

MULTI FORMAT WAVEFORM MONITOR

LV 5152



The cabinet is sold separately.

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

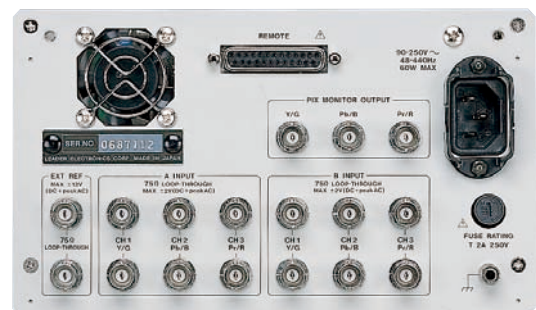
The LV 5152 Multi-format Waveform Monitor is designed to display analog component signals of multi-format DTV. This instrument features two analog component signal input systems. In addition to the waveform monitor function, vector, timing, and audio signal display functions are provided. Moreover, the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

FEATURES

- **Comply DTV for USA and Europe**
Accepts eight analog video formats for DTV-USA and three analog video formats for DTV-Europe.
- **Two analog signal input systems (Y, P_B, P_R or GBR) are provided.**
- **Picture monitor output is provided.**
- **Vectorscope function (SMPTE 274M, 296M)**
Displays color difference signal of component signals in vector format.
The analog GBR signal is converted into color difference signal with a matrix and displayed in vector format.
- **Conversion matrix, Y, P_B, P_R into GBR (SMPTE 274M, 296M)**
Simplifies signal level monitoring.
- **Measurements using cursor**
Ensures level measurement with 0.5% accuracy.
- **Preset memory function**
Stores/recalls up to 10 panel settings to reduce setup time by presetting frequently used measurement conditions.

- **Basic Operation Mode**
 - WFM(Waveform monitor mode)**
Displays up to three channel waveforms.
 - VEC(Vectorscope mode)**
Vector display of P_B and P_R channel input signals.
 - PIC(Picture monitor mode)**
Monochrome display of Y/G channel input signals.
 - AUDIO(Audio mode)**
Lissajous display of analog stereo audio signal.

■ LV 5152 REAR PANEL



Measurement Signal and Standards	No	Format	FullLine/Flame Frequency	Complied Spec.
	1	1080/60i	1125/29.97(30)	SMTPE 274M
	2	1080/50i	1125/25	SMTPE 274M
	3	1080/24P	1125/23.98(24)	SMTPE 274M
	4	1080/24sF	1125/23.98(24)	SMTPE 274M
	5	720/60P	750/59.94(60)	SMPTE 296M
	6	720/50P	750/25	SMPTE 296M
	7	480/60P	525/59.94(60)	SMPTE 293M
	8	480/60i	525/59.97(30)	SMPTE 253M
	9	1080/50i	1250/25	SMTPE 295M
	10	576/50P	625/50	ITU-R BT.1358
	11	576/50i	625/25	ITU-R BT.601-4
Input System				
Signal Input	CH1(Y/G),CH2(P _B /B),CH3(P _R /R),2-system			
Input Channel	BNC			
Return Loss	≥ 30 dB, 50 kHz to 30 MHz (both power on/off)			
Impedance	75 Ω 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	75 Ω passive loop-through			
Maximum Input Voltage	±12 V (DC + peak AC)			
Sync Amplitude	0.3 V _{p-p} ±6 dB			
Picture Monitor Output				
Frequency Response	25 Hz to 30 MHz, within ± 5 %			
Output Impedance	75 Ω			
Output Connector	BNC, 1 system			
Amplitude	1 V ± 5 %			
Vertical Axis				
Deflection System				
Deflection Sensitivity	Within ± 1 %, GAIN x 1 Within ± 3 %, GAIN x 5			
Variable Range	At least 0.5 to 1.2 times (both GAIN x 1 / x 5)			
GBR Matrix				
Deflection Sensitivity	Within ± 1 %, GAIN x 1 Within ± 3 %, GAIN x 5			
Frequency Response	x 1 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	≤20 %, attenuation at 60 Hz input			
Slow Mode	≥80 %, attenuation at 60 Hz input			
Fast Mode				
Clamp				
Point	Back porch			
Variable Range	0.5 to 2 μs, relative to sync pulse raising edge			
Blanking Level Shift	≤1 % (10 to 90 % of APL Variation)			
Horizontal Axis				
Operation Mode	Overlay: Displays waveforms overlaid Parade: Displays waveforms side by side Timing: For bowtie signal* measurement * Authorized by Tektronix, Inc.			
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 % (0.1 μs/ div)			
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	
Calibration Accuracy	±0.5 dB of full scale
Full Scale	0, 2, 4 dBm (menu selectable)
Bandwidth	Within -3 dB at 20 kHz
X-Y Phase Accuracy	Within 1 ° at 20 kHz
Calibration Signal	1 V ±0.5 %
Line Selector	WFM, VEC, PIC
Operation Mode	FLD1, FLD2, ALL (at Interlace)
Operation Field	Only ALL at 1080/50i (1250Line).
Display	The selected line is intensified
Line Window	
Function	Displays brighter by overlaying multiple lines resulting in higher effective refresh rate. 1 to 15 lines
Window Range	WFM, VEC, PIC
Operation Mode	FLD1, FLD2, ALL (at Interlace)
Operation Field	
Preset Function	
Preset/ Recall	Up to 10 front panel controls
Controls	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 to 2000 mV, 0 to 280.0 %
Accuracy	±0.5 %
Resolution	1 mV or 0.1 %
Amplitude Ratio Measurement	Amplitude between the REF and Δ cursors relative to 100 % REF is displayed in R%.
Time Measurement	Measures time between the REF and Δ cursors
Measurement Range	At least ±6 div from graticule center
Accuracy	±3 %
Resolution	1/ 80 div
Time Ratio Measurement	When [R%] is selected with the menu, time between the REF and Δ cursors relative to 100 % REF is displayed in R%.
Frequency Measurement	Frequency of one cycle between the REF and Δ cursors
CRT	
Effective Display Area	80 x 100 mm
Graticule	Internal (waveform) External (vector) Electronically-generated (vector, audio)
Environmental Conditions	
Operating Temperature	0 to 40 °C
Operating Humidity	≤ 90 % RH (without condensation)
Operating Environment	Indoor use
Operating Altitude	up to 2000 m
Overvoltage Category	II
Pollution Degree	2
Power Requirements	90 to 250 VAC, 48 to 440 Hz, 60 W max.
Dimensions and Weight	215 (W) x 132 (H) x 429 (D) mm, 5.5 kg 8 1/2(W) x 5 1/4(H) x 16 3/4(D) in., 12.1 lbs
Accessories	Illumination lamp.....5 25-pin D-sub connector.....1 25-pin D-sub connector cover.....1 Screw, rack mounting (inch size)2 Cover, inlet stopper1 Power cord1 Instruction manual1
Optional Accessories	LR 2427B (Cabinet, with handle) LR 2404A (Cabinet, without handle) LR 2700A-I (Rack-Mount Adapter, inch size)