

VIDEO NTSC/PAL/SECAM PATTERN GENERATOR

Component signal outputs of Y/B-Y/R-Y & GBR

CE
Upon request



LT 416 NTSC/PAL/SECAM PATTERN GENERATOR

GENERAL

Model LT 416 is a precision test-signal source which provides four color systems of NTSC, PAL, SECAM, and NTSC-4.43 for testing and adjusting all kind of video products such as TV, VTR etc.

In addition of a composite signal output, the generator provides a Y/C output and a component signal outputs(except SECAM) of Y/B-Y/R-Y and GBR so that it is suitable to a production line for video products of component system.

RF output is easily selected by setting channel number while the channels are pre-programmed by each countries. 15 test patterns including color bars, raster, convergence and circle satisfy the most desired applications.

FEATURES

- **Conforms to four standards (i.e., NTSC, PAL, SECAM, NTSC-4.43)**
This generator is ideal for adjusting and testing TVs, and AV equipments.
- **S connector**
An S connector is provided to output Y and C signals for adjusting AV equipments with S connector.
- **Component video signal output**
This generator output the composite video signal and component video signal.
Since Y/ B-Y/ R-Y or G/ B/ R is output, the generator allows test signals for component AV system adjustment and testing. (The SECAM color signals (B-Y, R-Y) are not output.)
- **RF setting**
The channel plan based on the country system is provided for easier RF frequency setting
- **Various test patterns**
This 15 patterns including color bar and circle are provided for various adjustment and test processes.

■ LT 416 Rear Panel



SPECIFICATIONS

LT 416

Composite Video Signal Output

Color System:	NTSC, PAL, SECAM, NTSC-4.43
Scanning Method	
NTSC/ NTSC-4.43:	525-line interlace scanning
PAL/ SECAM:	625-line interlace scanning (Progressive scanning can be performed for all color systems when the CIRCLE or CONVERGENCE pattern is selected.)
Field frequency	
NTSC:	59.94 Hz ±30 ppm (60.06 Hz ±30 ppm for progressive scanning)
PAL/ SECAM:	50 Hz ±30 ppm (50.08 Hz ±30 ppm for progressive scanning)
NTSC-4.43:	59.94 Hz ±150 ppm (60.06 Hz ±150 ppm for progressive scanning)
Line frequency	
NTSC:	15.734 kHz ±30 ppm
PAL/ SECAM:	15.625 kHz ±30 ppm
NTSC-4.43:	15.734 kHz ±150 ppm
Subcarrier Frequency	
NTSC:	3.579545 MHz ±30 ppm
PAL:	4.43361875 MHz ±30 ppm
NTSC-4.43:	4.43361875 MHz ±50 ppm
Video Generating System:	Digital system using 4 fsc sampling (without SECAM)
Number of Quantitative Bits:	8 bits
Output Impedance:	75 Ω
Output Level:	1 V _{p-p} ±50 mV _{p-p} (Between sync tip and 100 % white)
Setup Level:	NTSC: 0 % ("7.5 %" model optionally available)
Output connector	
Fixed output:	RCA jack.....1
Variable output:	BNC.....1
Sync Signal	
Amplitude:	286 mV _{p-p} ±14 mV _{p-p} (NTSC/ NTSC-4.43) 300 mV _{p-p} ±15 mV _{p-p} (PAL/ SECAM)
Horizontal Sync Width:	4.7 μs ±200 ns
Vertical Sync Width	
NTSC/ NTSC-4.43:	3H
PAL/ SECAM:	2.5H
Vertical Blanking Period	
NTSC/ NTSC-4.43:	20H
PAL/ SECAM:	25H
Color Burst	
Amplitude:	286 mV _{p-p} ±23 mV _{p-p} (NTSC/ NTSC-4.43) 300 mV _{p-p} ±24 mV _{p-p} (PAL/ SECAM)
Number of Cycles:	NTSC: 9 cycles, PAL: 10 cycles, NTSC-4.43: 11 cycles
SECAM Color Identification Signal	
Amplitude	
D'R Line:	540 mV _{p-p} +40 mV _{p-p} , -50 mV _{p-p}
D'B Line:	500 mV _{p-p} ±50 mV _{p-p}
SECAM Color (Back porch on the horizontal blanking period)	
Amplitude	
D'R Line:	215 mV _{p-p} ±25 mV _{p-p}
D'B Line:	167 mV _{p-p} ±20 mV _{p-p}
Test Patterns	
Color Bar:	100/ 0/ 75/ 0 Full-field Color Bar
Demodulator Pattern (Not output when the SECAM is selected)	
PAL:	Combination of normal and reversed B-Y and R-Y for each line
NTSC:	Combination of normal and reversed B-Y, R-Y, I, and Q for each line
line n:	R-Y, -(R-Y), B-Y, -(B-Y), R-Y, -(R-Y), B-Y, -(B-Y)
line n+1:	-(R-Y), R-Y, B-Y, -(B-Y), R-Y, -(R-Y), -(B-Y), B-Y
line n:	I, -I, Q, -Q, I, -I, Q, -Q
line n+1:	-I, I, Q, -Q, I, -I, -Q, Q
Multiburst	
Frequency	
NTSC/ NTSC-4.43:	0.5, 1.0, 2.0, 3.0, 3.58, 4.2 MHz
PAL/ SECAM:	0.5, 1.0, 2.0, 4.0, 4.8, 5.5 MHz
Amplitude:	100 % (*)
Raster	
Output eight colors in combination with red, green and, blue	
Color:	100 % white, yellow, cyan, green, magenta, red, blue, black
Amplitude:	Same as color bars
Window	
Window Amplitude:	100 % (*)
Step	
10 equal steps from 0 mV to 700 mV white	
Max. Luminance Amplitude:	100 %
Circle Pattern:	White circle pattern (with black fringe) on the convergence pattern Color Burst on/ off
Interlace/ Progressive:	Selectable (Flicker may occur on the border of convergence and circle patterns.)

Convergence	
Luminance Amplitude:	75 %
Number of Vertical Lines	
NTSC/ NTSC-4.43:	17
PAL/ SECAM:	19
Number of Horizontal Lines	
NTSC/ NTSC-4.43:	14
PAL/ SECAM:	15
Horizontal Line Width:	2 lines
Number of Dots	
NTSC/ NTSC-4.43:	16 x 13
PAL/ SECAM:	18 x 14
Dot Pulse Vertical Width:	2 lines
Color Burst:	On/ off selectable
Interlace/ Progressive:	Selectable
(*) Notes on pattern specifications	
Signal amplitude (100 % is as follows.	
PAL/ SECAM:	700 mV _{p-p}
NTSC/ NTSC-4.43:	714 mV _{p-p}
Accuracy:	Same as the composite signal
Y/ C Separation Output	
Specifications:	Same as the composite signal
Output Impedance:	75 Ω
Connector:	S type
Number of Outputs:	1
Y, B-Y, R-Y Output	
Output Signal (*):	Y, B-Y, R-Y
Y Output Amplitude	
NTSC/ NTSC-4.43:	714 mV _{p-p} ±36 mV
PAL:	700 mV _{p-p} ±35 mV
Sync Signal Amplitude	
NTSC/ NTSC-4.43:	286 mV _{p-p} ±14 mV
PAL:	300 mV _{p-p} ±15 mV
B-Y, R-Y Output Amplitude:	525 mV _{p-p} ±26 mV
Output Impedance:	75 Ω
Connector:	BNC
Number of Outputs:	1 each
(*) B-Y and R-Y are output when the SECAM is selected;	
Y is only output.	
R, G, B Output	
Output Signal (*):	R, G, B, C.SYNC
R, G, B Output Amplitude:	700 mV _{p-p} ±35 mV (NTSC, PAL, NTSC-4.43)
C.SYNC Output Amplitude:	C-MOS Level (NTSC, PAL, SECAM, NTSC-4.43)
Output Impedance:	75 Ω
Connector:	BNC
Number of Outputs:	1 each
(Pulse noise may be superimposed on the leading and trailing edges of the R, G and B Sync signals.)	
(*) R, G, B are output when the SECAM is selected;	
C.SYNC is only output.	
RF Output	
System	
NTSC:	M
PAL:	B, D, G, H, I, K
SECAM:	B, D, G, H, K, L (The RF is disabled when the NTSC-4.43 is selected)
Carrier Frequency Range:	VHF and UHF
Carrier Frequency Setting Method:	Direct setting using programmed country channel plan (Arbitrary frequency cannot be set)
Modulation Polarity:	Negative or Positive
Modulation System:	Double sideband
Sound Signal	
Intercarrier Frequency:	4.5, 5.5, 6.0, 6.5 MHz
Modulation Signal:	1 kHz ±200 Hz
Output Voltage	
VHF:	At least 1 mVrms (into 75 Ω)
UHF:	At least 0.5 mVrms (into 75 Ω)
Number of Output:	1 (75 Ω, BNC)
Sound Output	
Output Signal:	1 kHz ±100 Hz, sine wave
Amplitude:	1.2 V _{p-p} (into 600 Ω)
Number of Output:	1 (RCA jack)
Environmental Conditions	
Operating Temperature:	0 to 40 °C
Operating Humidity:	≤ 90 % RH (without condensation)
Spec-Guaranteed Temperature:	10 to 30 °C
Spec-Guaranteed Humidity:	≤ 85 % 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, 50/ 60 Hz 15 W max.
Dimensions and Weight:	
	426 (W) x 88 (H) x 300 (D) mm 4.6 kg
Accessories	
	Power cord..... 1
	Instruction manual..... 1