

# NTSC/PAL/SECAM Pattern Generator



LT 416

- *Conforms to NTSC, PAL, SECAM and NTSC/4.43 MHz Standards*
- *Composite and Y/C (4-Pin S-Video Outputs)*
- *Component GBR and Y, B-Y, R-Y Outputs*
- *15 Test Patterns Selected for TV, Monitor and VCR Use*
- *Flat Field of 8 Colors with On-Off Control of GBR*
- *RF Output for VHF/UHF Broadcast by Channel Number*
- *Worldwide Channel Coverage in 28 Channel Assignment Plans Covering 165 Countries*
- *Interlaced and Progressive Scans*
- *1 kHz Test Tone for Modulation and Audio Output*
- *Composite Sync*
- *Variable Video (with Preset) and RF Outputs*

The ideal test signal source for those engaged in the production, QC or service of TV/VCR and display systems that cover international applications, the LT416 handles NTSC, PAL, SECAM and a hybrid 525/59.94 format that employs the PAL color system. Features include composite

and Y/C outputs with Y, B-Y, R-Y and GBR available simultaneously. A comprehensive channel assignment system coordinates modulation based on the chosen system and the channel plan. Operation is simple and straight forward assuring efficient application.

## key specifications

### TEST PATTERNS

#### Color Bars

100/0/75/0 full-field color bars

#### Demodulator Pattern

(No 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

#### Multiburst (100%)

#### Frequency

NTSC/NTSC - 4.43: 0.5, 1.0, 2.0, 3.0, 3.58, and 4.2 MHz

PAL/SECAM: 0.5, 1.0, 2.0, 4.0, 4.8, 5.5 MHz

#### Raster

8 colors

#### Window

100%

#### Step

10 equal steps from 0 mV to 700 mV

#### Convergence

#### Luminance Amplitude

75%

#### Number of Lines V/H

NTSC/NTSC - 4.43: 17/14

PAL/SECAM: 19/15

#### Number of Dots

NTSC/NTSC - 4.43: 16 x 13

PAL/SECAM: 18 x 14

### Color Burst

On/Off selectable

### Interlace/Progressive

Selectable (circle and crosshatch)

### Signal Amplitude (100%)

PAL/SECAM: 700 mV p-p

NTSC/NTSC - 4.3: 714 mV p-p

### COMPOSITE VIDEO SIGNAL OUTPUT

#### Color System

NTSC, PAL, SECAM, NTSC - 4.3

#### Scanning Method

NTSC/NTSC - 4.43: 525 line interlace

PAL/SECAM: 625 line interlace

#### Field Frequency

NTSC: 59.94 Hz  $\pm$  30 ppm

(60.06 Hz  $\pm$  30 ppm progressive)

PAL/SECAM: 50 Hz  $\pm$  30 ppm

(50.08 Hz  $\pm$  30 ppm progressive)

NTSC - 4.43: 59.94 Hz  $\pm$  150 ppm

(60.06 Hz  $\pm$  150 ppm progressive)

#### Line Frequency

NTSC: 15.735 kHz  $\pm$  30 ppm

NTSC - 4.43: 15.734 kHz  $\pm$  150 ppm

PAL/SECAM: 15.625 kHz  $\pm$  30 ppm

#### Subcarrier Frequency

NTSC: 3.579545 MHz  $\pm$  30 ppm

PAL/NTSC - 4.43: 4.43361875 MHz

$\pm$  30 ppm/ $\pm$  50 ppm

#### Video Generating System

8-bit digital using 4 fsc sampling

### Setup Level

NTSC: 0% (7.5% optionally available)

### Output Level

1 V p-p  $\pm$  50 mV p-p (sync tip to 100%)

0 to 1 V p-p continuously variable

### Output Impedance

75  $\Omega$

### Output Connector

Fixed and variable output: RCA jack

### Sync Signal Amplitude

NTSC/NTSC - 4.43: 286 mV p-p

$\pm$  23 mV p-p

PAL/SECAM: 300 mV p-p  $\pm$  15 mV p-p

### Color Burst Amplitude

NTSC/NTSC - 4.43: 286 mV  $\pm$  23 mV p-p

PAL: 300 mV p-p  $\pm$  24 mV p-p

### Number of Cycles

NTSC: 9

PAL: 10

NTSC - 4.43: 11

### SECAM Color

#### Amplitude Identification Signal

D'R Line: 540 mV p-p + 40 mV p-p,

-50 mV p-p

D'R Line: 500 mV p-p  $\pm$  50 mV p-p

### SECAM Color

Amplitude (Back porch on the horizontal blanking period)

D'R Line: 215 mV p-p  $\pm$  25 mV p-p

D'R Line: 167 mV p-p  $\pm$  20 mV p-p

## key specifications LT416 - Cont.

### Y/C OUTPUT

Same as the Composite Signal  
Output Impedance / Connector  
75  $\Omega$  / S type

### Y, B-Y, R-Y OUTPUT\*

Y Output Amplitude  
Sync Signal Amplitude  
NTSC/NTSC - 4.43: 286 mV p-p  $\pm$  14 mV  
PAL: 300 mV p-p  $\pm$  15 mV  
B-Y, R-Y Output Amplitude  
525 mV p-p  $\pm$  26 mV  
Output Impedance / Connector  
75  $\Omega$  / BNC

### R, G, B OUTPUT

Output Signal \*\*  
R, G, B, C. SYNC  
R, G, B Output Amplitude  
700 mV p-p  $\pm$  35 mV (NTSC, PAL,  
NTSC - 4.43)  
C. SYNC Output Amplitude  
C-MOS Level (NTSC, PAL, SECAM,  
NTSC - 4.43)  
Output Impedance / Connector  
75  $\Omega$  / BNC

### RF OUTPUT

System  
NTSC: M  
PAL: B, D, G, H, I, K  
SECAM: B, D, G, H, K, L RF is disabled  
when NTSC - 4.43 is selected  
Carrier Frequency Range  
VHF and UHF  
Carrier Frequency  
Direct setting using programmed country  
channel plan  
Modulation Polarity  
Negative or Positive  
Modulation System  
Double sideband  
Sound Signal  
Inter-carrier Frequency: 4.5, 5.5, 6.0,  
6.5 MHz  
Modulation Signal: 1 kHz  $\pm$  200 Hz  
Output Voltage  
VHF: At least 1 mV rms into 75  $\Omega$   
UHF: At least 0.5 mV rms into 75  $\Omega$   
Number of Outputs: 1 75  $\Omega$

### SOUND OUTPUT

Output Signal  
1 kHz  $\pm$  100 Hz, sinewave  
Amplitude  
1.2 V p-p into 600  $\Omega$   
**POWER REQUIREMENTS**  
90 to 250 V ac, 50/60 Hz, 15 W max.

### PHYSICAL

Size (W x D x H)  
16<sup>3</sup>/<sub>4</sub> x 3<sup>1</sup>/<sub>2</sub> x 11<sup>3</sup>/<sub>4</sub> in.  
426 x 88 x 300 mm  
Weight  
10.1 lbs., 4.6 kg

\*Only output in SECAM