



Multi Format Video Generator

The compact, 1U half-rack sized, LT 4400 Multiformal Video Generator is applicable to both HD-SDI and SD-SDI systems. The various output capabilities are provided: color bar, SDI check field test pattern, ID characters, logomark in QVGA size, safety-area marker, superimposing embedded audio, genlock mode to synchronize external reference signal, and three independent analog black signal systems.

FEATURES

- Applicable to both HD-SDI and SD-SDI systems**
 Applicable to both HDTV (18 types of HDTV formats) and SDTV (525i/59.94, 625i/50) systems. The HDTV or SDTV can be selected.
- Superimposing ID characters**
 The ID characters can be superimposed at the arbitrary position on the screen. The character blinks to indicate the freeze status.
- Superimposing logomark**
 A logomark up to 320 (pixel) x 240 (line) in QVGA size can be superimposed at an arbitrary position on the screen. The logomark is converted from the bit map to four-grade monochrome data.
- Safety-area marker**
 The 90 % and 80 % safety-area markers can be superimposed on the screen. The 4:3 aspect-ratio marker can also be superimposed in HDTV format.
- Superimposing embedded audio**
 The 16 channels of embedded audio signals (4 channels x 4 groups) can be superimposed. The frequency and level can be respectively set for each channel.
- Genlock mode**
 This instrument can be locked by a NTSC/PAL black burst or HDTV tri-level sync signals for variable timing. The NTSC/PAL black burst signals with field reference pulse signal, and NTSC/PAL black burst signal with 10-field ID are also applicable.

- Stay-in sync function**

This function ensures the stable operation in genlock mode even when the external reference signal is accidentally intermittent.

- Analog black signal output**

Three independent analog black signal output systems are provided. The black burst signal with the same format as the SDI output, or HDTV tri-level sync signal with the same format of clock frequency can be selected for variable timing. The NTSC/PAL black burst signals with field reference pulse signal, and NTSC black burst signal with 10-field ID are also applicable.

- Pattern scroll (Simple motion picture mode)**

The simple motion picture mode is provided to scroll the pattern.

- Word clock output**

The 48 kHz word clock output is provided to synchronize the audio signal.

- Applicable to SNMP**

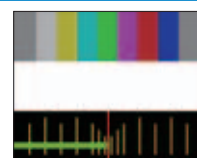
The network system can easily be constructed since this instrument supports SNMP.

■ OPTION

OP70:FULL SIZE LOGO Option

Applicable to the LOGO MARK of a full screen
 The Logo Mark of full screen size (up to 1920 x 1080 pixels) can be displayed.

LT 4400SER01 : LIP SYNC Option



LIP SYNC pattern

By adding the LT 4400SER01 option to the LT 4400, you can accurately measure the lip sync of the video and audio in an SDI signal.

To measure the lip sync, use Leader's LV 5800.

SDI Output Number of Outputs Conform To HDTV SDTV	1 system, 2 outputs (75 Ω, BNC) HD-SDI/SD-SDI, selectable SMPT 274M, SMPT 296M, SMPT 292M (except return loss) ITU-R BT 601, SMPT 125M ITU-R BT 656, SMPT 259M
Applicable Format HDTV	1080i/60, 1080i/59.94, 1080i/50, 1080p/30, 1080p/29.97, 1080p/25, 1080p/24, 1080p/23.98, 1080PsF/24, 1080PsF/23.98, 720p/60, 720p/59.94, 720p/50, 720p/30, 720p/29.97, 720p/25, 720p/24, 720p/23.98 525i/59.94-270 MHz, 625i/50-270 MHz
SDTV Timing Variable Variable Range Resolution	Entire frame range V: Settable in line steps H: Settable in clock steps (74.25 MHz, 74.25/1.001 MHz, 27 MHz)
Test Patterns HDTV	COLOR BAR 100 %, COLOR BAR 75 %, MULTIFORMAT COLOR BAR (ARIB STD-B28:75 % White, 100 % White, and + I signal, selectable), CHECK FIELD
SDTV	COLOR BAR 100 % (applicable to both 525i/59.94, 625i/50), COLOR BAR 75 %, SMPT COLOR BAR (applicable to 525i/59.94), EBU COLOR BAR/BBC COLOR BAR (applicable to 625i/50), CHECK FIELD (applicable to both 525i/59.94, 625i/50)
Safety Area Marker HDTV	Action safety area (90 %), Title safety area (80 %) 4:3 aspect ratio Selectable ON/OFF individually
SDTV	Action safety area (90 %), Title safety area (80 %) Selectable ON/OFF individually
ID Characters Number of Characters Size HDTV SDTV Display Position Freeze Confirmation Display Logo Mark Logo Mark Data Maximum Size Display Position Display Level Display Method File Format Before Conversion After Conversion Conversion Color Matrix	Up to 20 characters 32x32/64x64/128x128 dots selectable 32x32/64x64 dots selectable Displays at an arbitrary position on the screen. Blinking OFF, 1 to 9 seconds 4-level monochrome data between 0 and 3 320(dot) x 240(line) (QVGA size) Displays at an arbitrary position on the screen Set arbitrary levels for levels 0 to 3 Simultaneous display with the ID character 24-bit full-color bitmap data (.bmp) format LT 4400/LT 443D dedicated (.lg) format $Y = 0.212^*R + 0.701^*G + 0.087^*B$ Converts 256-level monochrome data(Y) to four levels (level 0 to 3) using arbitrary threshold values. Converted using the logo mark conversion application. Saves the data to a commercially sold Compact Flash card and inserts it to the LT 4400. *The data loaded from CF card to the LT 4400 cannot be held when the power is turned OFF.
Conversion Method Transferring the Logo Mark Data	
Pattern Scroll (Simple Motion Picture Mode) Direction Speed (Range, Resolution) Field and Frame Interface Others V H	8 directions (vertical, horizontal, diagonal) Variable in field steps Variable in frame steps 0 to 255 lines in 1 line steps 0 to 254 dots in 2 line steps
Embedded Audio Number of Channels Embedded Sampling Frequency Resolution Preemphasis Frame Number Frequency Level Audio Click	16 Channels (4ch x 4group). Each group can be set ON/OFF 48 kHz (sync to video signal) 20 bits, 24 bits, selectable OFF, 50/15 ms, CCITT, selectable (CS bit can only be selected) ON, OFF, selectable Silence/400 Hz /800 Hz /1 kHz, selectable (sets to each channel) Can be selected including silence (sets to each channel) -60 to 0 dBFS (settable in 1 dBFS steps) 1 sec/2 sec/3 sec/4 sec/OFF (sets to each channel) * When the CHECK FIELD pattern is selected, no audio signal is embedded. * In the SDTV format, resolution becomes 20 bits when the 16ch is output.
Genlock Function Reference Input Signal Input Configuration Input Signal NTSC black burst signal PAL black burst signal HDTV tri-level sync signal Sync Level NTSC black burst signal PAL black burst signal HDTV tri-level sync signal Operating Input Level Range External Lock Range Jitter Burst Lock Mode Sync Lock Mode Operation Modes INTERNAL	BNC (75 Ω, loop through) SMPT RP154/SMPT 170M/SMPT 318M EBU N14, ITU-R BT.470-6 SMPT 274M, SMPT 296M -286 mV -300 mV ±300 mV ± 6 dB ± 10 ppm ≤ 0.5 ° ≤ 1 ns Internal reference signal is used for operation. (INT mode)

AUTO (GO INTERNAL)	The EXT is automatically selected when the external reference signal is applied to the GENLOCK input. The INT mode is automatically selected when the external reference signal is removed.
MANUAL (GO INT)	The EXT mode is automatically selected when the external reference signal with the same format specified to the GENLOCK input is applied after power is turned on. The INT mode is automatically selected when no external reference signal is applied to the GENLOCK input or signal format does not match the specified format.
AUTO (STAYinSYNC)	The EXT mode is automatically selected when the external reference signal is applied to the GENLOCK input after power is turned on. If the external reference signal is accidentally removed during operation, the instrument continues operation under the conditions immediately before the signal is removed since STAYinSYNC mode is provided. After the external reference signal is recovered, the system is automatically locked.
MANUAL (STAYinSYNC)	The EXT mode is automatically selected when the external reference signal with the same format specified to the GENLOCK input is applied after power is turned on. If the external reference signal is accidentally removed during operation, the instrument continues operation under the conditions immediately before the signal is removed since STAYinSYNC mode is provided. The STAYinSYNC mode will be held until the reset operation is performed via the front panel even after the external reference signal is recovered.
Genlock Timing Variable Range NTSC black burst signal PAL black burst signal HDTV tri-level sync signal Resolution H V F Reference Point (at the time of the black burst input) NTSC PAL	± 5 frames ± 2 frames 1 frame (entire frame range) 0.0741 μs steps (13.5 MHz clock steps) 1 line steps 1 frame steps The phase coincident point of line 4 of the NTSC and line 1 of the HDTV The phase coincident point of line 1 of the PAL and line 1 of the HDTV
Analog Sync Signal Output Format NTSC black burst signal HDTV tri-level sync Output Signal Number of Outputs Setting Output Format Output Connector Output Connector Output Timing Setting Variable Range NTSC black burst signal PAL black burst signal HDTV tri-level sync Setting Resolution NTSC/PAL black burst signal HDTV tri-level sync	SMPT RP154, SMPT 170M, SMPT 318M SMPT 274M, SMPT 296M 6 Outputs (three output systems which equip with two connectors each) Settable BNC Three systems can be set individually. ± 5 frames ± 2 frames 1 frame (entire frame range) 0.0185 μs steps (54 MHz in clock steps) 0.0135 μs steps (74.25/1.001 MHz in clock steps, or 74.25 MHz in clock steps)
Word Clock Output Frequency Output Amplitude Output Connector Number of Outputs Timing Variable Variable Range Setting Resolution	48 kHz 1 Vp-p ± 0.1 V (into 75 Ω), or 5 V CMOS, selectable BNC 1 ± 1 AES/EBU frame 512 fs (24.576 MHz) steps
Memory Card Slot Function	Storing/reading preset data Reading logo data
Ethernet Connector Type Function	10BASE-T/100BASE-TX, auto switching Transferring operation status (e.g., genlock status) HTTP, TELNET, SNMP supported.
LCD Panel Number of Characters	20 characters x 2 lines can be displayed (w/backlight)
Environmental Conditions Operating Temperature Range Operating Humidity Range Operating Environment Operating Altitude Overvoltage Category Pollution Degree	0 to 40 °C ≤ 85 % RH (without condensation) Indoor use Up to 2000 m 1 2
Power Requirements	DC12 V (10 to 18 V) 20 W
Dimensions and Weight	213(W) x 44(H) x 400(D) mm (excluding projections), 1.8 kg 3 3/8(W) x 1 3/4(H) x 15 4/5(D) inch, 4 lbs.
Accessories	AC adapter1 Instruction manual1