Leader

LT 4600A

MULTIFORMAT VIDEO GENERATOR

Instruction Manual (MAIN)

Thank you for purchasing.

Please carefully read this instruction manual and the included "GENERAL SAFETY SUMMARY".
Please use the product safely.

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GENERAL SAFETY SUMMARY

■ Read This before Using the Instrument

This instrument should only be used by persons with sufficient knowledge of electronics who thoroughly understand the contents of this manual.

This instrument is not designed or manufactured for households or ordinary consumers.
If unqualified personnel are to use the instrument, be sure the instrument is handled under the supervision of qualified personnel (those who have electrical knowledge). This is to prevent the possibility of personal injury or damage to the instrument.

■ Note about Reading This Manual

The contents of this manual contain specialized terminology and may be difficult to understand. If you have any questions about the contents of this manual, please contact your local LEADER agent.

■ Symbols and Terms

The following symbols and terms are used in this instruction manual and on the instrument to indicate important warnings and notes.

<Symbol> 	This symbol appears in this instruction manual and on the instrument to indicate an area where improper handling could result in personal injury, damage to the instrument, or malfunction of the instrument or devices connected to it. When you encounter this symbol on the instrument, be sure to refer to the information in this instruction manual that corresponds to the area that the symbol marks.
<Term> 	Ignoring the precautions that this term indicates could lead to death or serious injury.
<Term> 	Ignoring the precautions that this term indicates could lead to personal injury or damage to the instrument.

GENERAL SAFETY SUMMARY

Read the warnings and information below thoroughly to avoid death, personal injury, and damage and deterioration of the instrument.

■ Warnings Concerning the Case and Panels

Do not remove the instrument's case or panels for any reason. Touching the internal components of the instrument could lead to fire or electric shock.

Also, do not allow foreign materials, such as liquids, combustible matter, and metal, to enter the instrument. Turning the instrument on when such materials are inside it could lead to fire, electric shock, damage to the instrument, or some other accident.

■ Installation Environment

● Operating Temperature Range

Use this instrument in a 0 to 40 °C environment. Using the instrument with its vents blocked or in a high temperature environment could lead to fire.

Drastic changes in temperature, such as might be caused by moving the instrument between two rooms with different temperatures, can damage the instrument by causing condensation to form within it. If there is a possibility that the instrument has condensation within it, wait for approximately 30 minutes before turning on the power.

● Operating Humidity Range

Use this instrument in an environment whose relative humidity is 85 %RH or less where there is no threat of condensation forming.

Also, do not operate this instrument with wet hands. Doing so could lead to electric shock or fire.

● Do Not Operate in an Explosive Atmosphere

Using this instrument in an environment where flammable gases, explosive gazes, or steam is emitted or stored could lead to an explosion or fire. Do not use the instrument in such an environment.

● Do Not Insert Foreign Materials

Do not insert foreign materials, such as metal and flammable objects, through the vents or allow liquid to enter the instrument. Such acts can lead to fire, electric shock, damage to the instrument, or some other accident.

■ If You Notice Something Wrong during Operation

If you notice smoke, fire, a strange smell, or something else that is wrong with the instrument while you are operating it, stop operation immediately. Failing to do so could lead to fire. Turn OFF the power switch, and remove the power cord from the outlet. After making sure that fire has not spread anywhere, contact your local LEADER agent.

GENERAL SAFETY SUMMARY

WARNING

■ Warnings Concerning the Power Source

Do not use a power source with a voltage other than the rated power source voltage for the instrument. Doing so could lead to fire.
Confirm the voltage of the power source before you connect the power cord to it.
Only use a power source whose frequency is 50/60 Hz.

Use a power cord that is appropriate for the voltage of the power source. Also, use a power cord that meets the safety standards of the country that you are using it in.
Using a power cord that does not meet the standards could lead to fire. If the power cord is damaged, stop using it, and contact your local LEADER agent. Using a damaged power cord could lead to electrical shock or fire.
When removing the power cord from the power outlet, do not pull on the cord. Pull from the plug.

■ Warnings Concerning Grounding

The instrument has a ground terminal to protect the user and the instrument from electric shock. Ensure that the product is properly grounded for safe operation.

■ Warnings Concerning the Panel

Sections of the panel are made out of glass. If the glass breaks, the broken glass may lead to injury. Do not apply a strong shock to the panel, cut it with sharp metal, or damage it in any similar manner.

CAUTION

■ Cautions Concerning the Input and Output Connectors

To avoid damaging the instrument, only apply signals to the input connectors that conform to the specifications in this instruction manual. Do not short or apply external voltage to the output connectors. Doing so could damage the instrument.

■ If You Will Not Use the Instrument for an Extended Period of Time

If you will not use the instrument for an extended period of time, remove the power plug from the outlet.

■ Cautions Concerning the Ethernet Port

When you are connecting the instrument to the communication provider's equipment, connect to the Ethernet port through a hub that is authorized for use in the country that you are using the instrument in.

GENERAL SAFETY SUMMARY

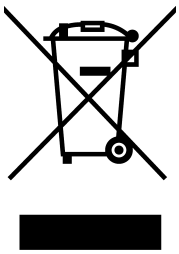
- Calibration and Repairs

  This instrument has been carefully examined at the factory to ensure that its performance is in accordance with the standards. However, because of factors such as parts wearing out over time, the performance of the instrument may degrade. To ensure stable performance, we recommend that you have the instrument calibrated regularly. Also, if the instrument malfunctions, repairs are necessary. For repairs and calibration, contact your local LEADER agent.

- Routine Maintenance

  When you clean the instrument, remove the power plug from the outlet.
  Do not use thinner or benzene when you clean the instrument's case, panels, or knobs. Doing so could lead to paint chipping and the corrosion of plastic components. To clean the case, panels, and knobs, use a soft cloth with mild detergent, and wipe gently. While cleaning, make sure that foreign materials, such as water and detergent, do not enter the product. If liquid or a metal object enters into the instrument, fire or electric shock may result.

- About the European WEEE Directive



  This instrument and its accessories are subject to the European WEEE Directive.
  Follow the applicable regulations of your country or region when discarding this instrument or its accessories. Follow the EU Battery Directive when discarding the batteries that you removed from this instrument.
  (WEEE stands for Waste Electrical and Electronic Equipment.)

Follow the warnings and precautions that have been listed in this section to use the instrument correctly and safely. Precautions are also contained in various other sections of this instruction manual. To use the instrument correctly, be sure to follow those precautions as well.

If you have any questions or comments about this instruction manual, please contact your local LEADER agent.

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1. INTRODUCTION

Thank you for purchasing this LEADER instrument. To use this instrument safely, read this instruction manual thoroughly, and make sure that you know how to use the instrument properly.

If some point about the operation of this instrument is still unclear after you have read this instruction manual, refer to the contact information on the back cover of the manual to contact LEADER, or contact your local LEADER agent.
After you have finished reading this manual, keep it in a convenient place so that you can refer to it when necessary.

1.1 Scope of Warranty

This LEADER instrument has been manufactured under the strictest quality control guidelines. LEADER shall not be obligated to furnish the following free services during the warranty period.

1. Repair of malfunction or damages resulting from fire, natural calamity, or improper voltage applied by the user.
2. Repair of a product that has been improperly repaired, adjusted, or modified by personnel other than a factory-trained LEADER representative.
3. Repair of malfunctions or damages resulting from improper use.
4. Repair of malfunctions caused by devices other than this instrument.
5. Repair of malfunctions or damages without the presentation of a proof of purchase or receipt bill for the instrument.

This Warranty is valid only in Japan.

1.2 Trademark Acknowledgments

The company and product names in this document are trademarks or registered trademarks of their respective holders.

1.3 Operating Precautions

1.3.1 Power Supply Voltage

Confirm the voltage of the power source before you connect the power cord to it.
The power requirements of this product are indicated on the rear panel.
Only use a power source that supplies a voltage within the operating voltage range and has a frequency of 50/60 Hz.

1.3.2 Maximum Allowable Input Voltage

The maximum signal voltage that can be applied to the input connectors is indicated below. Do not apply excessive voltage to the connectors. Doing so may damage the device or lead to injury.

Input Connector	Maximum Allowable Input Voltage
GENLOCK IN	±5V (DC+ peak AC)

1.3.3 Mechanical Shock

This instrument contains sensitive components, so it may be damaged if it is dropped or otherwise exposed to a strong shock.

1.3.4 Electrostatic Damage

Electronic components can be damaged by static discharge.

1.3.5 Warming Up

To ensure more accurate measurements, turn ON the instrument approximately 30 minutes before you intend to use it to allow its internal temperature to stabilize.

1.3.6 About Power-on Settings

Last memory is not supported (except for the UTILITY SETTING). By setting POWER ON RECALL, you can start the LT 4600A with preset settings.

1.4 About Terminology Used in this Manual

- **Internal Mode**

  A state in which the genlock mode is set to INTERNAL. The internal reference signal is used.

- **Genlock Mode**

  A state in which the genlock mode is set to STAY-IN-SYNC. An external reference signal is used.

- **Input Format**

  The following names are used for the SDI signal input formats.

Name	Description
SD	SD-SDI
HD	HD-SDI
HD(DL)	HD-SDI dual link
3G-A	3G-SDI level A
3G-B	3G-SDI Level B
3G	Collective term for 3G-A and 3G-B

- **Logo App**

  Logo App is a software for converting bitmap data (*.bmp) into 4-level monochrome data (*.lg) that can be used on the LT 4600A. It is in the included CD-ROM.

- **About Underlining (_)**

  Underlined options indicate the default values.

2. SPECIFICATIONS

2.1 General

The LT 4600A is a compact, 1U half-rack size SDI video signal generator that supports the triple-rate SDI (3G/HD/SD) format. In addition to test pattern output including color bars and SDI check fields, the LT 4600A is equipped with numerous features such as ID characters, QVGA logo marks, safety area markers, audio embedding, genlock function for external reference signals, and three analog black signals.

2.2 Features

- **Triple-rate SDI Ready**

  Supports 3G (level A and level B), HD (including dual link), and SD.
  The LT 4600A provides two outputs for two signals. The pattern and timing of each signal can be adjusted separately. (However, only one signal can be used for 3G-B and HD (DL).)

- **ID Character Overlay**

  ID characters can be overlaid at any position on the display. In addition, ID characters can be scrolled horizontally or displayed in a blinking state for checking whether the display has frozen.

- **Logo Mark Overlay**

  A logo mark up to 320 (dot) × 240 (line) in size (QVGA size) can be overlaid at any position on the display. Logo marks are 4-level monochrome data converted from bitmap data.

- **Safety Area Markers**

  90% and 80% safety area markers can be overlaid on the display. For 3G and HD, a 4:3 aspect marker can also be overlaid.

- **Pattern Scrolling**

  Equipped with a function for scrolling patterns in eight directions. The speed can also be adjusted.

- **Audio Embedding**

  The LT 4600A can embed 32 channels (link A, link B, 4 channels each × 4 groups) of audio signals for 3G-B and 16 channels (4 channels × 4 groups) of audio signals for 3G-A, HD, and SD. The frequency, level, and the like can be set for each channel.

- **Lip Sync Patterns**

  The LT 4600A can output lip sync patterns in which the video and audio are synchronized. By using Leader’s LV 5770(A), you can accurately measure the lip sync of the video and audio on SDI signals.

- **Genlock Function**

  The LT 4600A can synchronize with NTSC/PAL black burst signals and HD tri-level sync signals.
  NTSC/PAL black burst signal with field reference pulse and NTSC black burst signal with 10 field IDs are also supported.
  Furthermore, a Stay-in-Sync function is available in case errors occur at the genlock input.

- **Analog Black Output**

  Equipped with three independent black signals. The timing can be adjusted by selecting a NTSC/PAL black burst signal or a HD tri-level sync signal whose clock frequency is the same as in the SDI output format.
  NTSC/PAL black burst signal with field reference pulse and NTSC black burst signal with 10 field IDs are also supported.

- **Word-Clock Output**

  Equipped with one 48 kHz word-clock signal synchronized with video signals.

- **AES/EBU Serial Digital Audio Output**

  Equipped with two 48 kHz AES/EBU signals synchronized with video signals.

- **Ethernet**

  Standard support for SNMP makes it easy to integrate the LT 4600A in a network environment.

- **External Memory**

  Firmware updating and user data writing and saving are possible by connecting a USB memory device on the front panel.

- **Presets**

  Up to 10 presets can be saved. You can recall a preset to start the LT 4600A with the same settings every time.

2.3 Specifications

2.3.1 SDI Video Output

● SDI Electrical Characteristics

Bit Rate	
3G	2.970 Gbps, 2.970/1.001 Gbps
HD, HD (DL)	1.485 Gbps, 1.485/1.001 Gbps
SD	270 Mbps
Output Amplitude	800 mVp-p ± 10%
Overshoot	Less than 10%
Rise and Fall Times	
3G	≤ 135 ps (20 to 80%)
HD, HD (DL)	≤ 270 ps (20 to 80%)
SD	0.4 ns to 1.5 ns (20 to 80%)
DC Offset	0 ± 0.5 V
Output Impedance	75 Ω
Return Loss	≥ 15 dB (5 MHz to 1.485 GHz)
	≥ 10 dB (1.485 to 2.970GHz)
Outputs	Two signals two outputs (*1)
Output Connector	BNC

*1 One signal two outputs for 3G-B. One signal one output for HD (DL).
The output settings can be specified separately for the two signals, but for 3G and HD, different frame frequencies (60 Hz, 59.94 Hz, and 50 Hz) cannot be specified at the same time.

● Compliant Standards

3G-A	SMPTE ST 274, SMPTE ST 296, SMPTE ST 425
3G-B	SMPTE ST 274, SMPTE ST 372, SMPTE ST 425
HD (DL)	SMPTE ST 274, SMPTE ST 372
HD	SMPTE ST 274, SMPTE ST 292, SMPTE ST 296、SMPTE RP 211
SD	SMPTE ST 125, SMPTE ST 259
SDI Embedded Audio	
3G, HD, HD (DL)	SMPTE ST 299
SD	SMPTE ST 272
SDI Payload ID	SMPTE ST 352

- **Supported Formats**

3G-A Formats and Standards

Color System	Quantization	Image	Frame (Field) Frequency/Scanning	Compliant Standards
YCBCR 4:2:2	10 bits	1920×1080	60/59.94/50/P	SMPTE ST 274 SMPTE ST 425
	12 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
YCBCR 4:4:4	10 bits	1280×720	60/59.94/50/30/29.97/25/24/23.98/P	SMPTE ST 296 SMPTE ST 425
		1920×1080	60/59.94/50/I	SMPTE ST 274 SMPTE ST 425
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
	12 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
RGB 4:4:4	10 bits	1280×720	60/59.94/50/30/29.97/25/24/23.98/P	SMPTE ST 296 SMPTE ST 425
		1920×1080	60/59.94/50/I	SMPTE ST 274 SMPTE ST 425
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
	12 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	

3G-B Formats and Standards

Color System	Quantization	Image	Frame (Field) Frequency/Scanning	Compliant Standards
YCBCR 4:2:2	10 bits	1920×1080	60/59.94/50/P	SMPTE ST 274 SMPTE ST 372 SMPTE ST 425
	12 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
YCBCR 4:4:4	10 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
	12 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
RGB 4:4:4	10 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
	12 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	

HD (DL) Formats and Standards

Color System	Quantization	Image	Frame (Field) Frequency/Scanning	Compliant Standards
YCBCR 4:2:2	10 bits	1920×1080	60/59.94/50/P	SMPTE ST 274
	12 bits	1920×1080	60/59.94/50/I	SMPTE ST 372
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
YCBCR 4:4:4	10 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
	12 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
RGB 4:4:4	10 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	
	12 bits	1920×1080	60/59.94/50/I	
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/PsF	

HD and SD Formats and Standards

Color System	Quantization	Image	Frame (Field) Frequency/Scanning	Compliant Standards
YCBCR 4:2:2	10 bits	1280×720	60/59.94/50/30/29.97/25/24/23.98/P	SMPTE ST 292 SMPTE ST 296
		1920×1080	60/59.94/50/I	SMPTE ST 292
			30/29.97/25/24/23.98/P	SMPTE ST 274
			24/23.98/PsF	SMPTE ST 292 SMPTE RP 211
		720×487	59.94/I	SMPTE ST 259
		720×576	50/I	SMPTE ST 125

● Timing Adjustment

Adjustment Range	Entire frame
Adjustment Unit	
V	Lines
H	Clocks (148.5 MHz, 148.5/1.001 MHz, 74.25 MHz, 74.25/1.001 MHz, 27 MHz)

● Test Patterns

3G, HD	100% color bar, 75% color bar, multiformat color bar (ARIB STD-B28, pattern 2 area can be set to 100% white, 75% white, or +I), check field, blue field 100%, green field 100%, red field 100%, flat field white 100%, black 0%
SD	
525i/59.94	100% color bar, 75% color bar, SMPTE color bar, check field, blue field 100%, green field 100%, red field 100%, flat field white 100%, black 0%
625i/50	100% color bar, EBU color bar, BBC color bar, check field, blue field 100%, green field 100%, red field 100%, flat field white 100%, black 0%
Automatic Switching	Automatically switches between available patterns (except for check field)
Switch Time	1 to 255 sec

● Pattern Scrolling

Direction	Eight directions (up, down, left, right, and their combinations)
Speed Range and Unit	
Interlace	In unit of fields
V	0 to 256 lines, in 1 line steps
H	0 to 256 dots, in 2 dot steps
Progressive	In unit of frames
V	0 to 256 lines, in 1 line steps
H	0 to 256 dots, in 2 dot steps

* Not available when the check field pattern is selected.

● Safety Area Markers

3G, HD	Action safe area (90%) Title safe area (80%) 4:3 aspect ratio

	(can be turned on and off separately)
SD	Action safe area (90%)
	Title safe area (80%)
	(can be turned on and off separately)

* Not available when the check field pattern is selected.

● **ID Characters**

Number of Characters	Up to 20 characters
Size [Dots]	32×32, 64×64, 128×128, 256×256
Intensity	100%, 75% (black only for the background color)
Display Position	Anywhere on the display
Display Position Adjustment Resolution	
V	1 line
H	1 dot
Blinking Display (*1)	OFF, 1 to 9 sec
Scrolling (*1)	
Function	Scroll including the ID character background
Direction	Two directions (left and right)
Speed Range and Unit	
Interlace	In unit of fields 0 to 256 dots, in 2 dot steps
Progressive	In unit of frames 0 to 256 dots, in 2 dot steps

* Not available when the check field pattern is selected.

*1 The blinking display and scrolling can be used simultaneously.

● **Logo Mark**

Logo Mark Data	4-level monochrome data from level 0 to 3
Maximum Size	320 (dots) × 240 (lines) (QVGA size)
Number of Logo Marks That Can Be Saved in the LT 4600A	Up to 4
Display Position	Anywhere on the display
Display Position Adjustment Resolution	
V	1 line
H	1 dot
Display Level	Any level from 0 to 3
File Format	
Before Conversion	24-bit full color bitmap format (.bmp)
After Conversion	Original format (.lg)
Conversion Color Matrix	Y = (0.212×R) + (0.701×G) + (0.087×B) Converts 256-level monochrome data (Y) to 4 levels (levels 0 to 3) using specified thresholds
Conversion Method	Using the logo application
Logo Mark Data Transfer	Save the data to a USB memory device and transfer to the LT 4600A.

* Not available when the check field pattern is selected.

● **Channel On/Off**

Function	Each of the Y/G, Cb/B, and Cr/R components can be turned on and off for each channel independently.
On	Outputs the specified Y/G, Cb/B, or Cr/R signal
Off	
Y/G	040h/000h
Cb/B	200h/000h
Cr/R	200h/000h

* Not available when the check field pattern is selected.
* Black pattern can be output by turning off all channels and all embedded audio signals.

● **Image Overlay**

Display Precedence	ID characters > logo mark > safety area markers > test pattern (The display order cannot be changed.)
Simultaneous Display	ID characters, logo mark, safety area markers, and test pattern can be displayed simultaneously.

● **Embedded Audio**

Embedded Channels	Can be turned on and off at the group level
3G-A, HD, SD	16 channels (4 channels × 4 groups)
3G-B	32 channels (link A, link B, 4 channels each × 4 groups)
Sampling Frequency	48 kHz sampling (synced with the video signal)
Resolution	20 bits, 24 bits
Pre-emphasis	OFF, 50/15, CCITT (only the CS bit is switched)
Frequency	SILENCE, 400 Hz, 800 Hz, 1 kHz
Level	-60 to 0 dBFS (1 dBFS steps)
Audio Click	OFF, 1 to 4 sec

* Audio (including packets) cannot be embedded when the check field pattern is selected.
* The frequency, level, and audio click can be set for each channel.
* The following limitations apply for SD (525i/59.94).
  · For 16 channel output, the resolution is set to 20 bits.
  · Up to three groups (12 channels) can be output at 24-bit resolution.

● **Lip Sync Patterns**

Supported Formats	3G, HD, HD (DL), SD
Value	On, Off

* Not available when the check field pattern is selected.
* Safety area markers, ID characters, and logo mark cannot be overlaid.
* The audio click setting of embedded audio is disabled, and audio synchronized to the lip sync pattern is output.

2.3.2 Genlock Function

External Reference Input	
Format	BNC 75 Ω loop-through
Compliant Standards	
NTSC Black Burst Signal	SMPTE RP 154, SMPTE ST 170, SMPTE ST 318
PAL Black Burst Signal	EBU N14, ITU-R BT 1700
HD Tri-Level Sync Signal	SMPTE ST 240, SMPTE ST 274, SMPTE ST 296
Sync Level	
NTSC Black Burst Signal	-286 mV
PAL Black Burst Signal	-300 mV
HD Tri-Level Sync Signal	±300 mV
Operation Mode	
Internal	Operates using the internal signal
Stay-in-Sync	Holds the last genlock input frequency when the signal is interrupted

2.3.3 Analog Black Output

Compliant Standards	
NTSC Black Burst Signal	SMPTE RP 154, SMPTE ST 170, SMPTE ST 318
PAL Black Burst Signal	EBU N14, ITU-R BT 1700
HD Tri-Level Sync Signal	SMPTE ST 240, SMPTE ST 274, SMPTE ST 296
Output Signal	
Outputs	6 (3 signals × 2 outputs)
Output Format Setting	Each of the three signals can be configured independently.
Output Impedance	75 Ω
Output Connector	BNC
Timing Adjustment	
Value	Each of the three signals can be configured independently.
Adjustment Range	
NTSC Black Burst Signal	±5 frames
PAL Black Burst Signal	±2 frames
HD Tri-Level Sync Signal	1 frame (entire frame)
Adjustment Unit	
NTSC/PAL Black Burst Signal	In units of 0.0185 μs (54 MHz clock unit)
HD Tri-Level Sync Signal	In units of 0.0135 μs (74.25/1.001 MHz clock unit or 74.25 MHz clock unit)

* HD tri-level sync signal of 3G format (1080p) cannot be output.

* The output settings can be specified separately for the three signals, but for HD tri-level sync signal, different frame frequencies (60 Hz, 59.94 Hz, and 50 Hz) cannot be specified at the same time.

2.3.4 Word-Clock Output

Output Frequency	48 kHz
Output Amplitude	5V CMOS Compatible (when not terminated)
Output Connector	BNC
Outputs	1
Timing Adjustment	
Adjustment Range	±1 AES/EBU frame
Adjustment Unit	512 fs (24.576 MHz)

2.3.5 AES/EBU Digital Audio Output

Compliant Standards	ANSI S4.40, AES3-2009, AES11-2009, SMPTE ST 276
Output Impedance	75 Ω unbalanced
Output Amplitude	1 Vp-p ± 0.1 V
Output Connector	BNC
Outputs	2 (each 2 channel pair)
Timing Adjustment	
Adjustment Range	±1 AES/EBU frame
Adjustment Unit	512 fs (24.576 MHz)
Sampling Frequency	48 kHz sampling (synced with the video signal)
Resolution	20 bits, 24 bits
Pre-emphasis	OFF, 50/15, CCITT (only the CS bit is switched)
Frequency	SILENCE, 400 Hz, 800 Hz, 1 kHz
Level	-60 to 0 dBFS (1 dBFS steps)
Audio Click	OFF, 1 to 4 sec
Lip Sync	ENABLE, DISABLE
Sampling Clock Accuracy	Grade 2 (±10 ppm)

* The frequency, level, and audio click can be set for each channel.
(When lip sync is enabled, the audio click setting is disabled, and audio synchronized to the lip sync pattern is output.)

* Turn off all channels to output a digital audio reference signal (DARS).

2.3.6 External Interface

Ethernet	
Specifications	10BASE-T/100BASE-TX auto switching
Function	Transmission of operation status (e.g., genlock synchronization status) SNMP v1 compliant
USB	
Connector	USB Type A
Specifications	USB 2.0
Supported Media	USB memory device (up to 8 GB)
Function	Saving and loading of preset data saving and loading of logo data updating of firmware

2.3.7 Presets

Presets	Saves the panel settings (*1)
Number of Presets	10
Recall Method	Front panel
Copy Method	Copy all presets from the LT 4600A to a USB memory device or copy all presets from the USB memory device to the LT 4600A

* Last memory is not supported. By setting POWER ON RECALL, you can start the LT 4600A with preset settings.

*1 Logo data and device-specific information (e.g., IP address, time) cannot be saved.

2.3.8 LCD

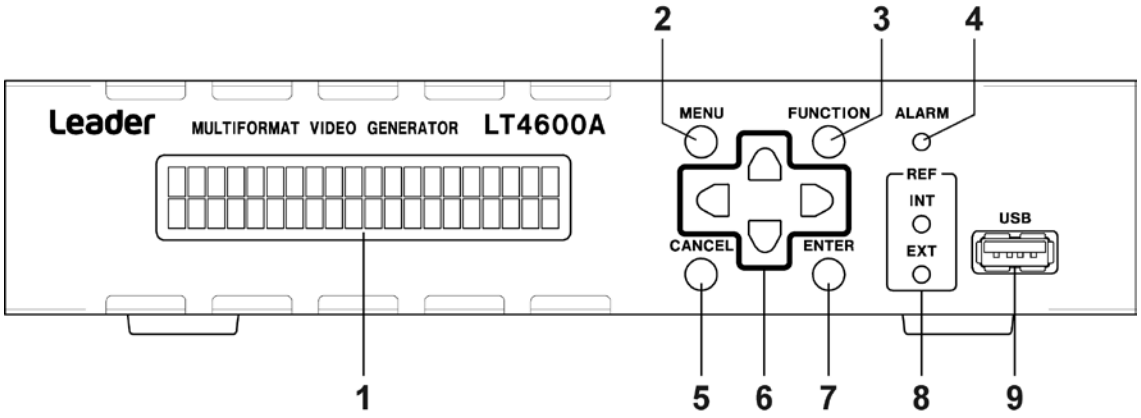
Number of Characters	20 characters × 2 lines
Backlight	On, Off

2.3.9 General Specifications

Environmental Conditions	
Operating Temperature	0 to 40 °C
Operating Humidity Range	85 %RH or less (no condensation)
Optimal Temperature	10 to 35 °C
Operating Environment	Indoors
Elevation	Up to 2,000 m
Overvoltage Category	Ⅱ
Pollution Degree	2
Power Requirements	
Voltage	90 to 250 VAC
Power Consumption	25W max.
Dimensions	213 (W) × 44 (H) × 400 (D) mm (excluding protrusions)
Weight	3.0kg
Accessories	Power cord .....1 Cover/Inlet stopper .....1 CD-ROM (Logo App, instruction manual) 1
Sold Separately	LR 2478 (rack mount adapter for two units) LR 2481 (rack mount adapter for one unit)

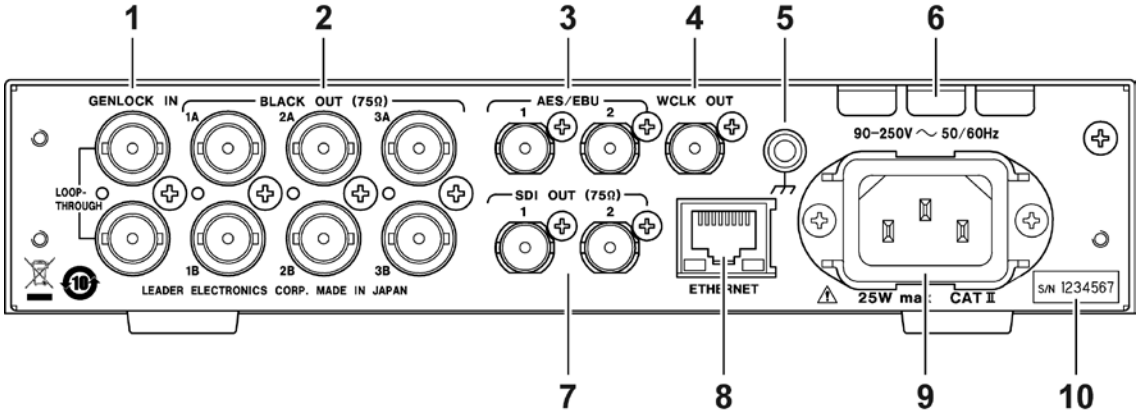
3. PANEL DESCRIPTION

3.1 Front Panel



No.	Name	Description
1	LCD	Shows various information.
2	MENU	Switches the menu. See section 4.5, “Menu Operations.”
3	FUNCTION	Enables and disables the key lock. See section 6.2, “Turning Key Lock On and Off.”
4	ALARM	Blinks when the fan stops. See section 4.3, “Alarm Indications.”
5	CANCEL	Cancels settings. See section 4.5, “Menu Operations.”
6	Arrow keys	Used to move the cursor and to set values.
7	ENTER	Confirms settings. See section 4.5, “Menu Operations.”
8	REF	INT lights when the internal reference signal is in use. EXT lights or blinks when an external reference signal is in use. See section 5.1, “Genlock Status Display.”
9	USB	USB port. Used to save and load various data and update the firmware. See section 4.4, “Connecting a USB Memory Device.”

3.2 Rear Panel



No.	Name	Description
1	GENLOCK IN	Genlock input connectors. They are loop-through connectors. They receive HD tri-level sync or NTSC/PAL black burst signals. See chapter 7, “GENLOCK FUNCTION (REFERENCE SETTING.)”
2	BLACK OUT	Black output connectors. They output HD tri-level sync or NTSC/PAL black burst signals. See chapter 9, “ANALOG BLACK OUTPUT (BLACK SETTING).”
3	AES/EBU	AES/EBU digital audio output connector. See chapter 11, “AES/EBU DIGITAL AUDIO OUTPUT (AES/EBU SETTING).”
4	WCLK OUT	48 kHz word-clock output connector. See chapter 12, “WORD-CLOCK OUTPUT (WCLK SETTING).”
5	Ground terminal	Connect the instrument to an external ground.
6	Fan	Cooling fan for the instrument.
7	SDI OUT	SDI output connectors. Outputs SD, HD, and 3G signals. See chapter 10, “SDI Output (SDI SETTING).”
8	ETHERNET	Ethernet port. Used to remotely monitor the LT 4600A status. See chapter 13, “SNMP.”
9	AC inlet	Attach the included cover/inlet stopper to the AC inlet. [See also] 4.1, “Attaching the Cover Inlet Stopper”
10	Serial label	The serial number is printed on this label.

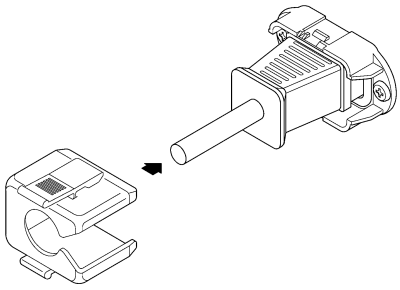
4. BEFORE USE

4.1 Attaching the Cover Inlet Stopper

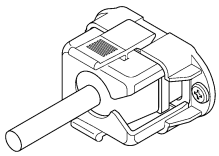
A cover/inlet stopper is included with the LV 7390. Use this device to prevent the power cord from being pulled free of the AC inlet. To attach the cover/inlet stopper, follow the procedure below.

● Attaching the Cover/Inlet Stopper

1. **Cover the power cord with the cover/inlet stopper.**



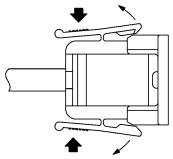
2. **Push the cover/inlet stopper, until you hear a click, to attach it to the AC inlet.**



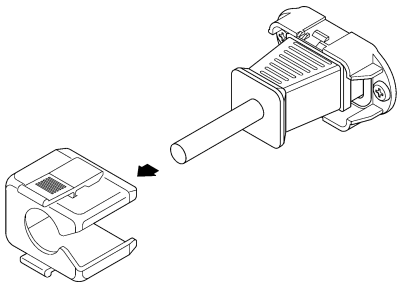
3. **Check that the cover/inlet stopper is securely attached to the AC inlet.**

● Removing the Cover/Inlet Stopper

1. **Release the lock by using two fingers to press the cover/inlet stopper levers.**



2. **Pull the cover/inlet stopper away from the AC inlet.**



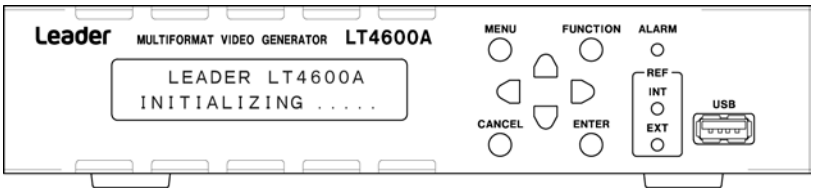
4.2 Turning the Power On

- **Turning the Power On**

  The LT 4600A does not have a power switch. Simply connect the power cord.

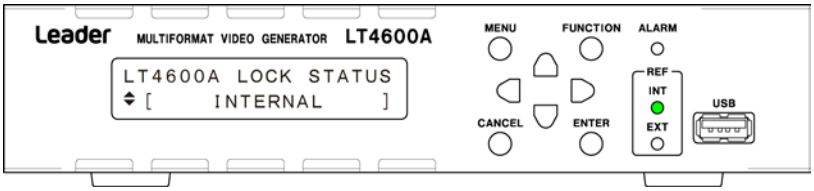
- **Starting**

  When the power turns on, the LT 4600A starts to initialize. During initialization, signals are not output, and you cannot use the keys.



- **Startup Complete**

  When the following screen appears, the startup is complete.

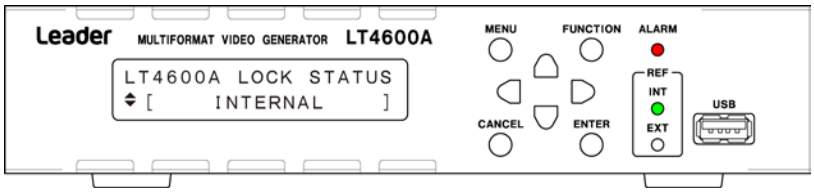


- **Power-on Settings**

  See section 14.1, “List of Settings.”

4.3 Alarm Indications

If an error occurs in the fan, the ALARM LED on the front panel blinks in red.
If this happens, contact your local LEADER agent.



4.4 Connecting a USB Memory Device

To import and export various data, you can use a USB memory device.
Use a USB memory device whose capacity is 8 GB or less. You can connect and disconnect a USB memory device with the power turned on.

When you connect a USB memory device, the following message appears.
Do not turn the power off or remove the USB memory device while it is being accessed.

```
*USB STORAGE DEVICE*
*       INSERT       *
```

When you remove the USB memory device, the following message appears.

```
*USB STORAGE DEVICE*
*       EJECT        *
```

4.5 Menu Operations

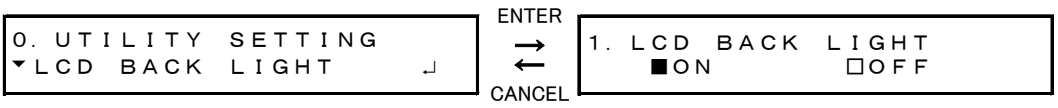
There are eight main types of menus that appear on the LCD. The menu switches each time you press the MENU key (when the menu level is at zero).

No.	Menu	Description	Reference
1	LT4600A LOCK STATUS ▲▼ [INTERNAL]	Displays the genlock status and the current main settings.	Chapter 5
2	0. UTILITY SETTING ▼ LCD BACK LIGHT ↵	Configure the backlight and other LT 4600A settings.	Chapter 6
3	0. REFERENCE SETTING ▼ GENLOCK MODE ↵	Set the genlock.	Chapter 7
4	0. SYSTEM SETTING ▼ SYSTEM SELECT ↵	Configure the frequency groups and other LT 4600A settings.	Chapter 8
5	0. BLACK SETTING ▼ BLACK1 SIGNAL ▶	Set the black signal.	Chapter 9
6	0. SDI SETTING ▼ SDI 1(3G-SDI-LvA) ▶	Set the SDI signal.	Chapter 10
7	0. AES/EBU SETTING ▼ AES/EBU 1 ▶	Set the AES/EBU signal.	Chapter 11
8	0. WCLK SETTING WCLK TIMING ↵	Set the word-clock signal.	Chapter 12

- **Menu Levels**

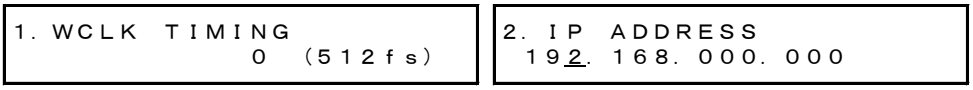
  With the exception of a portion of the screens, the settings menus show a number to the upper left of the screen. This number indicates the menu level. The larger the number, the deeper the level.

  To enter a lower level menu, press ENTER. (In some screens, you can also use the ▶ key.)
  To return to a higher level menu, press CANCEL or MENU. (In some screens, you can also use the ◀ key.)



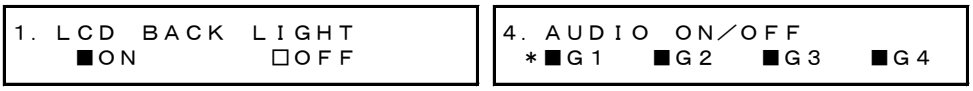
- **Specifying Values**

  To change values, use the ▲ and ▼ keys. Hold down a key to change the number quickly. If a cursor (_) is displayed such as in IP ADDRESS, use the ◀ and ▶ keys to move the cursor and the ▲ and ▼ keys to change the value.

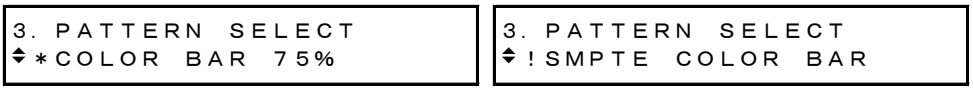


- **Selecting Items**

  To select an item, use the ◀ and ▶ keys.
  If a cursor (*) is displayed such as in AUDIO ON/OFF, use the ◀ and ▶ keys to move the cursor and the ▲ and ▼ keys to switch between on and off.



  Some items are selected using the ▲ and ▼ keys.
  When you press the ENTER key to confirm the value, an asterisk appears to the left of the item. An exclamation mark indicates that the item cannot be selected.



- **Confirming and Canceling Settings**

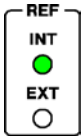
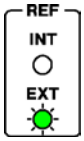
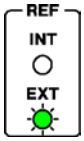
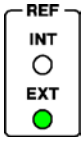
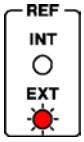
  Press ENTER on a setting screen to confirm the setting. Press CANCEL to cancel the setting.
  For some items, the setting is immediately confirmed. Pressing CANCEL will not revert the setting to the previous value.

5. STATUS DISPLAY (STATUS)

The STATUS display shows the genlock status and the current main settings. This screen is only for viewing; you cannot change the settings.
To switch screens, use the ▲ and ▼ keys.

5.1 Genlock Status Display

LT 4600A LOCK STATUS displays the genlock status.
This section will explain the display details in conjunction with the REF display.

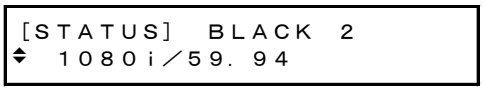
Screen	Reference display	Description
LT4600A LOCK STATUS ▲▼ [INTERNAL]	 [INT] Lit in green	Internal mode
LT4600A LOCK STATUS ▲▼ [NO SIGNAL]	 [EXT] Blinking green (fast)	Genlock mode, no input signal
LT4600A LOCK STATUS ▲▼ [TRACKING FAST]	 [EXT] Blinking green (slow)	Genlock mode, drawing in the reference signal
LT4600A LOCK STATUS ▲▼ [EXTERNAL]	 [EXT] Lit in green	Genlock mode, normal operation
LT4600A LOCK STATUS ▲▼ [STAY−IN−SYNC]	 [EXT] Blinking red	Genlock mode, reference signal error (Stay-in-sync in operation)

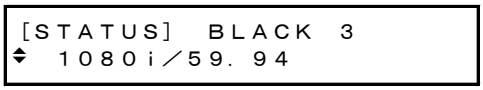
5.2 Genlock Setting Display

GENLOCK ST displays the genlock mode selected in section 7.2, “Selecting the Genlock Mode.”

5.3 Black Setting Display

BLACK 1, BLACK 2, and BLACK 3 display the black format selected in section 9.1, “Selecting the Black Format.”

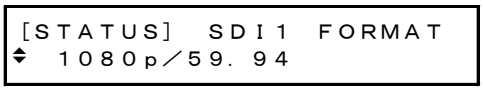


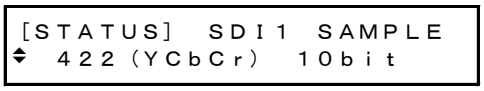


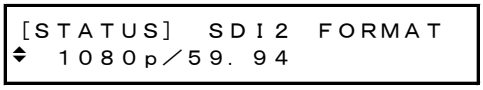
5.4 SDI Setting Display

OUTPUT MODE displays the SDI output set in section 8.3, “Selecting the SDI Output Signal.”

SDI1 FORMAT, SDI1 SAMPLE, SDI2 FORMAT, and SDI2 SAMPLE display the SDI format selected in section 10.1, “Selecting the SDI Format.”
If the SDI output is 3G-B or HD (DL), SDI FORMAT and SDI SAMPLE will be displayed.







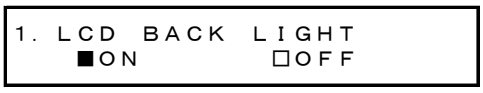
SDI1 PATT and SDI2 PATT display the SDI pattern selected in section 10.2.1, “Selecting the Pattern.”
If the SDI output is 3G-B or HD (DL), SDI PATT will be displayed.

6. LT 4600A CONFIGURATION (UTILITY SETTING)

UTILITY SETTING is used to configure the basic LT 4600A settings.
These settings are not stored to presets.

6.1 Turning the Backlight On and Off

To turn the LCD backlight on or off, follow the procedure below.



Procedure

UTILITY SETTING → LCD BACK LIGHT: ON / OFF

Settings

ON:	The backlight is turned on.
OFF:	The backlight is turned off.

6.2 Turning Key Lock On and Off

To turn key lock on and off, follow the procedure below.

Procedure

UTILITY SETTING → KEY LOCK: ON / OFF

Settings

ON:	Key lock is enabled.
OFF:	Key lock is disabled.

- **Behavior When Key Lock Is Enabled**

  The LT 4600A locks its keys after 30 seconds of inactivity (no key operations).
  When the keys are locked, all keys are disabled. If you press a key in this condition, the following message is displayed for about 3 seconds.

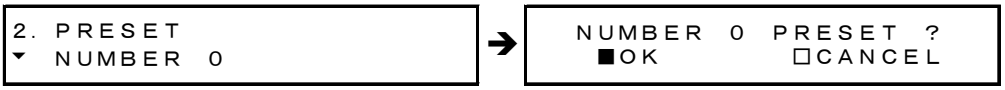
  When key lock is enabled, you can temporarily disable key lock by holding down FUNCTION for 3 seconds. (The LT 4600A will lock its keys again after 30 seconds of inactivity or if you hold down FUNCTION for 3 seconds.)
  Release the key when the following message appears.

6.3 Configuring Presets

Presets contain LT 4600A settings that you registered. Presets can be imported and exported through a USB memory device. A preset can be recalled automatically at startup.

6.3.1 Saving Presets

You can save up to 10 presets by following the procedure below. For details on what is saved in presets, see section 14.1, “List of Settings.”
By factory default, NUMBER 0 to NUMBER 9 contain factory default values.

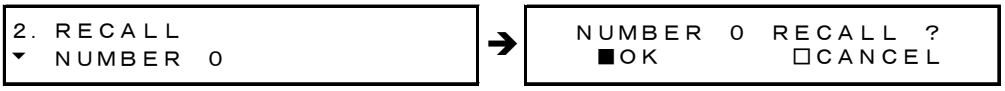


Procedure

UTILITY SETTING → PRESET/RECALL → PRESET: NUMBER 0 - NUMBER 9

6.3.2 Recalling Presets

To recall a preset that you saved according to the procedure in section 6.3.1, “Saving Presets,” follow the procedure below.



Procedure

UTILITY SETTING → PRESET/RECALL → RECALL: NUMBER 0 - NUMBER 9

6.3.3 Power-on Settings

To select the preset to use for starting the LT 4600A, follow the procedure below. For details, see section 14.1, “List of Settings.”

Procedure

UTILITY SETTING → PRESET/RECALL → POWER ON RECALL: OFF / NUMBER 0 - NUMBER 9

Settings

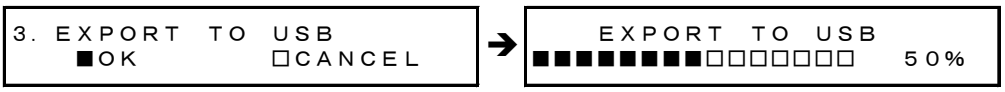
OFF: The LT 4600A starts with factory default settings.
NUMBER 0 - NUMBER 9:
The LT 4600A starts with the selected preset.

6.3.4 Exporting the Presets

To export the presets from the LT 4600A to a USB memory device, follow the procedure below. This feature is useful when you want to use multiple LT 4600As with the same settings.

All 10 presets are exported to a single file. You cannot export individual presets.

While the presets are being exported, an indicator appears to show the progress. When the original screen returns, exporting is finished. Do not turn the power off or remove the USB memory device until the original screen returns.



Procedure

UTILITY SETTING → PRESET/RECALL → IMPORT/EXPORT → EXPORT TO USB

- **USB Memory Device File Structure**

  The presets are exported to the PRESET folder in the USB memory device. If a file already exists, it is overwritten.
  The date and time of the exported file will be the date and time specified according to the procedure in section 6.6, “Setting the Date and Time.”

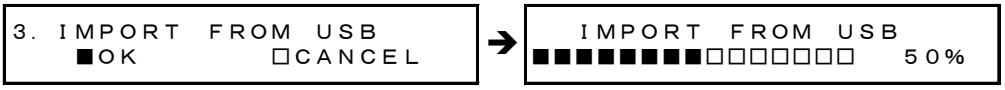
USB memory device
└ LT4600A
  └ PRESET
    └ LT4600A_PRESET_DATA.DAT

6.3.5 Importing Presets

To import the presets that have been exported according to the procedure in section 6.3.4, “Exporting the Presets” from the USB memory device to the LT 4600A, follow the procedure below. This feature is useful when you want to use multiple LT 4600As with the same settings.

All 10 presets are imported at once. You cannot import individual presets.

While the presets are being imported, an indicator appears to show the progress. When the original screen returns, importing is finished. Do not turn the power off or remove the USB memory device until the original screen returns.



Procedure

UTILITY SETTING → PRESET/RECALL → IMPORT/EXPORT → IMPORT FROM USB

- **USB Memory Device File Structure**

  The presets are imported from the PRESET folder in the USB memory device. (See section 6.3.4, “Exporting the Presets.”) The presets in the LT 4600A are overwritten.

6.4 Setting Logos

The logos (.lg format) that you create with the supplied Logo Application can be imported into the LT 4600A and overlaid on SDI signals. Up to four logos can be imported. Imported logos are retained even if the LT 4600A is restarted or initialized according to section 6.7, “Initializing Settings.”
A logo can also be overlaid on an SDI signal without importing the logo, but in this case, the logo is cleared when the LT 4600A is turned off.

Reference Section 10.8, “Setting Logos”

6.4.1 Selecting a Logo

To select a logo number, follow the procedure below. By factory default, all logo numbers show NO DATA. If logos have been imported, their file names are displayed.

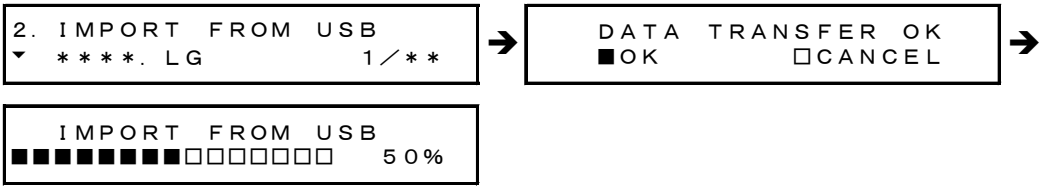
Procedure

UTILITY SETTING → LOGO DATA → LOGO SELECT → INT_1 - INT_4

6.4.2 Importing a Logo

To import a logo stored in a USB memory device to the number selected in section 6.4.1, “Selecting a Logo,” follow the procedure below.

While the presets are being imported, an indicator appears to show the progress. When the original screen returns, importing is finished. Do not turn the power off or remove the USB memory device until the original screen returns.



Procedure

UTILITY SETTING → LOGO DATA → IMPORT FROM USB

- **USB Memory Device File Structure**

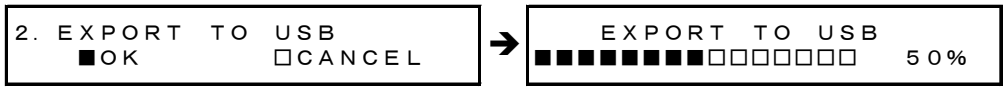
  Place logos in the LOGO folder of the USB memory device. Up to 99 logos can be selected from the LT 4600A. If a logo is already in the LT 4600A, it is overwritten.

  USB memory device
  └ LT4600A
  　└ LOGO
  　　└ ****.LG

6.4.3 Exporting a Logo

To export a logo selected in section 6.4.1, “Selecting a Logo,” to a USB memory device, follow the procedure below.

While the presets are being exported, an indicator appears to show the progress. When the original screen returns, exporting is finished. Do not turn the power off or remove the USB memory device until the original screen returns.



Procedure

UTILITY SETTING → LOGO DATA → EXPORT TO USB

- **USB Memory Device File Structure**

  Logos are exported to the LOGO folder in the USB memory device. (See section 6.4.2, “Importing a Logo”) If a file with the same name already exists, it is overwritten.
  The date and time of the exported file will be the date and time specified according to the procedure in section 6.6, “Setting the Date and Time.”

6.4.4 Clearing a Logo

To clear a logo selected in section 6.4.1, “Selecting a Logo,” follow the procedure below.

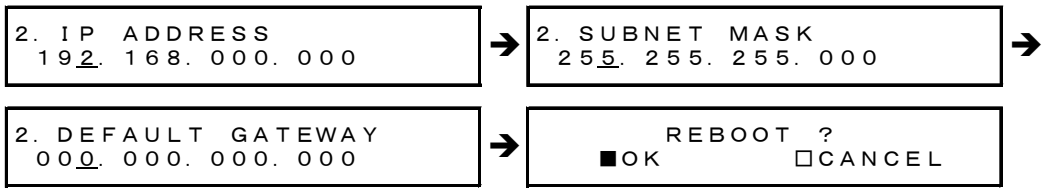
Procedure

UTILITY SETTING → LOGO DATA → ERASE DATA

6.5 Configuring Ethernet Settings

6.5.1 Setting the IP Address

To set the IP address, subnet mask, and default gateway, follow the procedure below.
For the new IP address to take effect, you need to restart the LT 4600A. When you restart the LT 4600A, some settings return to their factory default values. (See section 14.1, “List of Settings.”)
If necessary, save the current settings to a preset.



Procedure

UTILITY SETTING → ETHERNET → NETWORK SETTING

6.5.2 Viewing the MAC Address

To view the MAC address of the LT 4600A, follow the procedure below.
The MAC address is a unique number assigned to the device and cannot be changed.

Procedure

UTILITY SETTING → ETHERNET → MAC ADDRESS

6.5.3 Setting Trap Transmission

To select whether to transmit SNMP traps, follow the procedure below.

Procedure

UTILITY SETTING → ETHERNET → SNMP TRAP → ACTION: ENABLE / DISABLE

Settings

ENABLE:	Traps are transmitted.
DISABLE:	Traps are not transmitted.

6.5.4 Setting the Trap Transmission Destination

To set the IP address of the SNMP manager to send SNMP traps to, follow the procedure below.

Procedure

UTILITY SETTING → ETHERNET → SNMP TRAP → MANAGER IP

6.5.5 Setting the Community Names

To change the SNMP read community, write community, and trap community, follow the procedure below. To apply these settings, you need to restart the LT 4600A.

The characters that you can use are as follows. You can enter up to 15 characters.

◄0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz

◄ is the final character. If you enter this character, characters after this character will disappear, and you will not be able to edit them.

Procedure

UTILITY SETTING → ETHERNET → SNMP COMMUNITY
→ READ COMMUNITY: LDRUser◄
→ WRITE COMMUNITY: LDRAdm◄
→ TRAP COMMUNITY: LDRUser◄

6.5.6 Retrieving the MIB File

To copy the MIB file, which is used for SNMP, from the LT 4600A to a USB memory device, follow the procedure below.

Procedure

UTILITY SETTING → ETHERNET → GET MIB FILE

- **USB Memory Device File Structure**

  The MIB file is saved in the MIB folder of the USB memory device. If a file already exists, it is overwritten.
  The date and time of the exported file will be the date and time specified according to the procedure in section 6.6, “Setting the Date and Time.”

  USB memory device
  └ LT4600A
  　└ MIB
  　　└ LT4600-MIB.mib

6.6 Setting the Date and Time

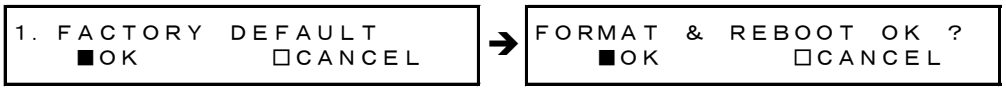
To set the date and time, follow the procedure below.
The date and time are used in data exporting, genlock log, and so on.
The date and time are reset to their factory default values (2012/01/01 00:00:00) each time the LT 4600A is started.

Procedure

UTILITY SETTING → DATE & TIME ADJUST

6.7 Initializing Settings

To reset all settings to their factory default values, follow the procedure below. For the factory default values, see section 14.1, “List of Settings.” To initialize, you need to restart the LT 4600A.
Logos imported according to section 6.4.2, “Importing a Logo” are not deleted even if the LT 4600A is initialized.

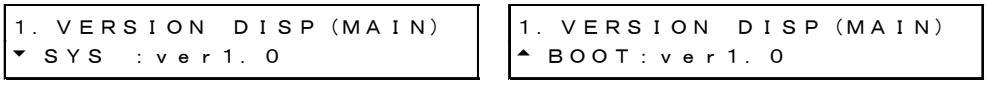


Procedure

UTILITY SETTING → FACTORY DEFAULT

6.8 Viewing the Version Information

To view the LT 4600A version, follow the procedure below.
The LT 4600A version consists of a SYS version and BOOT version. SYS version is the main version, and BOOT version is for maintenance. If you contact your local LEADER agent, tell them the SYS version.



Procedure

UTILITY SETTING → VERSION DISPLAY

7. GENLOCK FUNCTION (REFERENCE SETTING)

7.1 Genlock Function

This chapter will explain how to use the LT 4600A for the following two lock modes.

Lock mode	Reference signal	Description
Internal mode	Internal	The internal reference signal is used. The factory default setting is this mode.
Genlock mode	External (HD tri-level sync signal or NTSC/PAL black burst signal)	An external reference signal received through GENLOCK IN on the rear panel is used. If the external reference signal is lost during operation, the frequency immediately before the signal is lost is maintained. (Stay-in-sync function) During stay-in-sync operation, even if the external reference signal returns, the LT 4600A will not lock back on to the external reference signal until the LT 4600A is instructed to do so from the front panel.

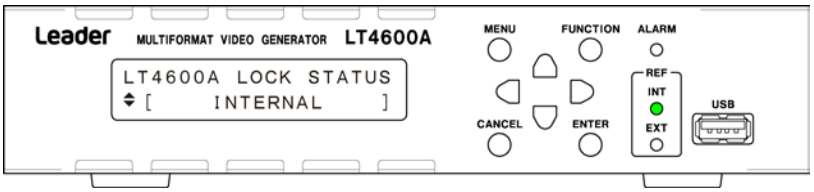
7.1.1 Internal mode

To switch to internal mode, under REFERENCE SETTING, set GENLOCK MODE to INTERNAL.

Reference Section 7.2, “Selecting the Genlock Mode”

- **Panel Display**

  Under LT4600A LOCK STATUS, INTERNAL appears, and INT under REF lights in green.



7.1.2 Genlock Mode

1. Under REFERENCE SETTING, set GENLOCK MODE to STAY-IN-SYNC.

Reference Section 7.2, “Selecting the Genlock Mode”

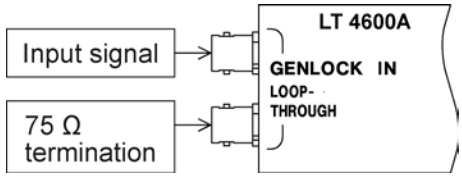
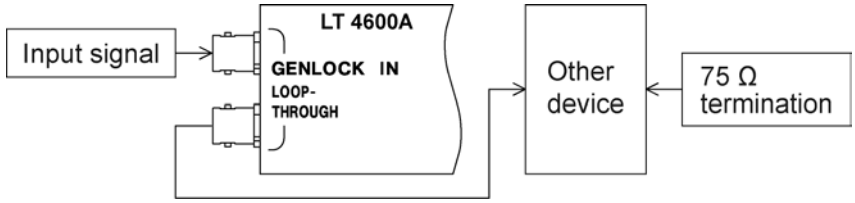
2. Under REFERENCE SETTING, select LOCK FORMAT.

Select the reference signal format.

Reference Section 7.3, “Selecting the Genlock Format”

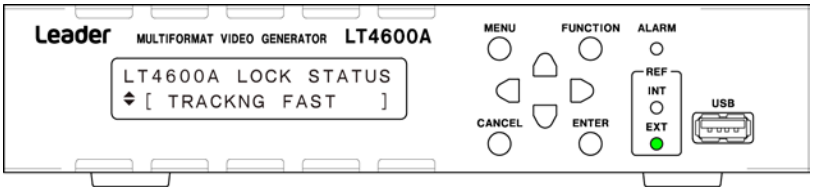
3. Apply a reference signal to GENLOCK IN on the rear panel.

The LT 4600A can use an HD tri-level sync or NTSC/PAL black burst signal for a reference signal. Connect cables with a characteristic impedance of 75 Ω in one of the following ways.

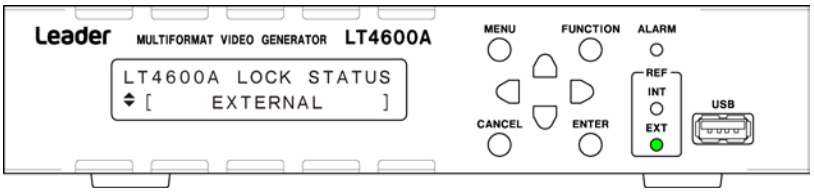
Input Method 1 Apply to one input and terminate the other at 75 Ω.	
Input Method 2 Apply to one input and connect the other to another device. Terminate the device at the end of the chain at 75 Ω.	

- **Panel Display**

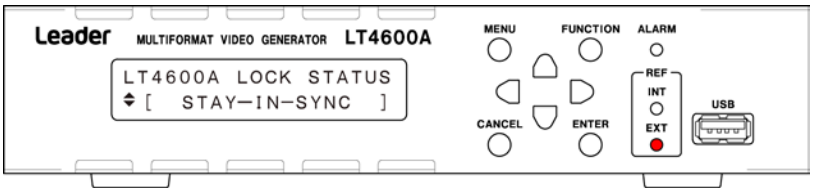
When you apply a reference signal, TRACKING FAST appears under LT4600A LOCK STATUS, and EXT under REF blinks in green. This indicates that the reference signal is being drawn in.



When genlock is complete, EXTERNAL appears under LT4600A LOCK STATUS, and EXT under REF lights in green.
In genlock mode, use the LT 4600A in this condition.

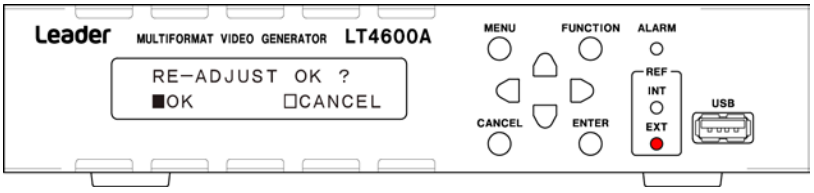


If an error occurs in the external reference signal in the EXTERNAL state, the frequency that was in use immediately before the error occurred is maintained (stay-in-sync function).
Under LT4600A LOCK STATUS, STAY-IN-SYNC appears, and EXT under REF blinks in red.



In the STAY-IN-SYNC status, even if the reference signal returns, the LT 4600A will not automatically lock on to the reference signal. To lock on to the reference signal, set GENLOCK MODE under REFERENCE SETTING to STAY-IN-SYNC, and then specify RE-ADJUST.

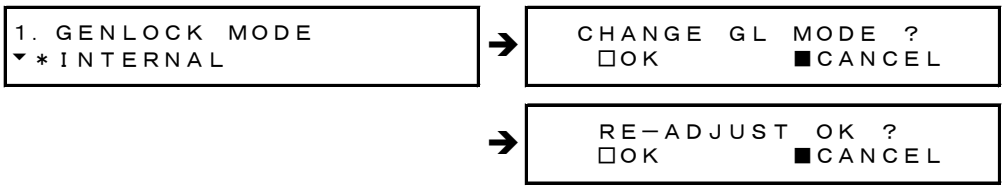
Reference Section 7.2, “Selecting the Genlock Mode”



Relocking takes a few seconds, and the output signal becomes discontinuous.

7.2 Selecting the Genlock Mode

To select the genlock mode, follow the procedure below.
If you select STAY-IN-SYNC when the mode is already in STAY-IN-SYNC mode, a message “RE-ADJUST OK?” will appear. This is used to relock when stay-in-sync operation is in progress.



Procedure

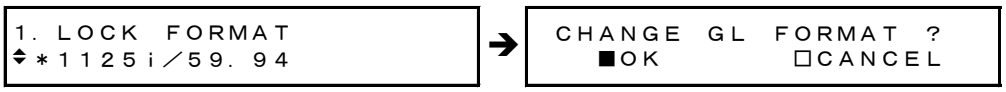
REFERENCE SETTING → GENLOCK MODE: INTERNAL / STAY-IN-SYNC

Settings

INTERNAL:	Internal mode is enabled. The internal reference signal is used.
STAY-IN-SYNC:	Genlock mode is enabled. An external reference signal received through GENLOCK IN on the rear panel is used. If the external reference signal is lost during operation, the frequency immediately before the signal is lost is maintained (stay-in-sync function).

7.3 Selecting the Genlock Format

To select the genlock format, follow the procedure below.
This setting is valid when GENLOCK MODE is set to STAY-IN-SYNC.
Note that the genlock formats are expressed in terms of the total number of lines, not the number of effective lines.



Procedure

REFERENCE SETTING → LOCK FORMAT

- **Genlock Formats**

  1125i/60, 1125i/59.94, 1125i/50,
  1125p/30, 1125p/29.97, 1125p/25, 1125p/24, 1125p/23.98,
  1125psF/24, 1125psF/23.98,
  750p/60, 750p/59.94, 750p/50, 750p/30, 750p/29.97, 750p/25, 750p/24, 750p/23.98,
  525i/59.94, NTSC BB (factory default value), NTSC BB+REF, NTSC BB+ID, NTSC BB+REF+ID, 525p/59.94,
  625i/50, PAL BB, PAL BB+REF, 625p/50

  * REF represents the field reference pulse, and ID represents the field ID.

7.4 Adjusting the Timing (Fine Adjustment)

When the LT 4600A is locked in genlock mode, to finely adjust the black signal relative to the reference signal, follow the procedure below.
The procedure here adjusts the timing of black signals 1 to 3 simultaneously. To adjust each signal, see section 9.2, “Adjusting the Timing.”
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

Procedure

REFERENCE SETTING → FINE PHASE ADJUST: -20 - 0 - 20 (one step is approximately 0.5 ns)

7.5 Setting the Genlock Log

The genlock log records the changes in the genlock state and settings in chronological order. Note that the log is cleared when the power is turned off.

7.5.1 Turning the Log On and Off

To set the genlock log to on or off, follow the procedure below.
This setting is not stored to presets.

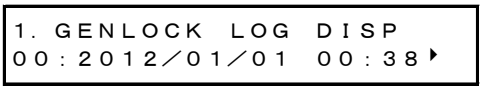
Procedure

REFERENCE SETTING → GENLOCK LOG ON/OFF: ON / OFF

7.5.2 Viewing the Log

To view the genlock log, follow the procedure below.
Press ▲ to view newer log entries, ▼ to view older log entries, and ◀ and ▶ to view the details log entries.

You can view up to 100 entries from 00 to 99. Subsequent entries that occur overwrite the oldest entries.
The date and time will be those specified according to the procedure in section 6.6, “Setting the Date and Time.”



Procedure

REFERENCE SETTING → GENLOCK LOG DISP

7.5.3 Saving the Log

To save the genlock log in log format to a USB memory device, follow the procedure below. The content of a file in log format can be viewed using WordPad and other text editors.

Procedure

REFERENCE SETTING → GENLOCK LOG SAVE

- **USB Memory Device File Structure**

  The genlock log is saved in the LOG folder in the USB memory device.
  The date and time of the exported file will be the date and time specified according to the procedure in section 6.6, “Setting the Date and Time.”

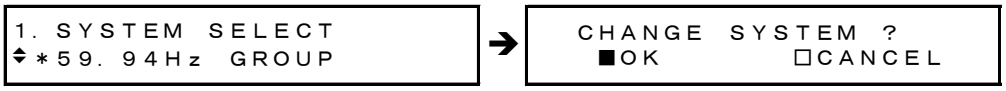
  USB memory device
  └ LT4600A
  　└ LOG
  　　└ LT4600A_LOG_YYYYMMDDhhmmss.log

8. CONFIGURING THE SYSTEM (SYSTEM SETTING)

SYSTEM SETTING is used to configure the LT 4600A operation.
Note that if you change the system settings, the settings specified using BLACK SETTING and SDI SETTING are reset to their factory defaults.

8.1 Selecting the Frequency Group

To select the black-output and SDI-output frequency group, follow the procedure below.
When you change the frequency group, the settings specified using SDI OUTPUT SELECT are reset to their factory defaults.



Procedure

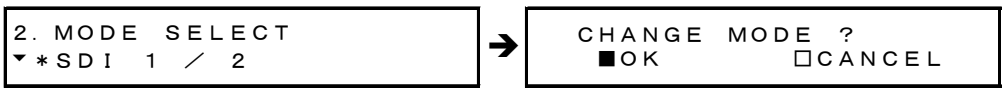
SYSTEM SETTING → SYSTEM SELECT: 60.00Hz GROUP / 59.94Hz GROUP / 50.00Hz GROUP

Settings

60.00Hz GROUP:	1080 or 720 images whose frame (field) frequency format is 60, 30, or 24 can be output.
59.94Hz GROUP:	1080 or 720 images whose frame (field) frequency format is 59.94, 29.97, or 23.98 can be output.
50.00Hz GROUP:	1080 or 720 images whose frame (field) frequency format is 50 or 25 can be output.

8.2 Selecting the SDI Output Mode

To select the SDI output mode, follow the procedure below.



Procedure

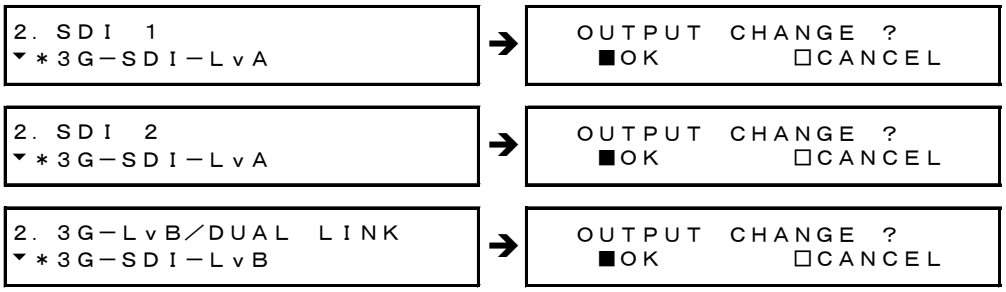
SYSTEM SETTING → SDI OUTPUT SELECT → MODE SELECT: SDI 1 / 2 / 3G-LvB / DUAL

Settings

SDI 1 / 2:	3G-A, HD, or SD is output. SDI OUT 1 and 2 can be set separately.
3G-LvB / DUAL:	3G-B or HD (DL) is output. When set to 3G-B, the same signal is output from SDI OUT 1 and 2.

8.3 Selecting the SDI Output Signal

To select the SDI output mode, follow the procedure below.



Procedure

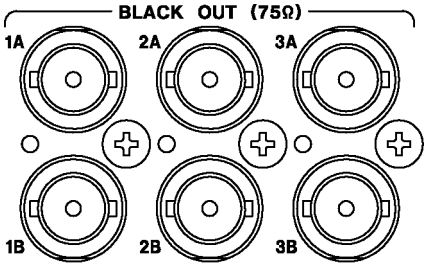
SYSTEM SETTING → SDI OUTPUT SELECT
→ SDI 1: 3G-SDI-LvA / HD/SD-SDI (when MODE SELECT is SDI 1 / 2)
→ SDI 2: 3G-SDI-LvA / HD/SD-SDI (when MODE SELECT is SDI 1 / 2)
→ 3G-LvB/DUAL LINK: 3G-SDI-LvB / HD DUAL LINK (when MODE SELECT is 3G-LvB / DUAL)

Settings

3G-SDI-LvA:	3G-A is output from SDI OUT 1 or SDI OUT 2.
HD/SD-SDI:	HD or SD is output from SDI OUT 1 or SDI OUT 2.
3G-SDI-LvB:	3G-B is output from SDI OUT 1 and SDI OUT 2.
HD DUAL LINK:	HD (DL) is output from SDI OUT 1 and SDI OUT 2.

9. ANALOG BLACK OUTPUT (BLACK SETTING)

Three analog black signals are output from the BLACK OUT connectors on the rear panel.



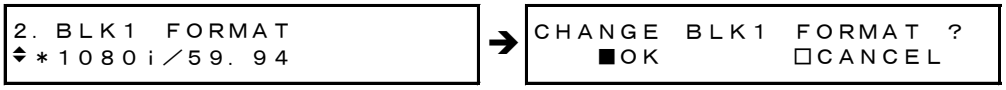
You can set the output signals using BLACK SETTING. Specify the settings under BLACK SETTING after you have finished configuring the system settings. Note that if you change the system settings, the settings specified using BLACK SETTING are reset to their factory defaults.

Reference Chapter 8, “CONFIGURING THE SYSTEM (SYSTEM SETTING)”

In BLACK SETTING, you can set the three signals separately. The procedure below is for black 1 (1A, 1B), but the same procedure can be applied to black 2 and 3.

9.1 Selecting the Black Format

To select the black signal format, follow the procedure below.
To use a normal composite black signal, select NTSC BB or PAL BB.



Procedure

BLACK SETTING → BLACK1 SIGNAL → BLK1 FORMAT

The formats that you can select vary depending on the frequency group that you selected in section 8.1 “Selecting the Frequency Group,” as follows.

BLK* FORMAT	SYSTEM SELECT		
	60.00Hz GROUP	59.94Hz GROUP	50.00Hz GROUP
1080i/60	Yes	No	No
1080i/59.94	No	Yes	No
1080i/50	No	No	Yes
1080p/30	Yes	No	No
1080p/29.97	No	Yes	No
1080p/25	No	No	Yes
1080p/24	Yes	No	No
1080p/23.98	No	Yes	No
1080psF/24	Yes	No	No
1080psF/23.98	No	Yes	No
720p/60	Yes	No	No
720p/59.94	No	Yes	No
720p/50	No	No	Yes

BLK* FORMAT	SYSTEM SELECT		
	60.00Hz GROUP	59.94Hz GROUP	50.00Hz GROUP
720p/30	Yes	No	No
720p/29.97	No	Yes	No
720p/25	No	No	Yes
720p/24	Yes	No	No
720p/23.98	No	Yes	No
NTSC BB	FD	FD	FD
NTSC BB+REF	Yes	Yes	Yes
NTSC BB+ID	Yes	Yes	Yes
NTSC BB+REF+ID	Yes	Yes	Yes
NTSC BB+SETUP	Yes	Yes	Yes
NTSC BB+S+REF	Yes	Yes	Yes
NTSC BB+S+ID	Yes	Yes	Yes
NTSC BB+S+R+ID	Yes	Yes	Yes
525i/59.94	Yes	Yes	Yes
525p/59.94	Yes	Yes	Yes
PAL BB	Yes	Yes	Yes
PAL BB+REF	Yes	Yes	Yes
625i/50	Yes	Yes	Yes
625p/50	Yes	Yes	Yes

(Yes: Can be selected, No: Cannot be selected, FD: Factory default setting)

* REF, R (Field REF): The following signal is included as a field ID signal.
- For NTSC, a 714 mV reference signal at line 10 (every two frames)
- For PAL, a 700 mV reference signal at line 7 (every four frames)

* ID (10 field ID): An ID signal complying with SMPTE ST 318 is included.

* SETUP, S (Setup): A 7.5IRE (7.5%) setup signal is included.

9.2 Adjusting the Timing

Note that if you change the black format, the timing adjustment specified here is reset to its factory default.

Reference Section 9.1, “Selecting the Black Format”

9.2.1 Adjusting the Timing (Frame)

To adjust the black signal relative to the reference signal at the frame level, follow the procedure below.
This menu appears when BLK* FORMAT is set to NTSC *, 525i/59.94, PAL *, or 625i/50.
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

Procedure

BLACK SETTING → BLACK1 SIGNAL → BLK1 TIMING → BLK1 F-PHASE
: -5 - 0 - +5 (when BLK* FORMAT is NTSC * or 525i/59.94)
: -2 - 0 - +2 (when BLK* FORMAT is PAL * or 625i/50)

9.2.2 Adjusting the Timing (Line)

To adjust the black signal relative to the reference signal at the line level, follow the procedure below. (The adjustment range provided below is the maximum. The range depends on the format.)
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

Procedure

BLACK SETTING → BLACK1 SIGNAL → BLK1 TIMING → BLK1 V-PHASE
: -1124 - 0 - +1124

9.2.3 Adjusting the Timing (Dot)

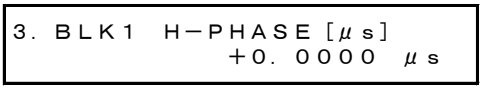
To adjust the black signal relative to the reference signal at the dot level, follow the procedure below. (The adjustment range provided below is the maximum. The range depends on the format.)
You can also adjust at the time level instead of at the dot level. See section 9.2.4, “Adjusting the Timing (Time).” Dot and time are mutually linked.
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

Procedure

BLACK SETTING → BLACK1 SIGNAL → BLK1 TIMING → BLK1 H-PHASE[dot]
: -4124 - 0 - +4124

9.2.4 Adjusting the Timing (Time)

To adjust the black signal relative to the reference signal at the time level, follow the procedure below. (The adjustment range provided below is the maximum. The range depends on the format.)
You can also adjust at the dot level instead of at the time level. See section 9.2.3, “Adjusting the Timing (Dot).” Time and dot are mutually linked.
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

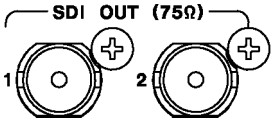


Procedure

BLACK SETTING → BLACK1 SIGNAL → BLK1 TIMING → BLK1 H-PHASE[μs]
: -63.9814 - 0 - +63.9814

10. SDI OUTPUT (SDI SETTING)

Two SDI signals are output from the SDI OUT connectors on the rear panel.

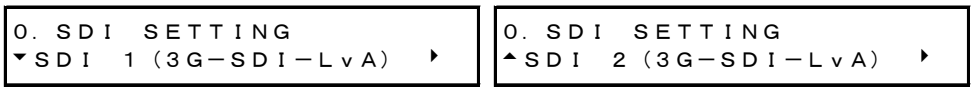


You can set the output signals using SDI SETTING. Specify the settings under SDI SETTING after you have finished configuring the system settings. Note that if you change the system settings, the settings specified using SDI SETTING are reset to their factory defaults.

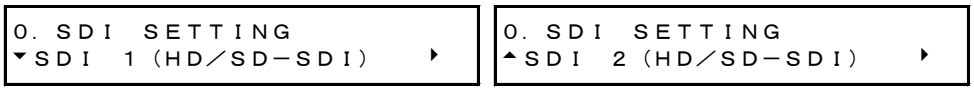
Reference Chapter 8, “CONFIGURING THE SYSTEM (SYSTEM SETTING)”

The settings under SDI SETTING vary depending on the signal selected in section 8.3, “Selecting the SDI Output Signal,” as shown below, but the procedure explanations use the term “SDI” to cover all these cases.

When SDI 1 or SDI 2 is 3G-SDI-LvA



When SDI 1 or SDI 2 is HD/SD-SDI

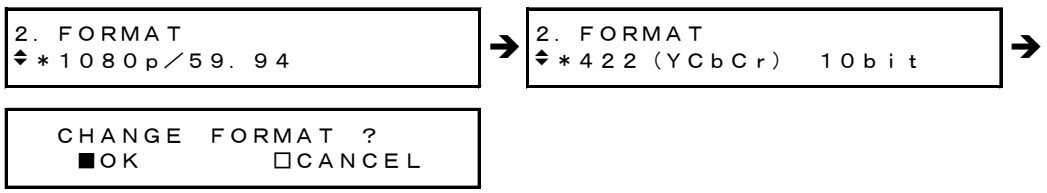


When SDI is 3G-SDI-LvB

When SDI is HD DUAL LINK

10.1 Selecting the SDI Format

To select the SDI signal format and color system, follow the procedure below.



Procedure

SDI SETTING → SDI → FORMAT

The selectable format and color system combinations are shown below.
Formats not listed cannot be selected. In addition, the formats that you can select vary depending on the frequency group that you selected in section 8.1 “Selecting the Frequency Group.”

- **3G-A Output**

Format	Color System						SYSTEM SELECT
	422(YCbCr) 10 bits	422(YCbCr) 12 bits	444(YCbCr) 10 bits	444(YCbCr) 12 bits	444(RGB) 10 bits	444(RGB) 12 bits	
1080i/60	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080i/59.94	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080i/50	No	Yes	Yes	Yes	Yes	Yes	50.00Hz
1080p/60	Yes	No	No	No	No	No	60.00Hz
1080p/59.94	FD	No	No	No	No	No	59.94Hz
1080p/50	Yes	No	No	No	No	No	50.00Hz
1080p/30	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080p/29.97	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080p/25	No	Yes	Yes	Yes	Yes	Yes	50.00Hz
1080p/24	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080p/23.98	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080psF/30	No	Yes	Yes	No	Yes	No	60.00Hz
1080psF/29.97	No	Yes	Yes	No	Yes	No	59.94Hz
1080psF/25	No	Yes	Yes	No	Yes	No	50.00Hz
1080psF/24	No	Yes	Yes	No	Yes	No	60.00Hz
1080psF/23.98	No	Yes	Yes	No	Yes	No	59.94Hz
720p/60	No	No	Yes	No	Yes	No	60.00Hz
720p/59.94	No	No	Yes	No	Yes	No	59.94Hz
720p/50	No	No	Yes	No	Yes	No	50.00Hz
720p/30	No	No	Yes	No	Yes	No	60.00Hz
720p/29.97	No	No	Yes	No	Yes	No	59.94Hz
720p/25	No	No	Yes	No	Yes	No	50.00Hz
720p/24	No	No	Yes	No	Yes	No	60.00Hz
720p/23.98	No	No	Yes	No	Yes	No	59.94Hz

(Yes: Can be selected, No: Cannot be selected, FD: Factory default setting)

- **3G-B Output**

Format	Color System						SYSTEM SELECT
	422(YCbCr) 10 bits	422(YCbCr) 12 bits	444(YCbCr) 10 bits	444(YCbCr) 12 bits	444(RGB) 10 bits	444(RGB) 12 bits	
1080i/60	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080i/59.94	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080i/50	No	Yes	Yes	Yes	Yes	Yes	50.00Hz
1080p/60	Yes	No	No	No	No	No	60.00Hz
1080p/59.94	FD	No	No	No	No	No	59.94Hz
1080p/50	Yes	No	No	No	No	No	50.00Hz
1080p/30	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080p/29.97	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080p/25	No	Yes	Yes	Yes	Yes	Yes	50.00Hz
1080p/24	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080p/23.98	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080psF/30	No	Yes	Yes	No	Yes	No	60.00Hz
1080psF/29.97	No	Yes	Yes	No	Yes	No	59.94Hz
1080psF/25	No	Yes	Yes	No	Yes	No	50.00Hz
1080psF/24	No	Yes	Yes	No	Yes	No	60.00Hz
1080psF/23.98	No	Yes	Yes	No	Yes	No	59.94Hz

(Yes: Can be selected, No: Cannot be selected, FD: Factory default setting)

- **HD (DL) Output**

Format	Color System						SYSTEM SELECT
	422(YCbCr) 10 bits	422(YCbCr) 12 bits	444(YCbCr) 10 bits	444(YCbCr) 12 bits	444(RGB) 10 bits	444(RGB) 12 bits	
1080i/60	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080i/59.94	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080i/50	No	Yes	Yes	Yes	Yes	Yes	50.00Hz
1080p/60	Yes	No	No	No	No	No	60.00Hz
1080p/59.94	FD	No	No	No	No	No	59.94Hz
1080p/50	Yes	No	No	No	No	No	50.00Hz
1080p/30	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080p/29.97	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080p/25	No	Yes	Yes	Yes	Yes	Yes	50.00Hz
1080p/24	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080p/23.98	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080psF/30	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080psF/29.97	No	Yes	Yes	Yes	Yes	Yes	59.94Hz
1080psF/25	No	Yes	Yes	Yes	Yes	Yes	50.00Hz
1080psF/24	No	Yes	Yes	Yes	Yes	Yes	60.00Hz
1080psF/23.98	No	Yes	Yes	Yes	Yes	Yes	59.94Hz

(Yes: Can be selected, No: Cannot be selected, FD: Factory default setting)

- **HD/SD Output**

Format	Color System						SYSTEM SELECT
	422(YCbCr) 10 bits	422(YCbCr) 12 bits	444(YCbCr) 10 bits	444(YCbCr) 12 bits	444(RGB) 10 bits	444(RGB) 12 bits	
1080i/60	Yes	No	No	No	No	No	60.00Hz
1080i/59.94	FD	No	No	No	No	No	59.94Hz
1080i/50	Yes	No	No	No	No	No	50.00Hz
1080p/30	Yes	No	No	No	No	No	60.00Hz
1080p/29.97	Yes	No	No	No	No	No	59.94Hz
1080p/25	Yes	No	No	No	No	No	50.00Hz
1080p/24	Yes	No	No	No	No	No	60.00Hz
1080p/23.98	Yes	No	No	No	No	No	59.94Hz
1080psF/24	Yes	No	No	No	No	No	60.00Hz
1080psF/23.98	Yes	No	No	No	No	No	59.94Hz
720p/60	Yes	No	No	No	No	No	60.00Hz
720p/59.94	Yes	No	No	No	No	No	59.94Hz
720p/50	Yes	No	No	No	No	No	50.00Hz
720p/30	Yes	No	No	No	No	No	60.00Hz
720p/29.97	Yes	No	No	No	No	No	59.94Hz
720p/25	Yes	No	No	No	No	No	50.00Hz
720p/24	Yes	No	No	No	No	No	60.00Hz
720p/23.98	Yes	No	No	No	No	No	59.94Hz
525i/59.94	Yes	No	No	No	No	No	-
625i/50	Yes	No	No	No	No	No	-

(Yes: Can be selected, No: Cannot be selected, FD: Factory default setting)

10.2 Configuring Patterns

10.2.1 Selecting the Pattern

To select the output pattern, follow the procedure below.

Procedure

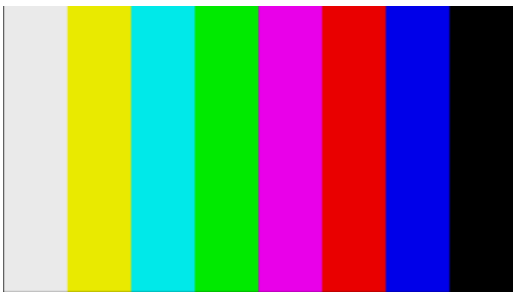
SDI SETTING → SDI → PATTERN → PATTERN SELECT: COLOR BAR 100% /
COLOR BAR 75% / MULTI CB 100% / MULTI CB 75% / MULTI CB (+I) /
SMPTE COLOR BAR / EBU COLOR BAR / BBC COLOR BAR / CHECK FIELD /
BLUE FIELD 100% / GREEN FIELD 100% / RED FIELD 100% /
FLAT FIELD 0% / FLAT FIELD 100%

The selectable patterns depend on the output format as shown below.

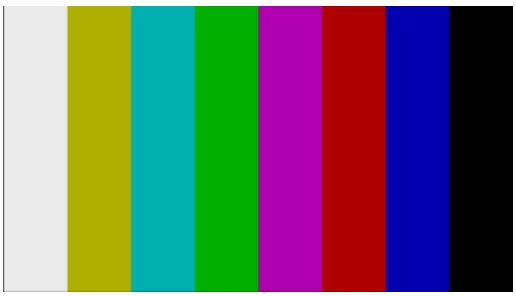
Pattern	Format		
	3G/HD(DL)/HD	525i/59.94	625i/50
COLOR BAR 100%	Yes	Yes	Yes
COLOR BAR 75%	Yes	Yes	No
MULTI CB 100%	Yes	No	No
MULTI CB 75%	Yes	No	No
MULTI CB (+I)	Yes	No	No
SMPTE COLOR BAR	No	Yes	No
EBU COLOR BAR	No	No	Yes
BBC COLOR BAR	No	No	Yes
CHECK FIELD	Yes	Yes	Yes
BLUE FIELD 100%	Yes	Yes	Yes
GREEN FIELD 100%	Yes	Yes	Yes
RED FIELD 100%	Yes	Yes	Yes
FLAT FIELD 0%	Yes	Yes	Yes
FLAT FIELD 100%	Yes	Yes	Yes

(Yes: Can be selected No: Cannot be selected)

COLOR BAR 100%



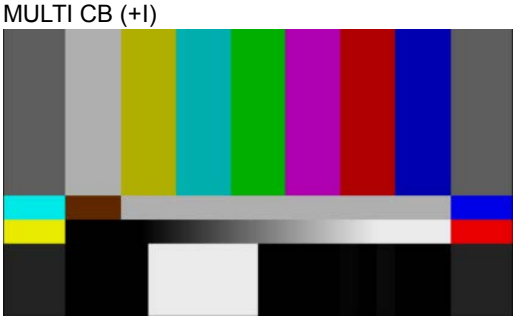
COLOR BAR 75%



MULTI CB 100%

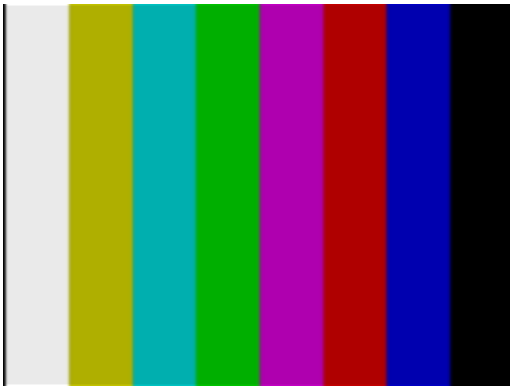
MULTI CB 75%

MULTI CB (+I)



SMPTE COLOR BAR

EBU COLOR BAR



BBC COLOR BAR

CHECK FIELD

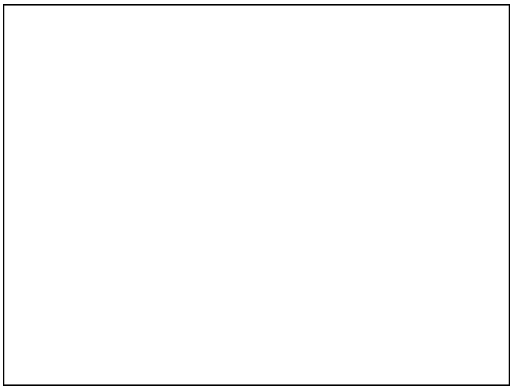
BLUE FIELD 100%

GREEN FILED 100%

RED FIELD 100%

FLAT FIELD 0%

FLAT FIELD 100%



10.2.2 Turning Pattern Scrolling On and Off

To turn pattern scrolling on and off, follow the procedure shown below.
If the check field pattern is selected, the patter will not scroll even if this is set to ON.

```
4. SCROLL ON/OFF
   □ON          ■OFF
```

Procedure

SDI SETTING → SDI → PATTERN → PATTERN SCROLL → SCROLL ON/OFF: ON / <u>OFF</u>

10.2.3 Setting the Pattern Scroll Direction

To select the pattern scroll direction, follow the procedure below.

```
5. DIRECTION
▼*UP & RIGHT
```

Procedure

SDI SETTING → SDI → PATTERN → PATTERN SCROLL → SCROLL PARAM SET → DIRECTION: <u>UP & RIGHT</u> / UP / UP & LEFT / LEFT / DOWN & LEFT / DOWN / DOWN & RIGHT / RIGHT

10.2.4 Setting the Pattern Scroll Speed

To select the pattern scroll speed, follow the procedure below.
The unit is dot/field (frame). If the speed is set to 0, the pattern will not scroll.
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

Procedure

SDI SETTING → SDI → PATTERN → PATTERN SCROLL → SCROLL PARAM SET
→ H SPEED: 0 - +256 (horizontal direction, 2 dot steps)
→ V SPEED: 0 - +256 (vertical direction, 1 dot steps)

10.2.5 Turning Pattern Change On and Off

To turn pattern change on and off, follow the procedure shown below.
If set to ON, the pattern is switched automatically between the available patterns (except for the check field) in the current format.

Procedure

SDI SETTING → SDI → PATTERN → PATTERN CHANGE → CHANGE ON/OFF: ON / OFF

10.2.6 Setting the Pattern Change Speed

To select the pattern change interval, follow the procedure below.

Procedure

SDI SETTING → SDI → PATTERN → PATTERN CHANGE → SPEED: +1 - +255

10.3 Adjusting the Timing

Note that if you change the SDI format, the timing adjustment specified here is reset to its factory default.

Reference Section 10.1, “Selecting the SDI Format”

10.3.1 Selecting the Timing Reference

To select the output timing used as a reference for the SDI and black signals, follow the procedure below.

When the output signal is 3G, this menu item is not displayed. If is fixed at SERIAL.

Procedure

SDI SETTING → SDI → TIMING → 0H TIMING: SERIAL / LEGACY

Settings

SERIAL:	Signals are output at the timing defined in the signal standard.
LEGACY:	Signals are output at the same timing as LEADER’s conventional signal generators.

10.3.2 Adjusting the Timing (Line)

To adjust the SDI signal relative to the reference signal at the line level, follow the procedure below. (The adjustment range provided below is the maximum. The range depends on the format.)

The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

Procedure

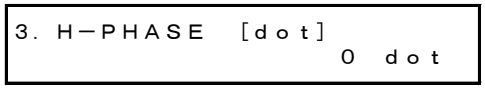
SDI SETTING → SDI → TIMING → V-PHASE: -1124 - 0 - +1124

10.3.3 Adjusting the Timing (Dot)

To adjust the SDI signal relative to the reference signal at the dot level, follow the procedure below. (The adjustment range provided below is the maximum. The range depends on the format.)

You can also adjust at the time level instead of at the dot level. See section 10.3.4, “Adjusting the Timing (Time).” Dot and time are mutually linked.

The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.



Procedure

SDI SETTING → SDI → TIMING → H-PHASE [dot]: -4124 - 0 - +4124

10.3.4 Adjusting the Timing (Time)

To adjust the SDI signal relative to the reference signal at the time level, follow the procedure below. (The adjustment range provided below is the maximum. The range depends on the format.)
You can also adjust at the dot level instead of at the time level. See section 10.3.3, “Adjusting the Timing (Dot).” Time and dot are mutually linked.
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

```
3. H－PHASE  [μs]
          ＋0. 0000  μsec
```

Procedure

SDI SETTING → SDI → TIMING → H-PHASE [μs]: -63.9629 - 0 - +63.9629

10.4 Configuring Embedded Audio

16 audio channels (32 channels for 3G-B) can be embedded in an SDI signal.

Channels 1 to 4, 5 to 8, 9 to 12, and 13 to 16 are called group 1, 2, 3, and 4, respectively. The frequency, level, and the like can be set for each channel separately.

In addition, if you link the group 2 settings to the group 1 settings, you only need to set group 1, and the group 2 settings will automatically be set to the same values as group 1.

<table>
<tr><td rowspan="17">SDI signal</td><td rowspan="16">Link A (3G-B only)</td><td rowspan="4">Group 1</td><td>Ch1</td></tr>
<tr><td>Ch2 (can also be set equal to Ch1)</td></tr>
<tr><td>Ch3 (can also be set equal to Ch1)</td></tr>
<tr><td>Ch4 (can also be set equal to Ch1)</td></tr>
<tr><td rowspan="4">Group 2
(can also be set equal to group 1)</td><td>Ch5</td></tr>
<tr><td>Ch6 (can also be set equal to Ch5)</td></tr>
<tr><td>Ch7 (can also be set equal to Ch5)</td></tr>
<tr><td>Ch8 (can also be set equal to Ch5)</td></tr>
<tr><td rowspan="4">Group 3</td><td>Ch9</td></tr>
<tr><td>Ch10 (can also be set equal to Ch9)</td></tr>
<tr><td>Ch11 (can also be set equal to Ch9)</td></tr>
<tr><td>Ch12 (can also be set equal to Ch9)</td></tr>
<tr><td rowspan="4">Group 4
(can also be set equal to group 3)</td><td>Ch13</td></tr>
<tr><td>Ch14 (can also be set equal to Ch13)</td></tr>
<tr><td>Ch15 (can also be set equal to Ch13)</td></tr>
<tr><td>Ch16 (can also be set equal to Ch13)</td></tr>
<tr><td>Link B (3G-B only)
(can also be set to link A)</td><td colspan="2">Same as link A</td></tr>
</table>

10.4.1 Settings Shared by Links

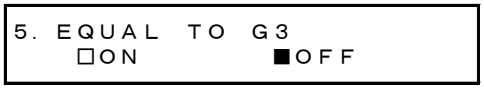
If the output signal is 3G-B, the link B settings can be linked to link A settings by following the procedure below to select ON. It is possible to set the link B settings even when this is set to ON, but the values will be ignored.

Procedure

SDI SETTING → SDI → EMBEDDED AUDIO → LINK-B → EQUAL TO LINK-A: ON / OFF

10.4.2 Settings Shared by Groups

You can link the group 2 settings to the group 1 settings by following the procedure below to set EQUAL TO G1 to ON. It is possible to set the group B settings even when this is set to ON, but the values will be ignored.
The same hold true for EQUAL TO G3.



Procedure

SDI SETTING → SDI → EMBEDDED AUDIO
→ GROUP 2 SET → EQUAL TO G1: ON / OFF
→ GROUP 4 SET → EQUAL TO G3: ON / OFF

10.4.3 Settings Shared by Channels

You can link the channel 2 setting to the channel 1 setting by following the procedure below to set EQUAL TO CH1 to ON. It is possible to set the channel 2 setting even when this is set to ON, but the value will be ignored.
The same holds true for the other similar settings.

Procedure

SDI SETTING → SDI → EMBEDDED AUDIO
→ GROUP 1 SET → CH SELECT → GROUP1 CH2 → EQUAL TO CH1: ON / OFF
→ GROUP 1 SET → CH SELECT → GROUP1 CH3 → EQUAL TO CH1: ON / OFF
(Omitted)
→ GROUP 4 SET → CH SELECT → GROUP1 CH15 → EQUAL TO CH13: ON / OFF
→ GROUP 4 SET → CH SELECT → GROUP1 CH16 → EQUAL TO CH13: ON / OFF

10.4.4 Turning the Audio On and Off

To turn the audio on or off at the group level, follow the procedure below.

Procedure

SDI SETTING → SDI → EMBEDDED AUDIO → AUDIO ON/OFF: ON / OFF

10.4.5 Selecting the Resolution

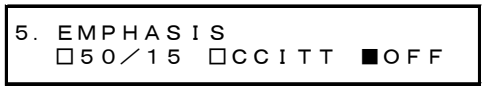
To select the resolution for the selected group, follow the procedure below.
If the output signal is 525i/59.94, not all groups can be set to 24 bit. Up to three groups can be set to 24 bit.

Procedure

SDI SETTING → SDI → EMBEDDED AUDIO → GROUP * SET → RESOLUTION: 20bit / 24bit

10.4.6 Selecting the Pre-emphasis Mode

To select the pre-emphasis mode for the selected group, follow the procedure below.



Procedure

SDI SETTING → SDI → EMBEDDED AUDIO → GROUP * SET → EMPHASIS: 50/15 / CCITT / OFF

10.4.7 Selecting the Frequency

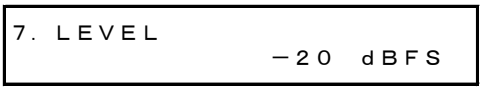
To select the frequency of the selected channel, follow the procedure below.

Procedure

SDI SETTING → SDI → EMBEDDED AUDIO → GROUP * SET → CH SELECT → GROUP * CH* → FREQUENCY: SILENCE / 400Hz / 800Hz / 1kHz

10.4.8 Setting the Level

To set the level of the selected channel, follow the procedure below.



Procedure

SDI SETTING → SDI → EMBEDDED AUDIO → GROUP * SET → CH SELECT → GROUP * CH* → LEVEL: -60 - -20 - 0

10.4.9 Setting Clicks

You can insert click sounds into the selected channel. Follow the procedure below to set the insertion interval in the range of 1 sec to 4 sec.
This setting is valid when LIPSYNC is set to OFF.

Procedure

SDI SETTING → SDI → EMBEDDED AUDIO → GROUP * SET → CH SELECT → GROUP * CH* → CLICK: OFF / 1sec / 2sec / 3sec / 4sec

10.5 Turning YCbCr On and Off

To turn individual components in a YCbCr or GBR signal on and off, follow the procedure below.

Procedure

SDI SETTING → SDI → Y,Cb,Cr ON/OFF: ON / OFF

10.6 Configuring Marker Settings

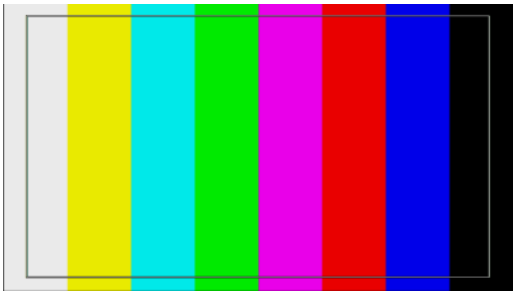
10.6.1 Turning the 90% Marker On and Off

To turn the 90% marker on and off, follow the procedure below.
If the 4:3 marker is off, the 90% marker is displayed at the outer frame of the picture. If the 4:3 marker is on, the marker is displayed at the 90% position by assuming the 4:3 marker to be 100%.

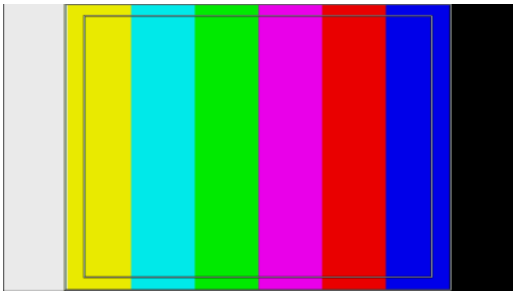
Procedure

SDI SETTING → SDI → SAFETY AREA → 90% AREA: ON / OFF

90% AREA = ON / 4:3 AREA = OFF



90% AREA = ON / 4:3 AREA = ON



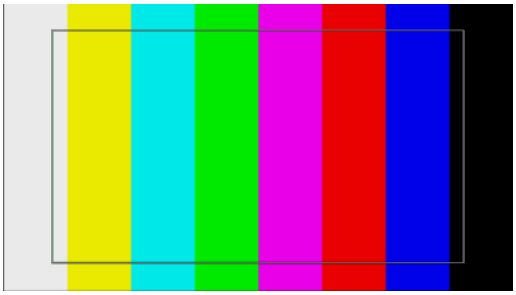
10.6.2 Turning the 80% Marker On and Off

To turn the 80% marker on and off, follow the procedure below.
If the 4:3 marker is off, the 80% marker is displayed at the outer frame of the picture. If the 4:3 marker is on, the marker is displayed at the 90% position by assuming the 4:3 marker to be 100%.

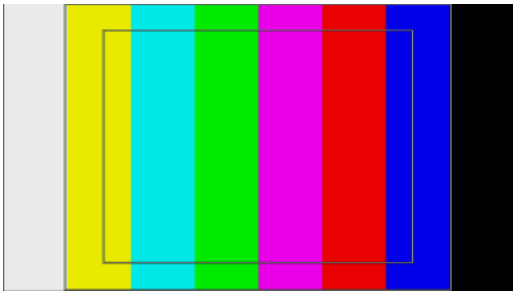
Procedure

SDI SETTING → SDI → SAFETY AREA → 80% AREA: ON / OFF

80% AREA = ON / 4:3 AREA = OFF



80% AREA = ON / 4:3 AREA = ON

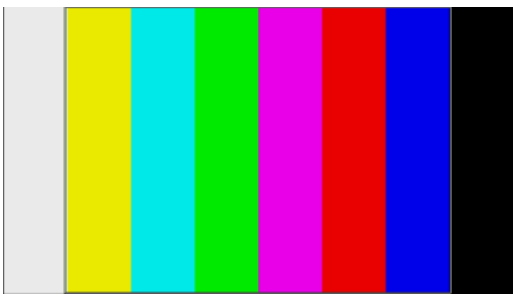


10.6.3 Turning the 4:3 Marker On and Off

To turn the 4:3 marker on and off, follow the procedure below.
This menu item does not appear if the output format is 525i/59.94 or 625i/50.

Procedure

SDI SETTING → SDI → SAFETY AREA → 4:3 AREA: ON / OFF



10.7 Setting ID Characters

10.7.1 Turning ID Characters On and Off

To turn ID characters on and off, follow the procedure below.
If the check field pattern is selected, the ID characters will not be displayed even if this is set to ON.

```
3. ID ON/OFF
   □ON          ■OFF
```

Procedure

SDI SETTING → SDI → ID CHARACTER → ID ON/OFF: ON / OFF

10.7.2 Creating ID Characters

To create ID characters, follow the procedure below.

The characters that you can use are as follows. You can enter up to 20 characters.
◄ !”# $%&’()*+,-./ 0123456789:;<=>?@
ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_→←

The ID character background is displayed in black for 20 characters worth. If you enter “◄” at the end of the ID character string, only the background of the entered characters will be displayed in black. (“◄” will not appear.)
If you enter “◄” in the middle of the ID character string, characters after this character will disappear, and you will not be able to edit them.

```
3. CHARACTER SET
LT4600A◄
```

Procedure

SDI SETTING → SDI → ID CHARACTER → CHARACTER SET: LT4600A◄

CHARACTER SET = LT4600A◄

CHARACTER SET = LT4600A

10.7.3 Setting the Position of ID Characters

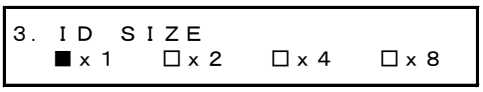
To set the position of the ID characters, follow the procedure below.
The values represent the coordinates at the upper left corner of the ID characters. The upper left corner of the pattern is 0.
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

Procedure

SDI SETTING → SDI → ID CHARACTER
→ ID V-POSITION: 0 - +1079 (vertical direction)
→ ID H-POSITION: 0 - +1919 (horizontal direction)

10.7.4 Selecting the Size of ID Characters

To set the size of ID characters, follow the procedure below.
The size of ×1 is 32×32 dot/character.



Procedure

SDI SETTING → SDI → ID CHARACTER → ID SIZE: ×1 / ×2 / ×4 / ×8

10.7.5 Selecting the Level of ID Characters

To set the intensity level of ID characters, follow the procedure below.

Procedure

SDI SETTING → SDI → ID CHARACTER → ID LEVEL: 100% / 75%

ID LEVEL = 100%

ID LEVEL = 75%

10.7.6 Turning ID Character Blinking On and Off

To turn ID character blinking on and off, follow the procedure below.

Procedure

SDI SETTING → SDI → ID CHARACTER → ID BLINK → ID BLINK ON/OFF: ON / OFF

10.7.7 Setting the ID Character Blinking Time

To set the ID character blinking time, follow the procedure below.

Procedure

SDI SETTING → SDI → ID CHARACTER → ID BLINK
→ ID BLINK ON TIME: +1 - +9 (on-time)
→ ID BLINK OFF TIME: +1 - +9 (off-time)

10.7.8 Turning ID Character Scrolling On and Off

To turn ID character scrolling on and off, follow the procedure below.
If set to ON, the ID characters scroll horizontally over the pattern.

Procedure

SDI SETTING → SDI → ID CHARACTER → ID SCROLL → SCROLL ON/OFF: ON / OFF

10.7.9 Selecting ID Character Scrolling Direction

To select the ID character scroll direction, follow the procedure below.

Procedure

SDI SETTING → SDI → ID CHARACTER → ID SCROLL → DIRECTION: LEFT / RIGHT

Settings

LEFT:	Scrolls from right to left.
RIGHT:	Scrolls from left to right.

10.7.10 Setting ID Character Scroll Speed

To set the ID character scroll speed, follow the procedure below.
The unit is dot/field (frame). If the speed is set to 0, the pattern will not scroll.
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

Procedure

SDI SETTING → SDI → ID CHARACTER → ID SCROLL → SPEED: 0 - +256 (2 dot steps)

10.8 Setting Logos

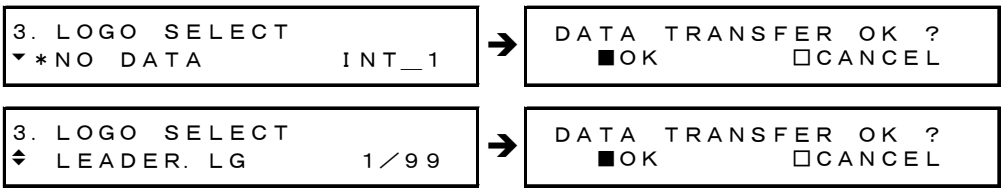
The logos (.lg format) that you create with the supplied Logo Application can be imported into the LT 4600A and overlaid on SDI signals.

10.8.1 Loading a Logo

To display a logo, you need to load it first.

You can either load a logo that has been imported into the LT 4600A according to section 6.4.2, “Importing a Logo,” or load a logo directly from a USB memory device.

To load a logo, follow the procedure below.
In LOGO SELECT, INT_1 to INT_4 represent imported logos, and 1 to 99 represent logos stored in the USB memory device.



Procedure

SDI SETTING → SDI → LOGO → LOGO SELECT: INT_1 - INT_4 / 1 - 99

- **USB Memory Device File Structure**

  Place logos in the LOGO folder of the USB memory device. Up to 99 logos can be selected from the LT 4600A. If a logo is already loaded, it is overwritten.

  USB memory device
  └ LT4600A
  　└ LOGO
  　　└ ****.LG

10.8.2 Turning the Logo On and Off

To turn the logo on and off, follow the procedure below.
If the check field pattern is selected or if a logo has not been loaded into the LT 4600A, no logo will be displayed even if this is set to ON.

Procedure

SDI SETTING → SDI → LOGO → LOGO ON/OFF: ON / OFF

10.8.3 Setting the Logo Position

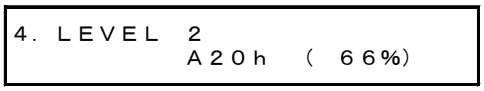
To set the logo position, follow the procedure below.
The values represent the coordinates at the upper left corner of logo. The upper left corner of the pattern is 0.
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

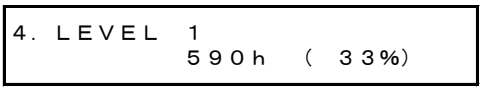
Procedure

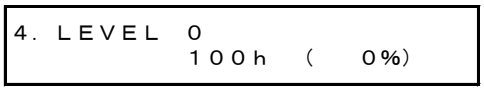
SDI SETTING → SDI → LOGO
→ LOGO V-POSITION: 0 - +1079 (vertical direction)
→ LOGO H-POSITION: 0 - +1919 (horizontal direction)

10.8.4 Setting the Logo Level

To set the logo intensity level, follow the procedure below.
Logos are made of 4-level monochrome data (LEVEL 3, LEVEL 2, LEVEL 1, and LEVEL 0). You can set the intensity level for each level.
If LOGO BACKGROUND is set to OFF, the intensity level for LEVEL 0 is invalid.
The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.







Procedure

SDI SETTING → SDI → LOGO → LOGO LEVEL
→ LEVEL 3: 100h(0%) - EB0h(100%)
→ LEVEL 2: 100h(0%) - A20h(66%) - EB0h(100%)
→ LEVEL 1: 100h(0%) - 590h(33%) - EB0h(100%)
→ LEVEL 0: 100h(0%) - EB0h(100%)

10.8.5 Selecting the Logo Background

To select whether to make the area set to LEVEL 0 transparent, follow the procedure below.

Procedure

SDI SETTING → SDI → LOGO → LOGO BACKGROUND: ON / OFF

LOGO BACKGROUND = ON

LOGO BACKGROUND = OFF

10.9 Configuring Lip Sync

Combining the LT 4600A and our waveform monitor LV 5770(A) makes it possible to measure the offset between the video signal and the audio signal that occurs in the transfer route for each channel. Prepare an LV 5770(A) with an LV 5770SER08/09A and LV 5770SER41/43 installed. For information on how to use it, see the LV 5770SER08/09A instruction manual.

10.9.1 Turning Lip Sync On and Off

To turn lip sync on or off, follow the procedure below.
If set to ON, a lip sync pattern will be output.
If the check field pattern is selected, the pattern will not be output even if this is set to ON.

Procedure

SDI SETTING → SDI → LIPSYNC: ON / OFF

If set to ON, refer to section 10.4, “Configuring Embedded Audio,” and set all embedded audio channels as shown below.
These settings are factory default settings.

Item	Value
AUDIO ON/OFF	ON
RESOLUTION	20 bits
EMPHASIS	OFF
FREQUENCY	1kHz
LEVEL	-20dBFS

10.9.2 Description of Lip Sync Patterns

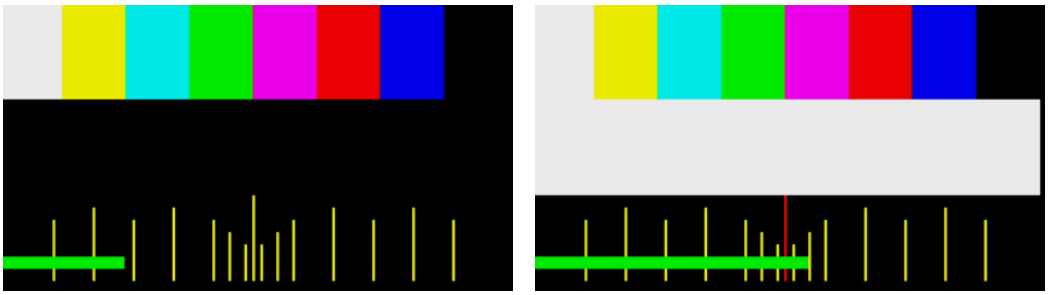
A lip sync pattern is divided into three areas. From the top, they are the pattern, raster, and scale areas. Audio is turned on or muted in sync with the image signal.

- **Pattern**

  The pattern specified by PATTERN is displayed.
  Markers, ID characters, and logo are not displayed even if they are set to ON.

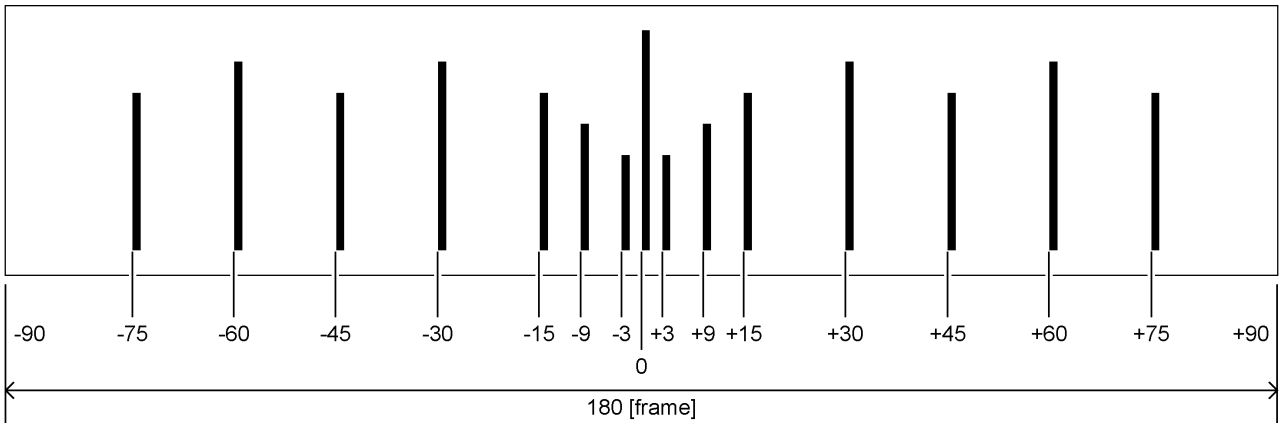
- **Raster**

  If the scale slide bar is between 0 and +15 [frames], a white raster is displayed. If not, a black raster is displayed.



- **Scale**

  A green slide bar scrolls from left to right (approximately 6 seconds for 1080i/59.94).
  The center scale turns red when the slide bar is between 0 and +15 [frames].

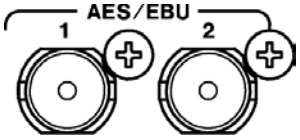


- **Audio**

  If the scale slide bar is between 0 and +15 [frames], audio turns on. If not, audio is muted.
  The embedded audio click setting is invalid.

11. AES/EBU DIGITAL AUDIO OUTPUT (AES/EBU SETTING)

Two 48 kHz AES/EBU signals synchronized with video signals are output from the AES/EBU connectors on the rear panel.



You can set the output signal using AES/EBU SETTING.
In AES/EBU SETTING, you can set the two signals separately. The procedure below is for AES/EBU 1, but the same procedure can be applied to AES/EBU 2.

11.1 Adjusting the Timing

To adjust the AES/EBU signal relative to the reference signal, follow the procedure below. The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

```
2. AES/EBU TIMING
                0 (512fs)
```

Procedure

AES/EBU SETTING →AES/EBU 1 →
AES/EBU TIMING: -511 - 0 - +511 (±1 AES/EBU frame)

11.2 Turning the Audio On and Off

To turn the audio on or off, follow the procedure below.

```
2. AUDIO ON/OFF
   □ON          ■OFF
```

Procedure

AES/EBU SETTING →AES/EBU 1 → AUDIO ON/OFF: ON / OFF

11.3 Selecting the Resolution

To select the resolution, follow the procedure below.

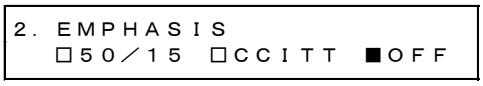
```
2. RESOLUTION
  ■20bit     □24bit
```

Procedure

AES/EBU SETTING →AES/EBU 1 → RESOLUTION: 20bit / 24bit

11.4 Selecting the Pre-emphasis Mode

To select the pre-emphasis mode, follow the procedure below.



Procedure

AES/EBU SETTING →AES/EBU 1 → EMPHASIS: 50/15 / CCITT / OFF

11.5 Settings Shared by Channels

You can link the channel 2 setting to the channel 1 setting by following the procedure below to select ON. It is possible to set the channel 2 setting even when this is set to ON, but the value will be ignored.

Procedure

AES/EBU SETTING →AES/EBU 1 → CH SELECT → CH2 SETTING →
EQUAL TO CH1: ON / OFF

11.6 Selecting the Frequency

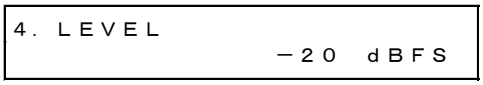
To select the frequency of the selected channel, follow the procedure below.

Procedure

AES/EBU SETTING →AES/EBU 1 → CH SELECT → CH* SETTING →
FREQUENCY: SILENCE / 400Hz / 800Hz / 1kHz

11.7 Setting the Level

To set the level of the selected channel, follow the procedure below.

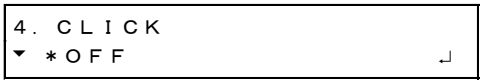


Procedure

AES/EBU SETTING →AES/EBU 1 → CH SELECT → CH* SETTING → LEVEL: -60 - -20 - 0

11.8 Setting Clicks

You can insert click sounds into the selected channel. Follow the procedure below to set the insertion interval in the range of 1 sec to 4 sec.
This setting is valid when LIPSYNC ENABLE is set to DISABLE.



Procedure

AES/EBU SETTING →AES/EBU 1 → CH SELECT → CH* SETTING →
CLICK: OFF / 1sec / 2sec / 3sec / 4sec

11.9 Configuring Lip Sync

To select whether to output AES/EBU signals at the same timing as the lip sync audio signal, follow the procedure below.

This setting is valid under the following conditions.

- When the output signal is 3G-A, HD, or SD, and SDI 1 lip sync is set to ON (see section 10.9.1, “Turning Lip Sync On and Off”)
- When the output signal is 3G-B or HD(DL), and lip sync is set to ON (see section 10.9.1, “Turning Lip Sync On and Off”)

Procedure

AES/EBU SETTING →AES/EBU 1 → LIPSYNC ENABLE: ENABLE / DISABLE

If set to ENABLE, set all AES/EBU signal channels as shown below.

Item	Value
AUDIO ON/OFF	ON
RESOLUTION	20bit
EMPHASIS	OFF
FREQUENCY	1kHz
LEVEL	-20dBFS

12. WORD-CLOCK OUTPUT (WCLK SETTING)

A 48 kHz word-clock signal synchronized to the video signal is output from the WCLK OUT connector on the rear panel. You can set the output signal using WCLK SETTING.

12.1 Adjusting the Timing

To adjust the word-clock signal relative to the reference signal, follow the procedure below. The value takes effect immediately. Pressing CANCEL does not revert the setting to the previous value.

Procedure

WCLK SETTING → WCLK TIMING: -511 - 0 - +511 (±1 AES/EBU frame)

13. SNMP

By using SNMP (Simple Network Management Protocol), you can check the LT 4600A status from an SNMP manager. In addition, when the fan stops or other errors occur, traps can be sent from the LT 4600A to an SNMP manager.

* The Ethernet features of the LT 4600A have only been confirmed to work in a local network environment. LEADER does not guarantee that they will work in any network environment.
* DHCP client and DNS resolver features are not supported.

13.1 SNMP Version

SNMPv1

13.2 SMI Definitions

```
IMPORTS
MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE, enterprises
FROM SNMPv2-SMI
DisplayString
FROM SNMPv2-TC
OBJECT-GROUP, MODULE-COMPLIANCE
FROM SNMPv2-CONF;
```

13.3 Procedure

1. **On the LT 4600A, set the IP address.**

   Use UTILITY SETTING > ETHERNET > NETWORK SETTING.
   Then, restart the LT 4600A according to the displayed instructions. The specified value takes effect after you restart the LT 4600A.

2. **Connect the LT 4600A's Ethernet port to the network.**

   Connect to a network with an SNMP manager.

3. **On the PC, start an SNMP manager.**

   An SNMP manager is not supplied with the LT 4600A. Please obtain it separately.
   For details on how to use the SNMP manager, see its instruction manual.

   Set the community names.
   Use UTILITY SETTING > ETHERNET > SNMP COMMUNITY.
   By default, the following community names are assigned.
   Read Community: LDRUser
   Write Community: LDRAdm
   Trap Community: LDRUser

4. **On the SNMP manager, set the IP address of the trap transmission destination.**

   OID: 1.3.6.1.4.1.leader(20111).lt4600(28).trap(100).target(1).managerIp(1).0
   You can also set it from the LT 4600A menu.

5. **On the SNMP manager, set trap transmission to enable(1).**

   OID: 1.3.6.1.4.1.leader(20111).lt4600(28).trap(100).target(1).trapAction(2).0
   You can also set it from the LT 4600A menu.

6. **Restart the LT 4600A.**

7. **When the LT 4600A restarts, check that the standard trap "ColdStart" is received by the SNMP manager.**

13.4 Enterprise MIB

- **Retrieving the MIB File**

  Copy the file from the LT 4600A to a USB memory device.
  Connect a USB memory device to the LT 4600A, and from the menu, select UTILITY SETTING > ETHERNET > GET MIB FILE > OK. The file LT4600-MIB.mib will be copied to the USB memory device.
  For details on how to use the MIB file, see the instruction manual for the SNMP manager.
  Reference Section 6.5.5, “Retrieving the MIB File”

- **Enterprise Number**

  Leader’s enterprise number is 20111.
  iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).leader(20111)

- **MIB Structure**

```
lt4600              OBJECT IDENTIFIER ::= { leader 28 }

standard            OBJECT IDENTIFIER ::= { lt4600 1 }
  status            OBJECT IDENTIFIER ::= { standard 1 }
    fanUnit         OBJECT IDENTIFIER ::= { status 1 }
    genlockSts      OBJECT IDENTIFIER ::= { status 2 }
  reference         OBJECT IDENTIFIER ::= { standard 2 }
  analogBlack       OBJECT IDENTIFIER ::= { standard 3 }
    output1         OBJECT IDENTIFIER ::= { analogBlack 1 }
    output2         OBJECT IDENTIFIER ::= { analogBlack 2 }
    output3         OBJECT IDENTIFIER ::= { analogBlack 3 }
  serialDigital     OBJECT IDENTIFIER ::= { standard 4 }
    sdi1            OBJECT IDENTIFIER ::= { serialDigital 1 }
    sdi2            OBJECT IDENTIFIER ::= { serialDigital 2 }

trap                OBJECT IDENTIFIER ::= { lt4600 100 }
  target            OBJECT IDENTIFIER ::= { trap 1 }
```

- **ACCESS**

  In the tables, "ACCESS" indicates the following:

RO: Read only.
R/W: Read and write.

13.4.1 status Group

- **fanUnit(1) Group**

MIB	OID	SYNTAX	ACCESS	VALUE	Description
fanStatus	fanUnit.1	INTEGER	RO	2	stop
				3	operation

- **genlockSts(2) Group**

MIB	OID	SYNTAX	ACCESS	VALUE	Description
genStatus	genlockSts.1	INTEGER	RO	1	disable
				2	internal
				3	unlock
				4	locked
				5	stay-in-sync

13.4.2 reference Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
genMode	reference.1	INTEGER	RO	1	internal
				2	stay-in-sync
genFormat	reference.2	INTEGER	RO	1	1125i/60
				2	1125i/59.94
				3	1125i/50
				4	1125p/30
				5	1125p/29.97
				6	1125p/25
				7	1125p/24
				8	1125p/23.98
				9	1125psF/24
				10	1125psF/23.98
				21	750p/60
				22	750p/59.94
				23	750p/50
				24	750p/30
				25	750p/29.97
				26	750p/25
				27	750p/24
				28	750p/23.98
				41	NTSC BB
				42	NTSC BB+REF
				43	NTSC BB+ID
				44	NTSC BB+REF+ID
				49	525i/59.94
				50	525p/59.94
				61	PAL BB
				62	PAL BB+REF
				63	625i/50

MIB	OID	SYNTAX	ACCESS	VALUE	Description
				64	625p/50

13.4.3 analogBlack Group

- **output1(1) Group**

MIB	OID	SYNTAX	ACCESS	VALUE	Description
blk1Format	output1.1	INTEGER	RO	1	1080i/60
				2	1080i/59.94
				3	1080i/50
				4	1080p/30
				5	1080p/29.97
				6	1080p/25
				7	1080p/24
				8	1080p/23.98
				15	1080psF/24
				16	1080psF/23.98
				21	720p/60
				22	720p/59.94
				23	720p/50
				24	720p/30
				25	720p/29.97
				26	720p/25
				27	720p/24
				28	720p/23.98
				41	NTSC BB
				42	NTSC BB+REF
				43	NTSC BB+ID
				44	NTSC BB+REF+ID
				45	NTSC BB+SETUP
				46	NTSC BB+S+REF
				47	NTSC BB+S+ID
				48	NTSC BB+S+R+ID
				49	525i/59.94
				50	525p/59.94
				61	PAL BB
				62	PAL BB+REF
				63	625i/50
				64	625p/50

- **output2(2) Group**

MIB	OID	SYNTAX	ACCESS	VALUE	Description
blk2Format	output2.1	INTEGER	RO	Same as output1(1) group	

- **output3(3) Group**

MIB	OID	SYNTAX	ACCESS	VALUE	Description
blk3Format	output3.1	INTEGER	RO	Same as output1(1) group	

13.4.4 serialDigital Group

- **sdi1(1) Group**

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1Format	sdi1.1	INTEGER	RO	4	3G-A 422(YCbCr) 10 bit 1080p/60
				5	3G-A 422(YCbCr) 10 bit 1080p/59.94
				6	3G-A 422(YCbCr) 10 bit 1080p/50
				1001	3G-A 422(YCbCr) 12 bit 1080i/60
				1002	3G-A 422(YCbCr) 12 bit 1080i/59.94
				1003	3G-A 422(YCbCr) 12 bit 1080i/50
				1007	3G-A 422(YCbCr) 12 bit 1080p/30
				1008	3G-A 422(YCbCr) 12 bit 1080p/29.97
				1009	3G-A 422(YCbCr) 12 bit 1080p/25
				1010	3G-A 422(YCbCr) 12 bit 1080p/24
				1011	3G-A 422(YCbCr) 12 bit 1080p/23.98
				1012	3G-A 422(YCbCr) 12 bit 1080psF/30
				1013	3G-A 422(YCbCr) 12 bit 1080psF/29.97
				1014	3G-A 422(YCbCr) 12 bit 1080psF/25
				1015	3G-A 422(YCbCr) 12 bit 1080psF/24
				1016	3G-A 422(YCbCr) 12 bit 1080psF/23.98
				2001	3G-A 444(YCbCr) 10 bit 1080i/60
				2002	3G-A 444(YCbCr) 10 bit 1080i/59.94
				2003	3G-A 444(YCbCr) 10 bit 1080i/50
				2007	3G-A 444(YCbCr) 10 bit 1080p/30
				2008	3G-A 444(YCbCr) 10 bit 1080p/29.97
				2009	3G-A 444(YCbCr) 10 bit 1080p/25
				2010	3G-A 444(YCbCr) 10 bit 1080p/24
				2011	3G-A 444(YCbCr) 10 bit 1080p/23.98
				2012	3G-A 444(YCbCr) 10 bit 1080psF/30
				2013	3G-A 444(YCbCr) 10 bit 1080psF/29.97
				2014	3G-A 444(YCbCr) 10 bit 1080psF/25
				2015	3G-A 444(YCbCr) 10 bit 1080psF/24
				2016	3G-A 444(YCbCr) 10 bit 1080psF/23.98
				2021	3G-A 444(YCbCr) 10 bit 720p/60
				2022	3G-A 444(YCbCr) 10 bit 720p/59.94
				2023	3G-A 444(YCbCr) 10 bit 720p/50
				2024	3G-A 444(YCbCr) 10 bit 720p/30
				2025	3G-A 444(YCbCr) 10 bit 720p/29.97

MIB	OID	SYNTAX	ACCESS	VALUE	Description
				2026	3G-A 444(YCbCr) 10 bit 720p/25
				2027	3G-A 444(YCbCr) 10 bit 720p/24
				2028	3G-A 444(YCbCr) 10 bit 720p/23.98
				3001	3G-A 444(YCbCr) 12 bit 1080i/60
				3002	3G-A 444(YCbCr) 12 bit 1080i/59.94
				3003	3G-A 444(YCbCr) 12 bit 1080i/50
				3007	3G-A 444(YCbCr) 12 bit 1080p/30
				3008	3G-A 444(YCbCr) 12 bit 1080p/29.97
				3009	3G-A 444(YCbCr) 12 bit 1080p/25
				3010	3G-A 444(YCbCr) 12 bit 1080p/24
				3011	3G-A 444(YCbCr) 12 bit 1080p/23.98
				4001	3G-A 444(RGB) 10 bit 1080i/60
				4002	3G-A 444(RGB) 10 bit 1080i/59.94
				4003	3G-A 444(RGB) 10 bit 1080i/50
				4007	3G-A 444(RGB) 10 bit 1080p/30
				4008	3G-A 444(RGB) 10 bit 1080p/29.97
				4009	3G-A 444(RGB) 10 bit 1080p/25
				4010	3G-A 444(RGB) 10 bit 1080p/24
				4011	3G-A 444(RGB) 10 bit 1080p/23.98
				4012	3G-A 444(RGB) 10 bit 1080psF/30
				4013	3G-A 444(RGB) 10 bit 1080psF/29.97
				4014	3G-A 444(RGB) 10 bit 1080psF/25
				4015	3G-A 444(RGB) 10 bit 1080psF/24
				4016	3G-A 444(RGB) 10 bit 1080psF/23.98
				4021	3G-A 444(RGB) 10 bit 720p/60
				4022	3G-A 444(RGB) 10 bit 720p/59.94
				4023	3G-A 444(RGB) 10 bit 720p/50
				4024	3G-A 444(RGB) 10 bit 720p/30
				4025	3G-A 444(RGB) 10 bit 720p/29.97
				4026	3G-A 444(RGB) 10 bit 720p/25
				4027	3G-A 444(RGB) 10 bit 720p/24
				4028	3G-A 444(RGB) 10 bit 720p/23.98
				5001	3G-A 444(RGB) 12 bit 1080i/60
				5002	3G-A 444(RGB) 12 bit 1080i/59.94
				5003	3G-A 444(RGB) 12 bit 1080i/50
				5007	3G-A 444(RGB) 12 bit 1080p/30
				5008	3G-A 444(RGB) 12 bit 1080p/29.97
				5009	3G-A 444(RGB) 12 bit 1080p/25
				5010	3G-A 444(RGB) 12 bit 1080p/24
				5011	3G-A 444(RGB) 12 bit 1080p/23.98
				10001	HD 422(YCbCr) 10 bit 1080i/60
				10002	HD 422(YCbCr) 10 bit 1080i/59.94
				10003	HD 422(YCbCr) 10 bit 1080i/50
				10007	HD 422(YCbCr) 10 bit 1080p/30
				10008	HD 422(YCbCr) 10 bit 1080p/29.97

MIB	OID	SYNTAX	ACCESS	VALUE	Description
				10009	HD 422(YCbCr) 10 bit 1080p/25
				10010	HD 422(YCbCr) 10 bit 1080p/24
				10011	HD 422(YCbCr) 10 bit 1080p/23.98
				10015	HD 422(YCbCr) 10 bit 1080psF/24
				10016	HD 422(YCbCr) 10 bit 1080psF/23.98
				10021	HD 422(YCbCr) 10 bit 720p/60
				10022	HD 422(YCbCr) 10 bit 720p/59.94
				10023	HD 422(YCbCr) 10 bit 720p/50
				10024	HD 422(YCbCr) 10 bit 720p/30
				10025	HD 422(YCbCr) 10 bit 720p/29.97
				10026	HD 422(YCbCr) 10 bit 720p/25
				10027	HD 422(YCbCr) 10 bit 720p/24
				10028	HD 422(YCbCr) 10 bit 720p/23.98
				10049	HD 422(YCbCr) 10 bit 525i/59.94
				10063	HD 422(YCbCr) 10 bit 625i/50
				20004	3G-B 422(YCbCr) 10 bit 1080p/60
				20005	3G-B 422(YCbCr) 10 bit 1080p/59.94
				20006	3G-B 422(YCbCr) 10 bit 1080p/50
				21001	3G-B 422(YCbCr) 12 bit 1080i/60
				21002	3G-B 422(YCbCr) 12 bit 1080i/59.94
				21003	3G-B 422(YCbCr) 12 bit 1080i/50
				21007	3G-B 422(YCbCr) 12 bit 1080p/30
				21008	3G-B 422(YCbCr) 12 bit 1080p/29.97
				21009	3G-B 422(YCbCr) 12 bit 1080p/25
				21010	3G-B 422(YCbCr) 12 bit 1080p/24
				21011	3G-B 422(YCbCr) 12 bit 1080p/23.98
				21012	3G-B 422(YCbCr) 12 bit 1080psF/30
				21013	3G-B 422(YCbCr) 12 bit 1080psF/29.97
				21014	3G-B 422(YCbCr) 12 bit 1080psF/25
				21015	3G-B 422(YCbCr) 12 bit 1080psF/24
				21016	3G-B 422(YCbCr) 12 bit 1080psF/23.98
				22001	3G-B 444(YCbCr) 10 bit 1080i/60
				22002	3G-B 444(YCbCr) 10 bit 1080i/59.94
				22003	3G-B 444(YCbCr) 10 bit 1080i/50
				22007	3G-B 444(YCbCr) 10 bit 1080p/30
				22008	3G-B 444(YCbCr) 10 bit 1080p/29.97
				22009	3G-B 444(YCbCr) 10 bit 1080p/25
				22010	3G-B 444(YCbCr) 10 bit 1080p/24
				22011	3G-B 444(YCbCr) 10 bit 1080p/23.98
				22012	3G-B 444(YCbCr) 10 bit 1080psF/30
				22013	3G-B 444(YCbCr) 10 bit 1080psF/29.97
				22014	3G-B 444(YCbCr) 10 bit 1080psF/25
				22015	3G-B 444(YCbCr) 10 bit 1080psF/24
				22016	3G-B 444(YCbCr) 10 bit 1080psF/23.98
				23001	3G-B 444(YCbCr) 12 bit 1080i/60

MIB	OID	SYNTAX	ACCESS	VALUE	Description
				23002	3G-B 444(YCbCr) 12 bit 1080i/59.94
				23003	3G-B 444(YCbCr) 12 bit 1080i/50
				23007	3G-B 444(YCbCr) 12 bit 1080p/30
				23008	3G-B 444(YCbCr) 12 bit 1080p/29.97
				23009	3G-B 444(YCbCr) 12 bit 1080p/25
				23010	3G-B 444(YCbCr) 12 bit 1080p/24
				23011	3G-B 444(YCbCr) 12 bit 1080p/23.98
				24001	3G-B 444(RGB) 10 bit 1080i/60
				24002	3G-B 444(RGB) 10 bit 1080i/59.94
				24003	3G-B 444(RGB) 10 bit 1080i/50
				24007	3G-B 444(RGB) 10 bit 1080p/30
				24008	3G-B 444(RGB) 10 bit 1080p/29.97
				24009	3G-B 444(RGB) 10 bit 1080p/25
				24010	3G-B 444(RGB) 10 bit 1080p/24
				24011	3G-B 444(RGB) 10 bit 1080p/23.98
				24012	3G-B 444(RGB) 10 bit 1080psF/30
				24013	3G-B 444(RGB) 10 bit 1080psF/29.97
				24014	3G-B 444(RGB) 10 bit 1080psF/25
				24015	3G-B 444(RGB) 10 bit 1080psF/24
				24016	3G-B 444(RGB) 10 bit 1080psF/23.98
				25001	3G-B 444(RGB) 12 bit 1080i/60
				25002	3G-B 444(RGB) 12 bit 1080i/59.94
				25003	3G-B 444(RGB) 12 bit 1080i/50
				25007	3G-B 444(RGB) 12 bit 1080p/30
				25008	3G-B 444(RGB) 12 bit 1080p/29.97
				25009	3G-B 444(RGB) 12 bit 1080p/25
				25010	3G-B 444(RGB) 12 bit 1080p/24
				25011	3G-B 444(RGB) 12 bit 1080p/23.98
				30004	HD(DL) 422(YCbCr) 10 bit 1080p/60
				30005	HD(DL) 422(YCbCr) 10 bit 1080p/59.94
				30006	HD(DL) 422(YCbCr) 10 bit 1080p/50
				31001	HD(DL) 422(YCbCr) 12 bit 1080i/60
				31002	HD(DL) 422(YCbCr) 12 bit 1080i/59.94
				31003	HD(DL) 422(YCbCr) 12 bit 1080i/50
				31007	HD(DL) 422(YCbCr) 12 bit 1080p/30
				31008	HD(DL) 422(YCbCr) 12 bit 1080p/29.97
				31009	HD(DL) 422(YCbCr) 12 bit 1080p/25
				31010	HD(DL) 422(YCbCr) 12 bit 1080p/24
				31011	HD(DL) 422(YCbCr) 12 bit 1080p/23.98
				31012	HD(DL) 422(YCbCr) 12 bit 1080psF/30
				31013	HD(DL) 422(YCbCr) 12 bit 1080psF/29.97
				31014	HD(DL) 422(YCbCr) 12 bit 1080psF/25
				31015	HD(DL) 422(YCbCr) 12 bit 1080psF/24
				31016	HD(DL) 422(YCbCr) 12 bit 1080psF/23.98
				32001	HD(DL) 444(YCbCr) 10 bit 1080i/60

MIB	OID	SYNTAX	ACCESS	VALUE	Description
				32002	HD(DL) 444(YCbCr) 10 bit 1080i/59.94
				32003	HD(DL) 444(YCbCr) 10 bit 1080i/50
				32007	HD(DL) 444(YCbCr) 10 bit 1080p/30
				32008	HD(DL) 444(YCbCr) 10 bit 1080p/29.97
				32009	HD(DL) 444(YCbCr) 10 bit 1080p/25
				32010	HD(DL) 444(YCbCr) 10 bit 1080p/24
				32011	HD(DL) 444(YCbCr) 10 bit 1080p/23.98
				32012	HD(DL) 444(YCbCr) 10 bit 1080psF/30
				32013	HD(DL) 444(YCbCr) 10 bit 1080psF/29.97
				32014	HD(DL) 444(YCbCr) 10 bit 1080psF/25
				32015	HD(DL) 444(YCbCr) 10 bit 1080psF/24
				32016	HD(DL) 444(YCbCr) 10 bit 1080psF/23.98
				33001	HD(DL) 444(YCbCr) 12 bit 1080i/60
				33002	HD(DL) 444(YCbCr) 12 bit 1080i/59.94
				33003	HD(DL) 444(YCbCr) 12 bit 1080i/50
				33007	HD(DL) 444(YCbCr) 12 bit 1080p/30
				33008	HD(DL) 444(YCbCr) 12 bit 1080p/29.97
				33009	HD(DL) 444(YCbCr) 12 bit 1080p/25
				33010	HD(DL) 444(YCbCr) 12 bit 1080p/24
				33011	HD(DL) 444(YCbCr) 12 bit 1080p/23.98
				33012	HD(DL) 444(YCbCr) 12 bit 1080psF/30
				33013	HD(DL) 444(YCbCr) 12 bit 1080psF/29.97
				33014	HD(DL) 444(YCbCr) 12 bit 1080psF/25
				33015	HD(DL) 444(YCbCr) 12 bit 1080psF/24
				33016	HD(DL) 444(YCbCr) 12 bit 1080psF/23.98
				34001	HD(DL) 444(RGB) 10 bit 1080i/60
				34002	HD(DL) 444(RGB) 10 bit 1080i/59.94
				34003	HD(DL) 444(RGB) 10 bit 1080i/50
				34007	HD(DL) 444(RGB) 10 bit 1080p/30
				34008	HD(DL) 444(RGB) 10 bit 1080p/29.97
				34009	HD(DL) 444(RGB) 10 bit 1080p/25
				34010	HD(DL) 444(RGB) 10 bit 1080p/24
				34011	HD(DL) 444(RGB) 10 bit 1080p/23.98
				34012	HD(DL) 444(RGB) 10 bit 1080psF/30
				34013	HD(DL) 444(RGB) 10 bit 1080psF/29.97
				34014	HD(DL) 444(RGB) 10 bit 1080psF/25
				34015	HD(DL) 444(RGB) 10 bit 1080psF/24
				34016	HD(DL) 444(RGB) 10 bit 1080psF/23.98
				35001	HD(DL) 444(RGB) 12 bit 1080i/60
				35002	HD(DL) 444(RGB) 12 bit 1080i/59.94
				35003	HD(DL) 444(RGB) 12 bit 1080i/50
				35007	HD(DL) 444(RGB) 12 bit 1080p/30
				35008	HD(DL) 444(RGB) 12 bit 1080p/29.97
				35009	HD(DL) 444(RGB) 12 bit 1080p/25
				35010	HD(DL) 444(RGB) 12 bit 1080p/24

MIB	OID	SYNTAX	ACCESS	VALUE	Description
				35011	HD(DL) 444(RGB) 12 bit 1080p/23.98
				35012	HD(DL) 444(RGB) 12 bit 1080psF/30
				35013	HD(DL) 444(RGB) 12 bit 1080psF/29.97
				35014	HD(DL) 444(RGB) 12 bit 1080psF/25
				35015	HD(DL) 444(RGB) 12 bit 1080psF/24
				35016	HD(DL) 444(RGB) 12 bit 1080psF/23.98
sdi1Pattern	sdi1.2	INTEGER	RO	1	Color Bar 100%
				2	Color Bar 75%
				3	Multi CB 100%
				4	Multi CB 75%
				5	Multi CB (+I)
				6	SMPTE Color Bar
				7	EBU Color Bar
				8	BBC Color Bar
				9	Check Field
				10	Blue Field
				11	Green Field
				12	Red Field
				13	Flat Field 0%
				14	Flat Field 100%
				1001	Color Bar 100% (LIPSYNC: ON)
				1002	Color Bar 75% (LIPSYNC: ON)
				1003	Multi CB 100% (LIPSYNC: ON)
				1004	Multi CB 75% (LIPSYNC: ON)
				1005	Multi CB (+I) (LIPSYNC: ON)
				1006	SMPTE Color Bar (LIPSYNC: ON)
				1007	EBU Color Bar (LIPSYNC: ON)
				1008	BBC Color Bar (LIPSYNC: ON)
				1010	Blue Field (LIPSYNC: ON)
				1011	Green Field (LIPSYNC: ON)
				1012	Red Field (LIPSYNC: ON)
				1013	Flat Field 0% (LIPSYNC: ON)
				1014	Flat Field 100% (LIPSYNC: ON)
sdi1Scroll	sdi1.3	INTEGER	RO	1	Off
				2	On
sdi1Vtiming	sdi1.4	INTEGER	RO	±1124	-
sdi1Htiming	sdi1.5	INTEGER	RO	±4124	-
sdi1Emb-audio	sdi1.6	INTEGER	RO	1	G1: OFF G2: OFF G3: OFF G4: OFF
				2	G1: OFF G2: OFF G3: OFF G4: ON
				3	G1: OFF G2: OFF G3: ON G4: OFF
				4	G1: OFF G2: OFF G3: ON G4: ON
				5	G1: OFF G2: ON G3: OFF G4: OFF
				6	G1: OFF G2: ON G3: OFF G4: ON
				7	G1: OFF G2: ON G3: ON G4: OFF
				8	G1: OFF G2: ON G3: ON G4: ON

MIB	OID	SYNTAX	ACCESS	VALUE	Description
				9	G1: ON G2: OFF G3: OFF G4: OFF
				10	G1: ON G2: OFF G3: OFF G4: ON
				11	G1: ON G2: OFF G3: ON G4: OFF
				12	G1: ON G2: OFF G3: ON G4: ON
				13	G1: ON G2: ON G3: OFF G4: OFF
				14	G1: ON G2: ON G3: OFF G4: ON
				15	G1: ON G2: ON G3: ON G4: OFF
				16	G1: ON G2: ON G3: ON G4: ON
sdi1YCbCr-onoff	sdi1.7	INTEGER	RO	1	Y: OFF Cb: OFF Cr: OFF
				2	Y: OFF Cb: OFF Cr: ON
				3	Y: OFF Cb: ON Cr: OFF
				4	Y: OFF Cb: ON Cr: ON
				5	Y: ON Cb: OFF Cr: OFF
				6	Y: ON Cb: OFF Cr: ON
				7	Y: ON Cb: ON Cr: OFF
				8	Y: ON Cb: ON Cr: ON
sdi1Safty90area	sdi1.8	INTEGER	RO	1	Off
				2	On
sdi1Safty80area	sdi1.9	INTEGER	RO	1	Off
				2	On
sdi1Safty43area	sdi1.10	INTEGER	RO	1	Off
				2	On
sdi1Id-charactor	sdi1.11	INTEGER	RO	1	Off
				2	On
sdi1Logo	sdi1.12	INTEGER	RO	1	Off
				2	On

- **sdi2(2) Group**

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi2Format	sdi2.1	INTEGER	RO	Same as sdi1(1) group	
sdi2Pattern	sdi2.2	INTEGER	RO		
sdi2Scroll	sdi2.3	INTEGER	RO		
sdi2Vtiming	sdi2.4	INTEGER	RO		
sdi2Htiming	sdi2.5	INTEGER	RO		
sdi2Emb-audio	sdi2.6	INTEGER	RO		
sdi2YCbCr-onoff	sdi2.7	INTEGER	RO		
sdi2Safty90area	sdi2.8	INTEGER	RO		
sdi2Safty80area	sdi2.9	INTEGER	RO		
sdi2Safty43area	sdi2.10	INTEGER	RO		
sdi2Id-charactor	sdi2.11	INTEGER	RO		
sdi2Logo	sdi2.12	INTEGER	RO		

13.4.5 trap Group

- **target(1) Group**

MIB	OID	SYNTAX	ACCESS	VALUE	Description
managerIp	target.1	IP ADDRESS	R/W	*.*.*.*	Trap transmission destination
trapAction	target.2	INTEGER	R/W	1	enable
				2	disable

13.5 Extended TRAP

ID	Event Name	Description	Object Data
1	fanUnitStatus	Fan unit status change detection	fanUnit.status
10	genlockSignalStatus	Genlock status change detection	genlockSts.status

14. APPENDIX

14.1 List of Settings

A list of settings that you can specify on the LT 4600A is provided below. The description of each item is as follows:

Presets	Y	Items that are saved to presets
	N	Items that are not saved to presets
Last memory	Y	At startup, settings that are set to those that were in use the last time the power was turned off
	M	Settings that are initialized at startup when POWER ON RECALL is set to OFF Settings that are set to those of the preset at startup when POWER ON RECALL is set to a value between NUMBER 0 and 9 For details on POWER ON RECALL, see section 6.3.3, “Power-on Settings.”
	N	Settings that are set to their factory defaults at startup

14.1.1 UTILITY SETTING

Setting	Value (Maximum)	Factory Default Value	Preset	Last memory
LCD BACK LIGHT	ON / OFF	ON	N	Y
KEY LOCK	ON / OFF	OFF	N	Y
POWER ON RECALL	OFF / NUMBER 0 - NUMBER 9	OFF	N	Y
LOGO SELECT	INT_1 - INT_4	INT_1	N	Y
IP ADDRESS	000.000.000.000 - 255.255.255.255	192.168.000.000	N	Y
SUBNET MASK	000.000.000.000 - 255.255.255.255	255.255.255.000	N	Y
DEFAULT GATEWAY	000.000.000.000 - 255.255.255.255	000.000.000.000	N	Y
ACTION	ENABLE / DISABLE	DISABLE	N	Y
MANAGER IP	000.000.000.000 - 255.255.255.255	192.168.000.000	N	Y
READ COMMUNITY	◀ 0123456789 ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijklmnopqrstuvwxyz	LDRUser ◀	N	Y
WRITE COMMUNITY		LDRAdm ◀	N	Y
TRAP COMMUNITY		LDRUser ◀	N	Y
DATE & TIME ADJUST	2000/01/01 00:00:00 - 2099/12/31 23:59:59	2012/01/01 00:00:00	N	N

14.1.2 REFERENCE SETTING

Setting	Value (Maximum)	Factory Default Value	Preset	Last memory
GENLOCK MODE	INTERNAL / STAY-IN-SYNC	INTERNAL	Y	M
LOCK FORMAT	1125i/60 / 1125i/59.94 / 1125i/50 / 1125p/30 / 1125p/29.97 / 1125p/25 / 1125p/24 / 1125p/23.98 / 1125psF/24 / 1125psF/23.98 / 750p/60 / 750p/59.94 / 750p/50 / 750p/30 / 750p/29.97 / 750p/25 / 750p/24 / 750p/23.98 / 525i/59.94 / NTSC BB / NTSC BB+REF / NTSC BB+ID / NTSC BB+REF+ID / 525p/59.94 / 625i/50 / PAL BB / PAL BB+REF / 625p/50	NTSC BB	Y	M
FINE PHASE ADJUST	±20	0	Y	M
GENLOCK LOG ON/OFF	ON / OFF	OFF	N	N

14.1.3 SYSTEM SETTING

Setting	Value (Maximum)	Factory Default Value	Preset	Last memory
SYSTEM SELECT	60.00Hz GROUP / 59.94Hz GROUP / 50.00Hz GROUP	59.94Hz GROUP	Y	M
MODE SELECT	SDI 1 / 2 / 3G-LvB / DUAL	SDI 1 / 2	Y	M
SDI 1	3G-SDI-LvA / HD/SD-SDI	HD/SD-SDI	Y	M
SDI 2	3G-SDI-LvA / HD/SD-SDI	HD/SD-SDI	Y	M
3G-LvB/DUAL LINK	3G-SDI-LvB / HD DUAL LINK	HD DUAL LINK	Y	M

14.1.4 BLACK SETTING

Setting	Value (Maximum)	Factory Default Value	Preset	Last memory
BLK1 FORMAT	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 / NTSC BB / NTSC BB+REF / NTSC BB+ID / NTSC BB+REF+ID / NTSC BB+SETUP / NTSC BB+S+REF / NTSC BB+S+ID / NTSC BB+S+R+ID / 525i/59.94 / 525p/59.94 / PAL BB / PAL BB+REF / 625i/50 / 625p/50	NTSC BB	Y	M
BLK1 F-PHASE	±5	0	Y	M
BLK1 V-PHASE	±1124	0	Y	M
BLK1 H-PHASE[dot]	±4124	0	Y	M
BLK1 H-PHASE[µs]	±63.9814	+0.0000	Y	M

* BLK2 and BLK3 settings are the same as BLK1 settings.

14.1.5 SDI SETTING

Setting	Value (Maximum)	Factory Default Value	Preset	Last memory
FORMAT	1080i/60 / 1080i/59.94 / 1080i/50 / 1080p/60 / 1080p/59.94 / 1080p/50 / 1080p/30 / 1080p/29.97 / 1080p/25 / 1080p/24 / 1080p/23.98 / 1080psF/30 / 1080psF/29.97 / 1080psF/25 / 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 / 625i/50	1080i/59.94	Y	M
	422(YCbCr) 10bit / 422(YCbCr) 12bit / 444(YCbCr) 10bit / 444(YCbCr) 12bit / 444(RGB) 10bit / 444(RGB) 12bit	422(YCbCr) 10bit	Y	M
PATTERN SELECT	COLOR BAR 100% / COLOR BAR 75% / MULTI CB 100% / MULTI CB 75% / MULTI CB (+I) / SMPTE COLOR BAR / EBU COLOR BAR / BBC COLOR BAR / CHECK FIELD / BLUE FIELD / GREEN FIELD / RED FIELD / FALT FIELD 100% / FLAT FIELD 0% /	COLOR BAR 100%	Y	M
DIRECTION	UP & RIGHT / UP / UP & LEFT / LEFT / DOWN & LEFT / DOWN /	UP & RIGHT	Y	M

Setting	Value (Maximum)	Factory Default Value	Preset	Last memory
	DOWN & RIGHT / RIGHT			
H SPEED	0 - +256	0	Y	M
V SPEED	0 - +256	0	Y	M
SCROLL ON/OFF	ON / OFF	OFF	Y	M
SPEED	+1 - +255	+1	Y	M
CHANGE ON/OFF	ON / OFF	OFF	Y	M
0H TIMING	SERIAL / LEGACY	LEGACY	Y	M
V-PHASE	±1124	0	Y	M
H-PHASE [dot]	±4124	0	Y	M
H-PHASE [µs]	±63.9629	0.0000	Y	M
AUDIO ON/OFF	ON / OFF	All ON	Y	M
RESOLUTION	20bit / 24bit	20bit	Y	M
EMPHASIS	50/15 / CCITT / OFF	OFF	Y	M
FREQUENCY	SILENCE / 400Hz / 800Hz / 1kHz	1kHz	Y	M
LEVEL	-60 - 0	-20	Y	M
CLICK	OFF / 1sec / 2sec / 3sec / 4sec	OFF	Y	M
EQUAL TO CH1	ON / OFF	OFF	Y	M
EQUAL TO CH5	ON / OFF	OFF	Y	M
EQUAL TO CH9	ON / OFF	OFF	Y	M
EQUAL TO CH13	ON / OFF	OFF	Y	M
EQUAL TO G1	ON / OFF	OFF	Y	M
EQUAL TO G3	ON / OFF	OFF	Y	M
EQUAL TO LINK-A	ON / OFF	OFF	Y	M
Y,Cb,Cr ON/OFF	ON / OFF	All ON	Y	M
90% AREA	ON / OFF	OFF	Y	M
80% AREA	ON / OFF	OFF	Y	M
4:3 AREA	ON / OFF	OFF	Y	M
CHARACTER SET	◄ !”# $%&’()*+,-./0123456789:;<=>?@ ABCDEFGHIJKLMNOPQRSTUVWXYZ [\]^_→←	LT4600A◄	Y	M
ID V-POSITION	0 - +1079	0	Y	M
ID H-POSITION	0 - +1919	0	Y	M
ID SIZE	X1 / X2 / X4 / X8	X1	Y	M
ID LEVEL	100% / 75%	100%	Y	M
ID BLINK ON TIME	+1 - +9	+1	Y	M
ID BLINK OFF TIME	+1 - +9	+1	Y	M
ID BLINK ON/OFF	ON / OFF	OFF	Y	M
DIRECTION	LEFT / RIGHT	RIGHT	Y	M
SPEED	0 - +256	0	Y	M
SCROLL ON/OFF	ON / OFF	OFF	Y	M
ID ON/OFF	ON / OFF	OFF	Y	M
LOGO SELECT	INT_1 - INT_4 / 1 - 99 (Presets are INT_1 to INT_4 only.)	INT_1	Y	M
LOGO V-POSITION	0 - +1079	0	Y	M

Setting	Value (Maximum)	Factory Default Value	Preset	Last memory
LOGO H-POSITION	0 - +1919	0	Y	M
LEVEL 3	100h - EB0h	EB0h	Y	M
LEVEL 2	100h - EB0h	A20h	Y	M
LEVEL 1	100h - EB0h	590h	Y	M
LEVEL 0	100h - EB0h	100h	Y	M
LOGO BACKGROUND	ON / OFF	OFF	Y	M
LOGO ON/OFF	ON / OFF	OFF	Y	M
LIPSYNC	ON / OFF	OFF	Y	M

14.1.6 AES/EBU SETTING

Setting	Value (Maximum)	Factory Default Value	Preset	Last memory
AES/EBU TIMING	±511	0	Y	M
AUDIO ON/OFF	ON / OFF	OFF	Y	M
RESOLUTION	20bit / 24bit	20bit	Y	M
EMPHASIS	50/15 / CCITT / OFF	OFF	Y	M
FREQUENCY	SILENCE / 400Hz / 800Hz / 1kHz	1kHz	Y	M
LEVEL	-60 - 0	-20	Y	M
CLICK	OFF / 1sec / 2sec / 3sec / 4sec	OFF	Y	M
EQUAL TO CH1	ON / OFF	OFF	Y	M
LIPSYNC ENABLE	ENABLE / DISABLE	DISABLE	Y	M

* AES/EBU 2 settings are the same as AES/EBU 1 settings.

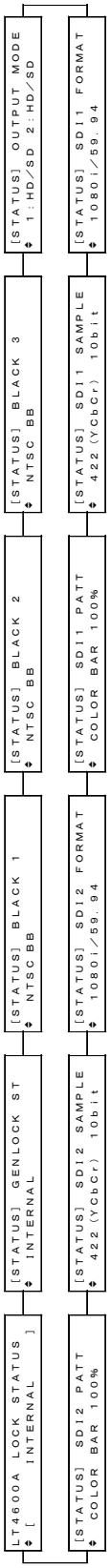
14.1.7 WCLK SETTING

Setting	Value (Maximum)	Factory Default Value	Preset	Last memory
WCLK TIMING	±511	0	Y	M

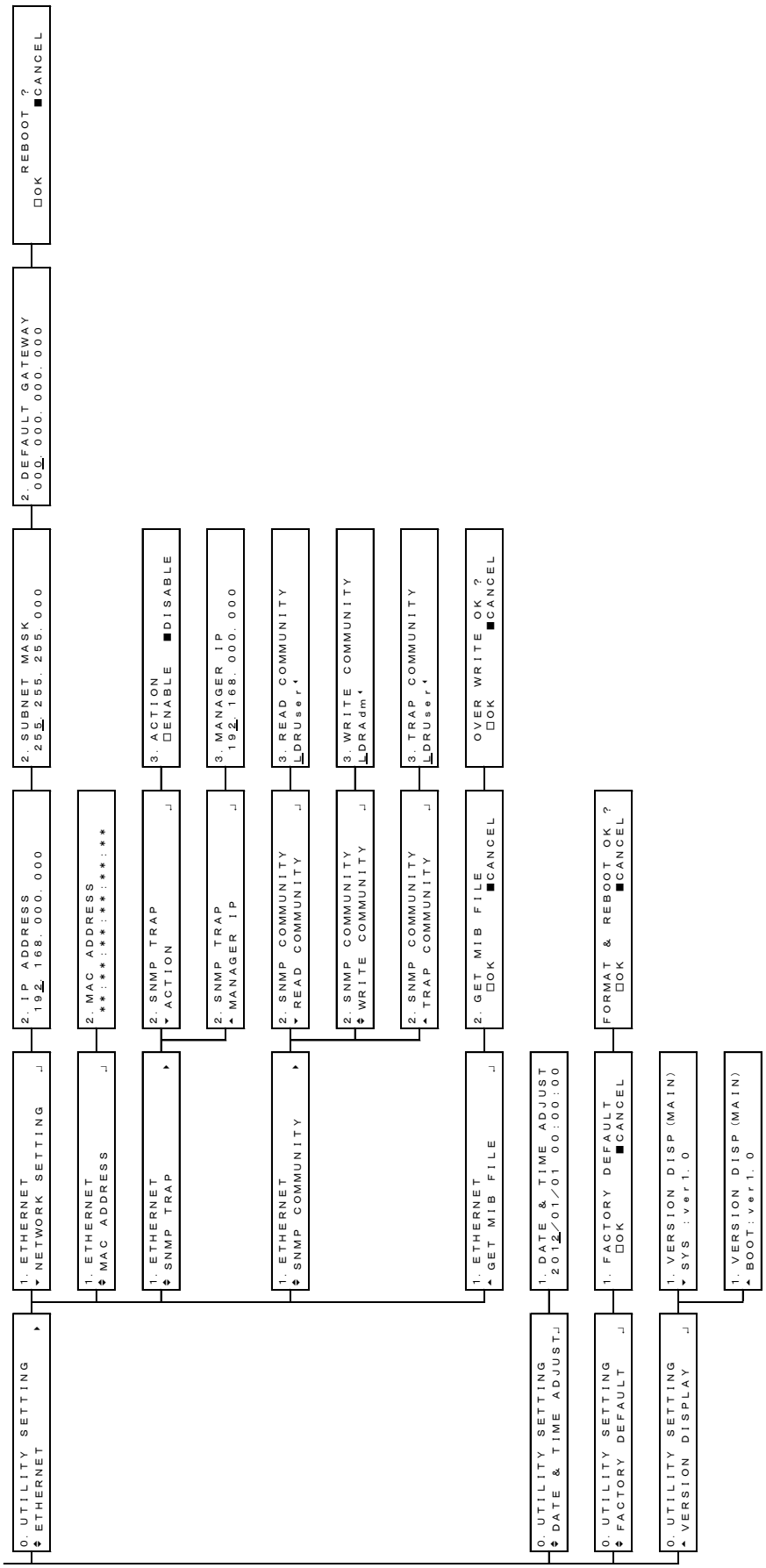
14.2 MENU TREE

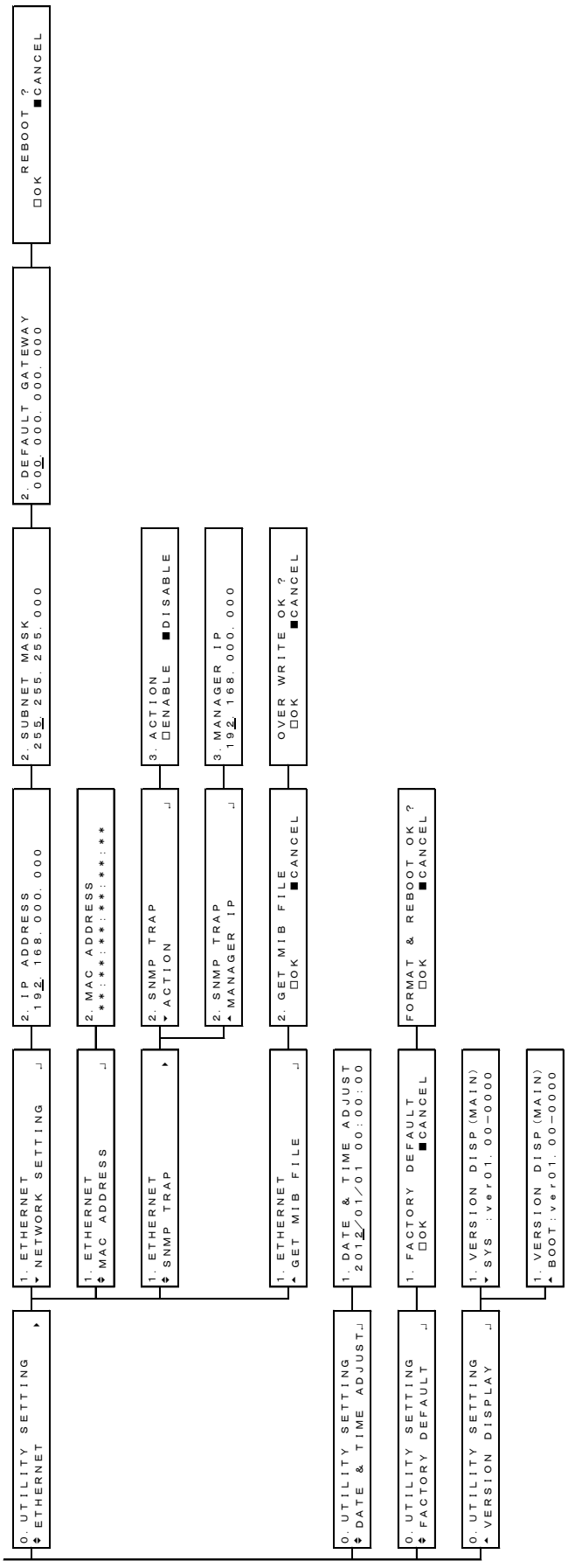
The screen shows the initial settings.

14.2.1 STATUS MENU

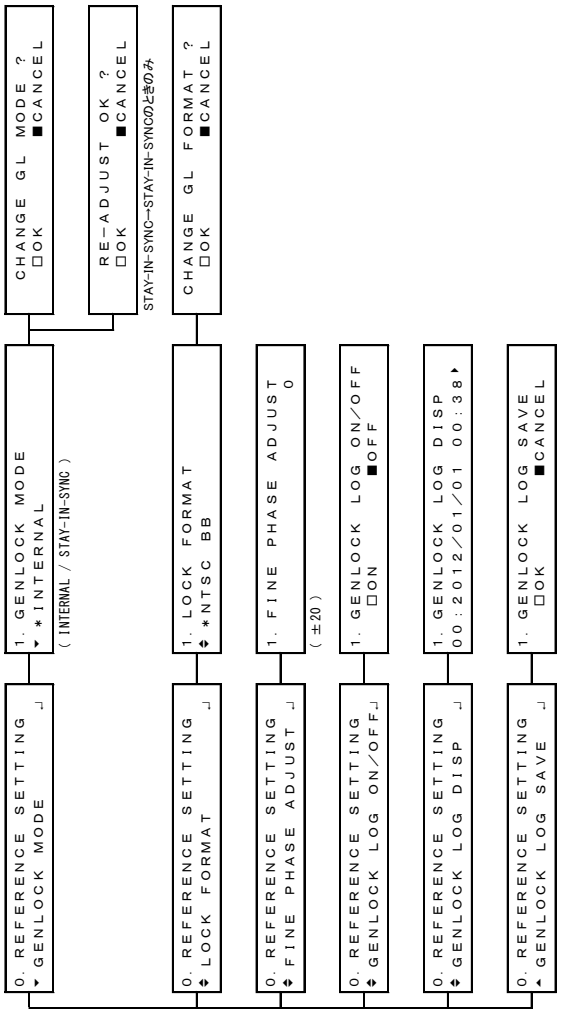


14.2.2 UTILITY MENU

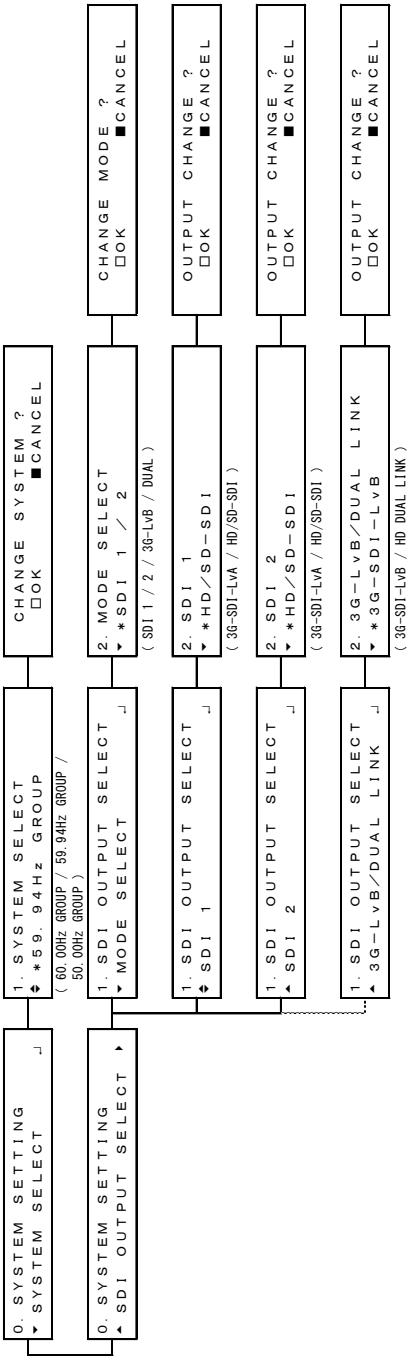



0. UTILITY SETTING
ETHERNET
1. ETHERNET
NETWORK SETTING
2. IP ADDRESS
192. 168. 000. 000
2. SUBNET MASK
255. 255. 255. 000
2. DEFAULT GATEWAY
000. 000. 000. 000
REBOOT ?
OK CANCEL
1. ETHERNET
MAC ADDRESS
2. MAC ADDRESS
::**:**:**:**
1. ETHERNET
SNMP TRAP
2. SNMP TRAP
ACTION
3. ACTION
ENABLE DISABLE
2. SNMP TRAP
MANAGER IP
3. MANAGER IP
192. 168. 000. 000
1. ETHERNET
GET MIB FILE
2. GET MIB FILE
OK CANCEL
OVER WRITE OK ?
OK CANCEL
0. UTILITY SETTING
DATE & TIME ADJUST
1. DATE & TIME ADJUST
2012/01/01 00:00:00
0. UTILITY SETTING
FACTORY DEFAULT
1. FACTORY DEFAULT
OK CANCEL
FORMAT & REBOOT OK ?
OK CANCEL
0. UTILITY SETTING
VERSION DISPLAY
1. VERSION DISP(MAIN)
SYS :ver01.00-0000
1. VERSION DISP(MAIN)
BOOT:ver01.00-0000

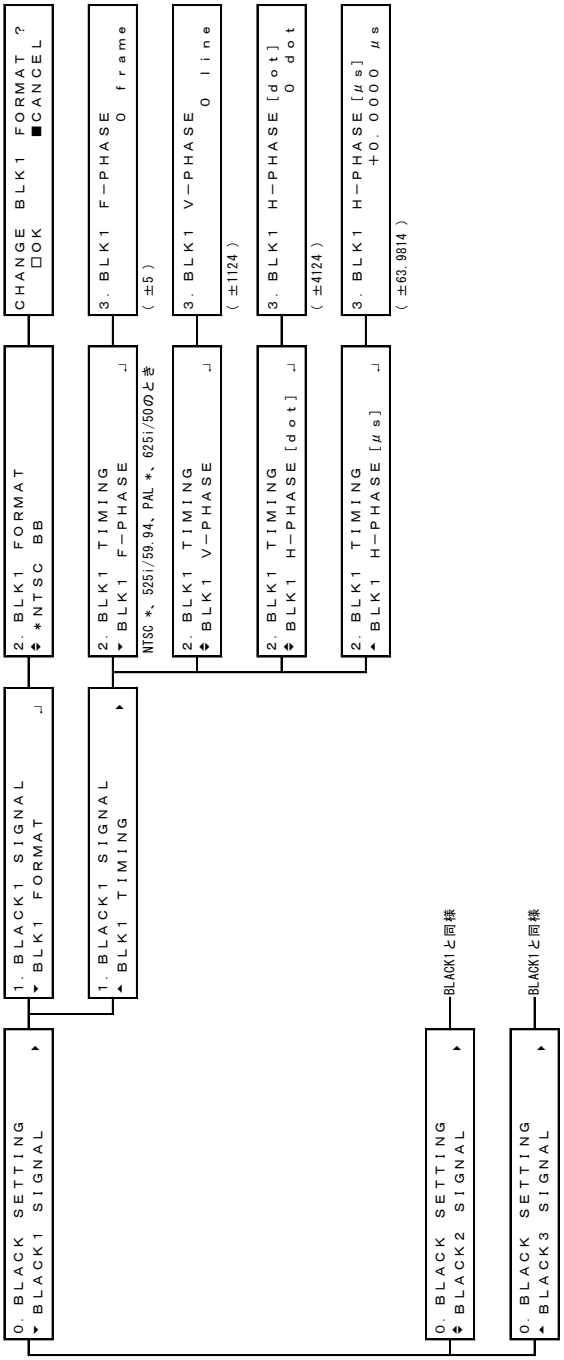
14.2.3 REFERENCE MENU



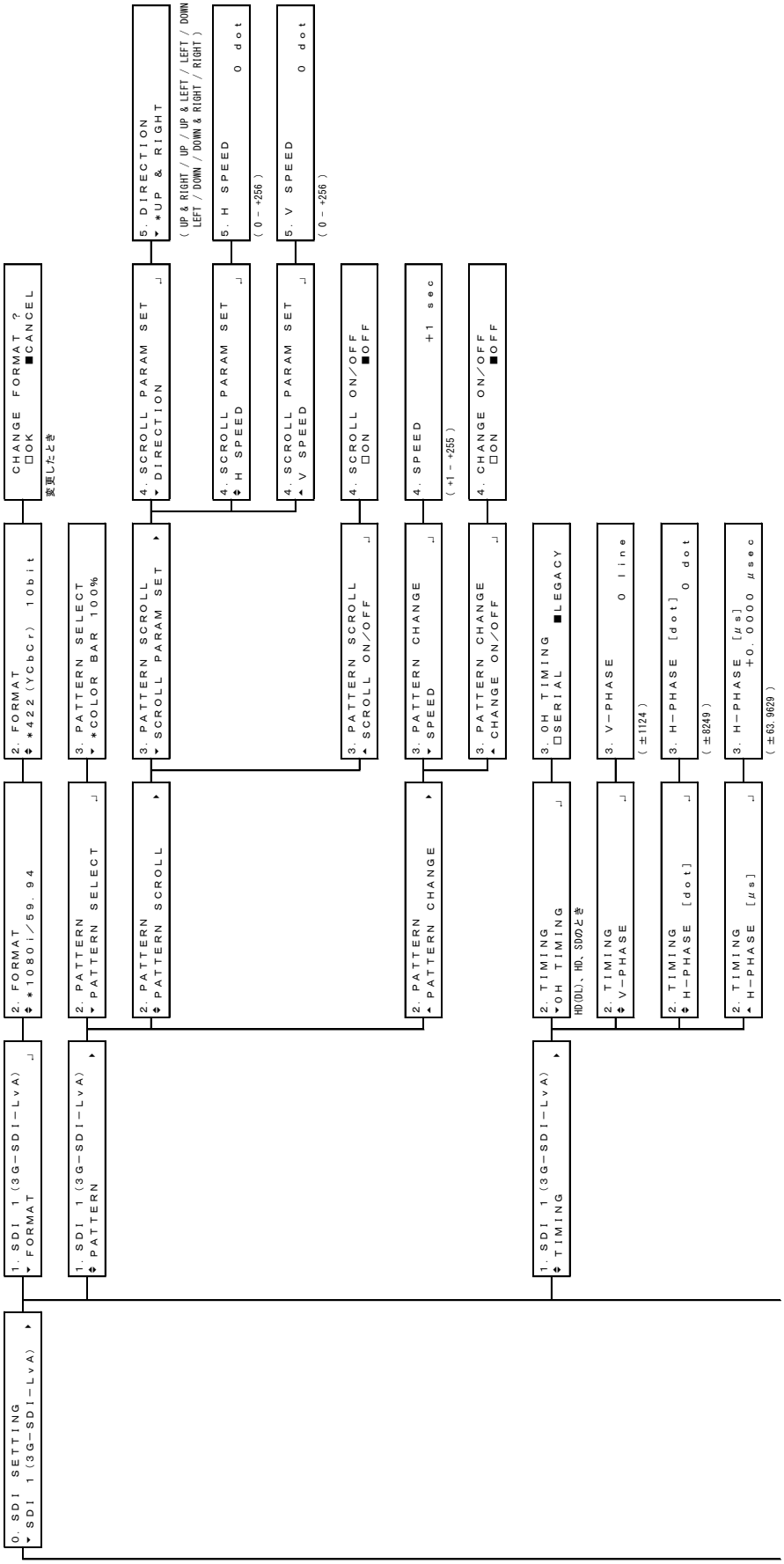
14.2.4 SYSTEM MENU

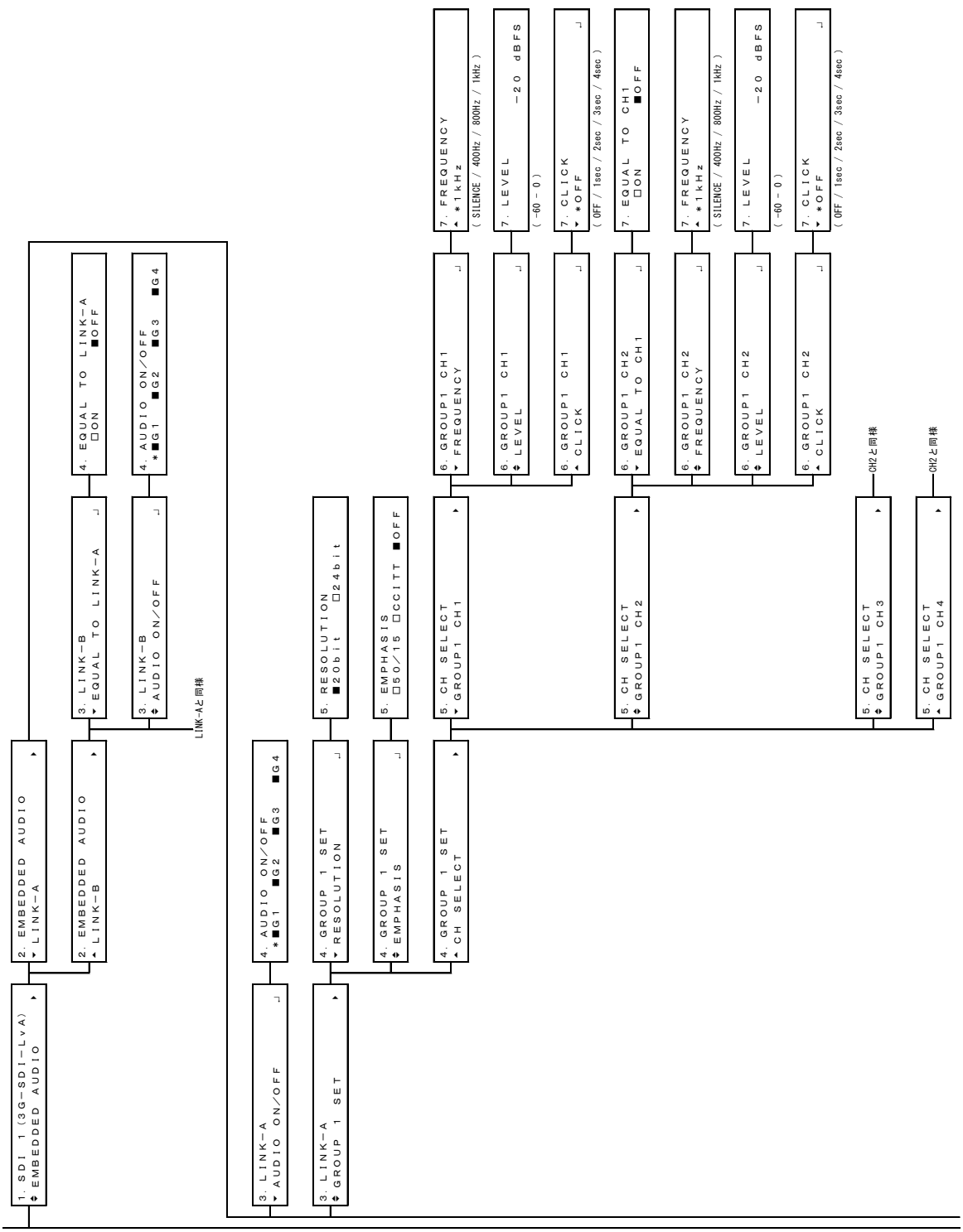


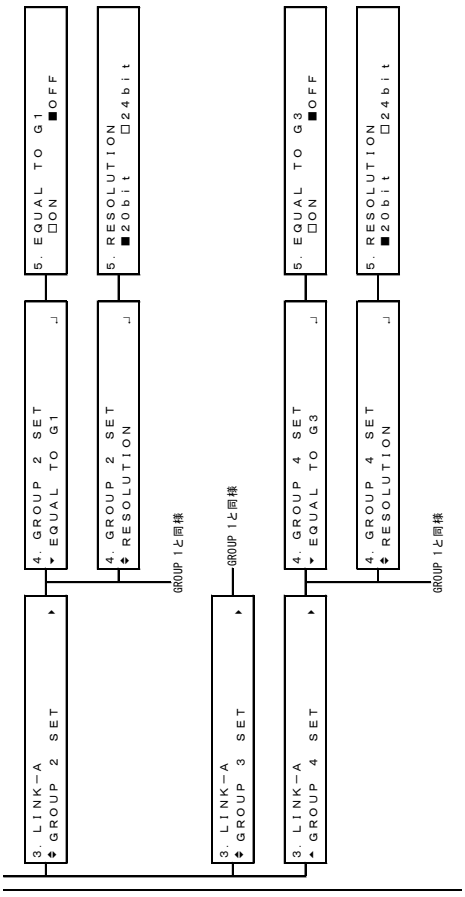
14.2.5 BLACK MENU

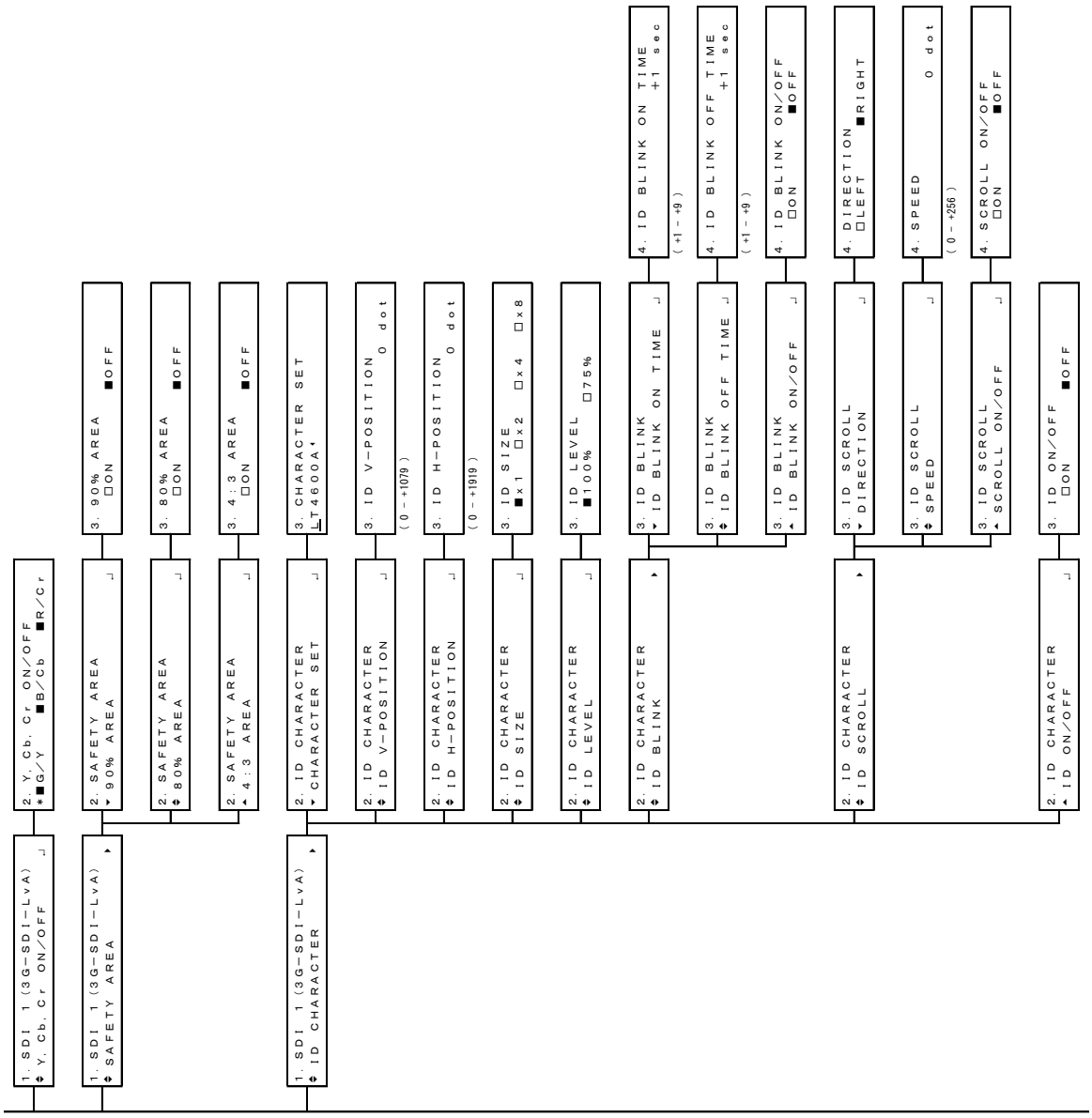


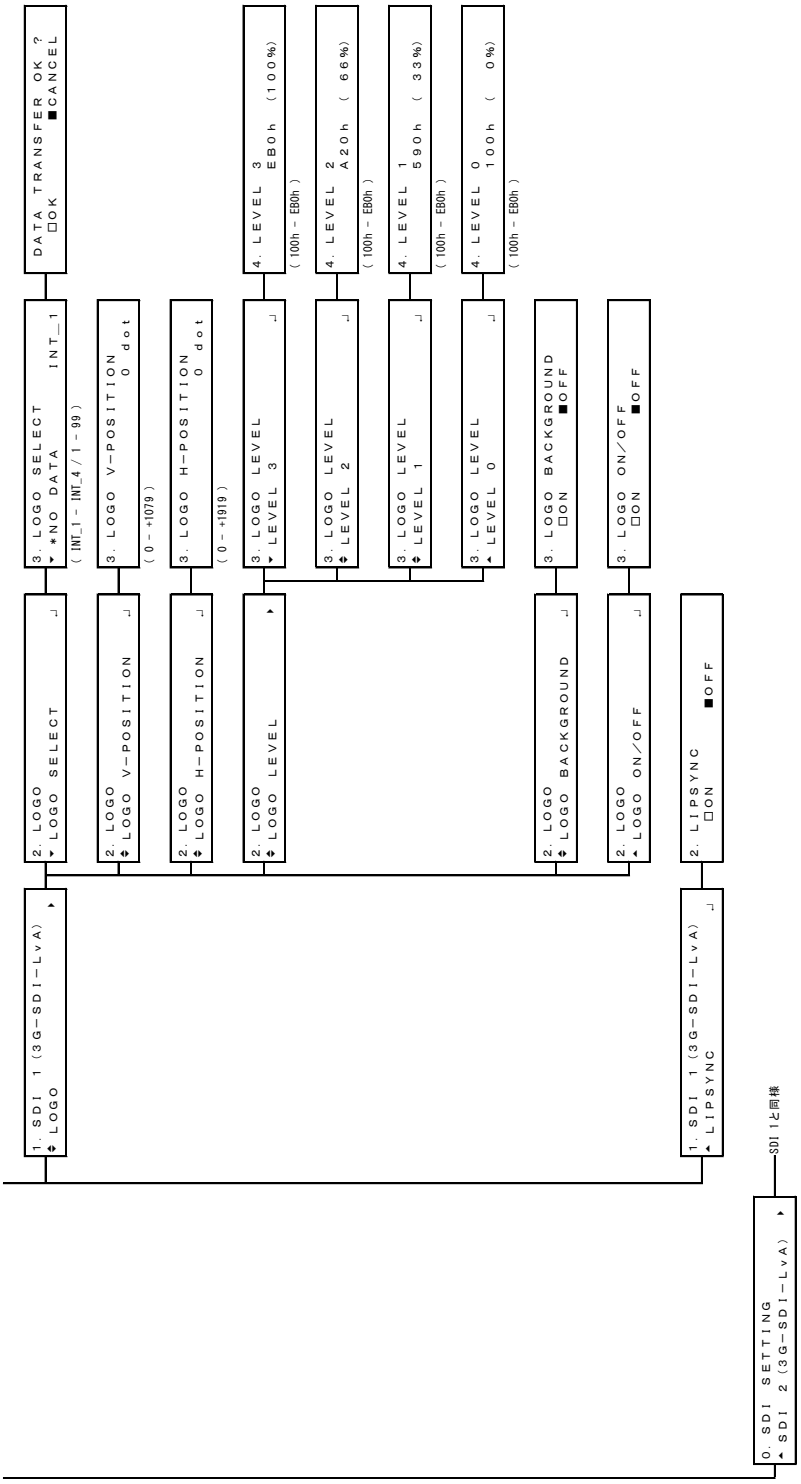
14.2.6 SDI MENU



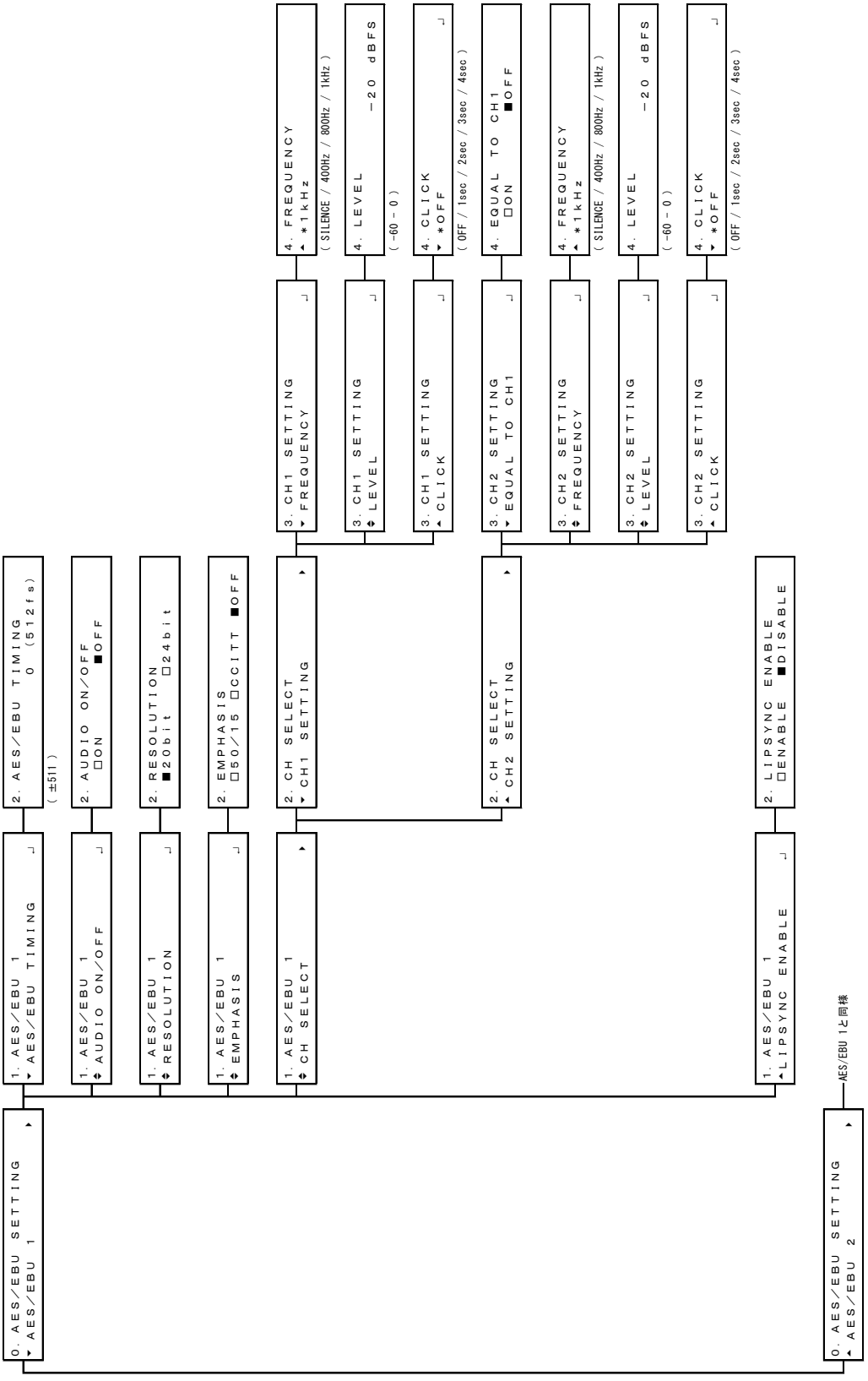

1. SDI 1 (3G-SDI-LvA)
EMBEDDED AUDIO
2. EMBEDDED AUDIO
LINK-A
2. EMBEDDED AUDIO
LINK-B
3. LINK-A
AUDIO ON/OFF
4. AUDIO ON/OFF
*■G1 ■G2 ■G3 ■G4
3. LINK-A
GROUP 1 SET
4. GROUP 1 SET
RESOLUTION
5. RESOLUTION
■20bit □24bit
4. GROUP 1 SET
EMPHASIS
5. EMPHASIS
□50/15 □CCITT ■OFF
4. GROUP 1 SET
CH SELECT
5. CH SELECT
GROUP1 CH1
6. GROUP1 CH1
FREQUENCY
7. FREQUENCY
*1kHz
(SILENCE / 400Hz / 800Hz / 1kHz)
6. GROUP1 CH1
LEVEL
7. LEVEL
-20 dBFS
(-60 - 0)
6. GROUP1 CH1
CLICK
7. CLICK
*OFF
(OFF / 1sec / 2sec / 3sec / 4sec)
5. CH SELECT
GROUP1 CH2
6. GROUP1 CH2
EQUAL TO CH1
7. EQUAL TO CH1
□ON ■OFF
6. GROUP1 CH2
FREQUENCY
7. FREQUENCY
*1kHz
(SILENCE / 400Hz / 800Hz / 1kHz)
6. GROUP1 CH2
LEVEL
7. LEVEL
-20 dBFS
(-60 - 0)
6. GROUP1 CH2
CLICK
7. CLICK
*OFF
(OFF / 1sec / 2sec / 3sec / 4sec)
5. CH SELECT
GROUP1 CH3
CH2と同様
5. CH SELECT
GROUP1 CH4
CH2と同様
3. LINK-B
EQUAL TO LINK-A
4. EQUAL TO LINK-A
□ON ■OFF
3. LINK-B
AUDIO ON/OFF
4. AUDIO ON/OFF
*■G1 ■G2 ■G3 ■G4
LINK-Aと同様


3. LINK-A
◆ GROUP 2 SET
4. GROUP 2 SET
▼ EQUAL TO G1
5. EQUAL TO G1
□ON ■OFF
4. GROUP 2 SET
◆ RESOLUTION
5. RESOLUTION
■20bit □24bit
GROUP 1と同様
3. LINK-A
◆ GROUP 3 SET
GROUP 1と同様
3. LINK-A
▲ GROUP 4 SET
4. GROUP 4 SET
▼ EQUAL TO G3
5. EQUAL TO G3
□ON ■OFF
4. GROUP 4 SET
◆ RESOLUTION
5. RESOLUTION
■20bit □24bit
GROUP 1と同様

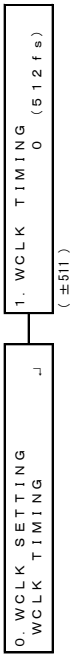

1. SDI 1 (3G-SDI-LvA)
Y, Cb, Cr ON/OFF
2. Y, Cb, Cr ON/OFF
G/Y B/Cb R/Cr
1. SDI 1 (3G-SDI-LvA)
SAFETY AREA
2. SAFETY AREA
90% AREA
3. 90% AREA
ON OFF
2. SAFETY AREA
80% AREA
3. 80% AREA
ON OFF
2. SAFETY AREA
4:3 AREA
3. 4:3 AREA
ON OFF
1. SDI 1 (3G-SDI-LvA)
ID CHARACTER
2. ID CHARACTER
CHARACTER SET
3. CHARACTER SET
LT4600A
2. ID CHARACTER
ID V-POSITION
3. ID V-POSITION
0 dot
(0 – +1079)
2. ID CHARACTER
ID H-POSITION
3. ID H-POSITION
0 dot
(0 – +1919)
2. ID CHARACTER
ID SIZE
3. ID SIZE
x1 x2 x4 x8
2. ID CHARACTER
ID LEVEL
3. ID LEVEL
100% 75%
2. ID CHARACTER
ID BLINK
3. ID BLINK
ID BLINK ON TIME
4. ID BLINK ON TIME
+1 sec
(+1 – +9)
3. ID BLINK
ID BLINK OFF TIME
4. ID BLINK OFF TIME
+1 sec
(+1 – +9)
3. ID BLINK
ID BLINK ON/OFF
4. ID BLINK ON/OFF
ON OFF
2. ID CHARACTER
ID SCROLL
3. ID SCROLL
DIRECTION
4. DIRECTION
LEFT RIGHT
3. ID SCROLL
SPEED
4. SPEED
0 dot
(0 – +256)
3. ID SCROLL
SCROLL ON/OFF
4. SCROLL ON/OFF
ON OFF
2. ID CHARACTER
ID ON/OFF
3. ID ON/OFF
ON OFF


0. SDI SETTING
▲ SDI 2 (3G-SDI-LvA)
SDI 1と同様
1. SDI 1 (3G-SDI-LvA)
◆ LOGO
1. SDI 1 (3G-SDI-LvA)
▲ LIPSYNC
2. LOGO
▼ LOGO SELECT
2. LOGO
◆ LOGO V-POSITION
2. LOGO
◆ LOGO H-POSITION
2. LOGO
◆ LOGO LEVEL
2. LOGO
◆ LOGO BACKGROUND
2. LOGO
▲ LOGO ON/OFF
2. LIPSYNC
□ON ■OFF
3. LOGO SELECT INT_1
▼ *NO DATA
(INT_1 - INT_4 / 1 - 99)
3. LOGO V-POSITION 0 dot
(0 - +1079)
3. LOGO H-POSITION 0 dot
(0 - +1919)
3. LOGO LEVEL
▼ LEVEL 3
3. LOGO LEVEL
◆ LEVEL 2
3. LOGO LEVEL
◆ LEVEL 1
3. LOGO LEVEL
▲ LEVEL 0
3. LOGO BACKGROUND
□ON ■OFF
3. LOGO ON/OFF
□ON ■OFF
DATA TRANSFER OK ?
□OK ■CANCEL
4. LEVEL 3 EB0h (100%)
(100h - EB0h)
4. LEVEL 2 A20h (66%)
(100h - EB0h)
4. LEVEL 1 590h (33%)
(100h - EB0h)
4. LEVEL 0 100h (0%)
(100h - EB0h)

14.2.7 AES/EBU MENU



14.2.8 WCLK MENU



14.3 Firmware Update History

This manual is written for firmware version 1.1.
To view the firmware version, select UTILITY SETTING → VERSION DISPLAY → SYS .

Ver. 1.1

- [UTILITY] SNMP COMMUNITY has been added to the ETHERNET item.
- [UTILITY] The display format of VERSION DISPLAY has been changed.

Following information is for Chinese RoHS only

所含有毒有害物质信息

部件号码：LT 4600A

此标志适用于在中国销售的电子信息产品，依据2006年2月28日公布的《电子信息产品污染控制管理办法》以及SJ/T11364-2006《电子信息产品污染控制标识要求》，表示该产品在使用完结后可再利用。数字表示的是环境保护使用期限，只要遵守与本产品有关的安全和使用上的注意事项，从制造日算起在数字所表示的年限内，产品不会产生环境污染和对人体、财产的影响。
产品适当使用后报废的方法请遵从电子信息产品的回收、再利用相关法令。
详细请咨询各级政府主管部门。

产品中有毒有害物质或元素的名称及含量

部件名称 Parts	有毒有害物质或元素 Hazardous Substances in each Part					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
实装基板	×	○	○	○	○	○
主体部	×	○	○	○	○	○
液晶显示模组	○	○	○	○	○	○
开关电源	×	○	○	○	○	○
风扇	×	○	○	○	○	○
外筐	×	○	○	○	○	○
线材料一套	×	○	○	○	○	○
附件	×	○	○	○	○	○
包装材	○	○	○	○	○	○

备注）

○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 规定的限量要求以下。

×：表示该有毒有害物质或元素至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。

Ver.1

Contact Us

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Kanagawa , 223-8505 , Japan

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May 28, 2018 Ver.3 (Firmware Ver.1.1)