

LT 4610 SYNC GENERATOR

LT 4610SER01 GPS/TC

INSTRUCTION MANUAL

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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.

<p><Symbol></p> 	<p>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.</p> <p>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.</p>
<p><Term></p>  WARNING	<p>Ignoring the precautions that this term indicates could lead to death or serious injury.</p>
<p><Term></p>  CAUTION	<p>Ignoring the precautions that this term indicates could lead to personal injury or damage to the instrument.</p>

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 % 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 gases, 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



■ 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.



■ 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

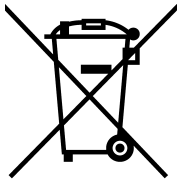
This instrument has been carefully examined at the factory to ensure that its performance is in accordance with the standards. However, because of factors such as parts wearing out over time, the performance of the instrument may degrade. To ensure stable performance, we recommend that you have the instrument 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.

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 Trademarks 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 and fuse rating 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 Voltage
GENLOCK IN	± 5 V (DC + peak AC)
GPS IN (SER01)	3.3Vp-p
CW IN/OUT (SER01)	2Vp-p
LTC IN/OUT (SER01)	4Vp-p

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. Static electricity can build up in the core wire of a coaxial cable. Before connecting a coaxial cable to an I/O connector of the instrument, short the core wire of the cable with the external conductor.

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.

1.4 Terminology Used in This Manual

- **SER****

The LT 4610SER** is referred to as the SER**.

- **Logo App**

Logo App refers to a software application for converting bitmap data (*.bmp) into 4-level monochrome data (*.lg) that can be used on the LT 4610. It is included in the CD-ROM.

- **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 name for 3G-A and 3G-B
12G	12G-SDI

2. SPECIFICATIONS

2.1 General

The LT 4610 is 1U full-rack size sync signal generator that can output triple-rate SDI (3G-SDI/HD-SDI/SD-SDI) signals. It employs two power supply units for redundant operation to accommodate power supply failures. The genlock function for external sync signals enables SDI signals, six sets of analog black sync signals, and audio word-clock signals to be output synchronously. The genlock function is equipped with a STAY IN SYNC function that maintains the phase when errors occur in the input signal, making it possible to construct stable systems. In addition to test pattern output including color bars and SDI check fields, the LT 4610 can embed ID characters, QVGA logo marks, safety area markers, and embedded audio in SDI signal output.

2.2 Features

- **Triple-rate SDI Ready**

SDI signal output supports 3G-SDI (level A and level B), HD-SDI (including dual link), and SD-SDI. There are two independent outputs of SDI signal output terminals. The pattern and phase can be set separately for each. (However, only a single output is available for 3G-SDI level B and HD dual link.)

- **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 that is 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-SDI and HD-SDI, a 4:3 aspect marker can be overlaid.

- **Pattern Scrolling**

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

- **Audio Embedding**

The LT 4610 can embed 32 channels (link A, link B, 4 channels each × 4 groups) of audio signals for 3G-SDI level B and 16 channels (4 channels × 4 groups) of audio signals for 3G-SDI level A, HD-SDI, and SD-HDI. The frequency, level, and the like can be set for each channel.

- **Lip Sync Patterns**

The LT 4610 can output lip sync patterns in which the video and audio are synchronized. In combination with a waveform monitor that features a lip sync function, such as the Leader's LV 5770A, it is possible to accurately measure the offset between the video and audio in SDI signal transmissions.

- **Genlock Function**

The LT 4610 can synchronize with NTSC/PAL black burst signals and HDTV 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.

A STAY IN SYNC function is available in case errors occur at the genlock input. The LT 4610 also has a slow lock function to reduce the shock that occurs when genlock is performed again based on STAY IN SYNC.

- **Analog Black Sync Signal Output**

The LT 4610 is equipped with six independent analog black sync signal outputs, which makes it possible to vary the timing.

NTSC/PAL black burst signal with field reference pulse and NTSC black burst signal with 10 field IDs are also supported.

- **Word-Clock Signal Output**

The LT 4610 can output a 48 kHz word-clock signal synchronized with video signals.

- **AES/EBU Signal Output**

The LT 4610 can output a 48 kHz AES/EBU signal synchronized with video signals. It is also equipped with a muted AES/EBU signal output.

- **Real Time Clock**

The real time clock is backed up with a battery, so time is maintained even when the power is turned off and turned back on. The time can also be maintained even when GPS signals cannot be received if the SER01 is installed.

- **Ethernet**

SNMP is supported as standard. When an error is detected, a TRAP is issued. Further, the LT 4610 can be controlled through HTTP.

- **Preset Memory Function**

Up to 10 presets can be saved. Convenient registered presets can be recalled during operation. The LT 4610 can be started with the same settings every time.

- **External Memory Support**

Logo data and preset data can be written and saved from the front panel using USB memory devices.

- **Redundant Power Supply**

Two power supplies are built in to provide redundancy. When errors occur in power supply units, alarms are indicated on the LT 4610 panel. Errors can also be output as alarms using SNMP.

2. SPECIFICATIONS

- **GPS/TC Option (SER01)**

Installation of this option adds (1) a GPS lock function, which locks to the frequency and time that can be obtained from GPS, (2) 10 MHz CW lock function, and (3) time code generator function.

In addition to operating in free run mode based on the internal time information, the time code generator can also output ATC (LTC) and LTC embedded time codes based on GPS, LTC, and VITC time information.

It also features a holdover function, which retains the phase and frequency of the output signal when GPS signals or CW signals are lost. Further, when locked to the GPS, the LT 4610 can be used as an NTP server.

- **CW I/O (SER01)**

The CW I/O connector not only receives 10 MHz CW but also outputs 10 MHz CW or 1PPS, whichever is selected.

- **LTC I/O (SER01)**

The LTC I/O connector receives LTC1, outputs LTC 3, and outputs two separate alarms.

2. SPECIFICATIONS

2.3 Specifications

2.3.1 Compliant Standards

SDI Embedded Audio	
3G, HD, HD(DL)	SMPTE ST 299
SD	SMPTE ST 272
SDI Payload ID	SMPTE ST 352
Analog Black Signal	
NTSC Black Burst Signal	SMPTE ST 170, SMPTE ST 318, SMPTE RP 154
PAL Black Burst Signal	ITU-R BT 1700, EBU N14
HD Tri-Level Sync Signal	SMPTE ST 240, SMPTE ST 274, SMPTE ST 296
AES/EBU	ANSI S4.40, AES3-2009, AES11-2009, SMPTE ST 276

2.3.2 SDI Formats and Standards

3G-A Formats and Standards

Color System	Quantization	Image	Frame (Field) Frequency/Scanning	Corresponding Standard
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 425
			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
		1920×1080	60/59.94/50/I	SMPTE ST 274
			30/29.97/25/24/23.98/P	SMPTE ST 425
			30/29.97/25/24/23.98/PsF	
	12 bits	1920×1080	60/59.94/50/I	SMPTE ST 425
			30/29.97/25/24/23.98/P	
			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
		1920×1080	60/59.94/50/I	SMPTE ST 274
			30/29.97/25/24/23.98/P	SMPTE ST 425
			30/29.97/25/24/23.98/PsF	
	12 bits	1920×1080	60/59.94/50/I	SMPTE ST 425
			30/29.97/25/24/23.98/P	
			30/29.97/25/24/23.98/P	

2. SPECIFICATIONS

3G-B Formats and Standards

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

2. SPECIFICATIONS

HD and SD Formats and Standards

Color System	Quantization	Image	Frame (Field) Frequency/Scanning	Corresponding Standard
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

2. SPECIFICATIONS

2.3.3 I/O Connectors

SDI Output Connector

Connector	BNC connector, 2 connectors
3G-A, HD, SD	2
3G-B, HD(DL)	1
Output Impedance	75 Ω
Output Amplitude	800 mVp-p \pm 10%
Output Return Loss	
5 MHz to 1.485 GHz	15 dB or more
1.485 to 2.97 GHz	10 dB or more
Overshoot	Less than 10%
Rise and Fall Times	
3G	\leq 135 ps (20 to 80%)
HD, HD(DL)	\leq 270 ps (20 to 80%)
SD	0.4 ns to 1.5 ns (20 to 80%)
DC Offset	0 \pm 0.5 V

Genlock Input Connector

Connector	BNC connector, 2 connectors
Input Signal	Analog composite sync signal Analog component sync signal
Format	They are loop-through.
Input Impedance	15 k Ω
Maximum Input Voltage	\pm 5 V (DC + peak AC)
Operating Input Level Range	\pm 6 dB
External Lock Range	\pm 5 ppm
Jitter	1 ns (when genlock is in use)

Analog Black Output Connector

Connector	6 BNC connectors, 6 outputs
Output Signal	Analog composite sync signal Analog component sync signal
Output Impedance	75 Ω
Sync Level	
NTSC	40 \pm 1 IRE
PAL	-300 \pm 6 mV
HD	\pm 300 \pm 6 mV
Blanking	0 \pm 15 mV

AES/EBU Digital Audio Output Connector

Connector	BNC connector, 1 connector
Output Amplitude	1 Vp-p \pm 0.1 V
Output Impedance	75 Ω unbalanced

AES/EBU Silence Output Connector

Connector	BNC connector, 1 connector
Output Amplitude	1 Vp-p \pm 0.1 V
Output Impedance	75 Ω unbalanced

2. SPECIFICATIONS

	Word-Clock Output Connector	
	Connector	BNC connector, 1 connector
	Output Frequency	48 kHz
	Output Amplitude	3.5 V or more (into 75 Ω, high level)
2.3.4	Control Connectors	
	Ethernet Port	
	Specifications	IEEE 802.3
	Protocol	SNMP v2c
	Connector	RJ-45
	Function	Trap transmission when errors are detected Transmission of operation status (e.g., genlock synchronization status)
	Type	10BASE-T/100BASE-TX auto switching
	USB Port	
	Specifications	USB 2.0
	Supported Media	USB memory device
	Function	Saving and recalling presets, genlock log, logo, and ID characters Updating firmware Retrieving MIB files
	Connector	USB Type A
2.3.5	LCD	
	Number of Characters	20 characters × 2 lines
	Backlight	On / Off
2.3.6	SDI Video Output	
	• SDI Signal	
	Bit Rate	
	3G	2.970Gbps, 2.970/1.001Gbps
	HD, HD(DL)	1.485Gbps, 1.485/1.001Gbps
	SD	270 Mbps
	• 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)

2. SPECIFICATIONS

● 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, flat field white 100%, black 0%, red 100%, green 100%, blue 100%
SD	
525/59.94I	100% color bar, 75% color bar, SMPTE color bar, check field, flat field white 100%, black 0%, red 100%, green 100%, blue 100%
625/50I	100% color bar, EBU color bar, BBC color bar, check field, flat field white 100%, black 0%, red 100%, green 100%, blue 100%
Automatic Switching	Automatically switches between selectable color bar patterns
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.

2. SPECIFICATIONS

● 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 4610	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	$Y = (0.212 \times R) + (0.701 \times G) + (0.087 \times B)$ 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 4610.

* Not available when the check field pattern is selected.

2. SPECIFICATIONS

● Component On/Off

Function	Each of the Y/G, Cb/B, and Cr/R components can be turned on and off 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.

● 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 / 400Hz / 800Hz / 1kHz
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 (525/59.94I).
 - For 16 channel output, the resolution is set to 20 bits.
 - Up to three groups (12 channels) can be output at 24-bit resolution.

2. SPECIFICATIONS

2.3.7 Genlock Function

Signal format	NTSC BB, NTSC BB+REF, NTSC BB+ID, NTSC BB+REF+ID, PAL BB, PAL BB+REF, 525/59.94I, 525/59.94P, 625/50I, 625/50P, 1125/60I, 1125/59.94I, 1125/50I, 1125/30P, 1125/29.97P, 1125/25P, 1125/24P, 1125/23.98P, 1125/24PsF, 1125/23.98PsF, 750/60P, 750/59.94P, 750/50P, 750/30P, 750/29.97P, 750/25P, 750/24P, 750/23.98P
Timing Adjustment	
Adjustment Range	
NTSC Black Burst Signal	±5 frames
PAL Black Burst Signal	±2 frames
HD Tri-Level Sync Signal	1 frame (entire frame)
FINE	Covers 1 adjustment unit (adjustment unit: 13.5 MHz, clock width: 74.1 nsec)
Genlock Mode	
INTERNAL	Operates using the internal reference signal
EXTERNAL	Operates using an external reference signal GL FMT-AUTO / GL FMT-MANUAL / GPS (SER01) / 10MHz CW (SER01)
Recovery Mode	
AUTO	Resynchronizes according to the auto setting when the external reference signal recovers
MANUAL	Retains the STAY IN SYNC state when the external reference signal recovers
Auto Setting	
IMMEDIATE	Resets the lock when the external reference signal recovers
FAST	Quickly resynchronizes when the external reference signal recovers
SLOW	Slowly resynchronizes when the external reference signal recovers
Manual Setting	
IMMEDIATE	Resets the lock when the external reference signal recovers
FAST	Quickly resynchronizes when the external reference signal recovers
SLOW	Slowly resynchronizes when the external reference signal recovers
Genlock Reset	Resynchronizes immediately.

2. SPECIFICATIONS

2.3.8 Analog Black Output

Signal Format	Each of the 6 outputs can be set separately. 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, PAL BB, PAL BB+REF, 525/59.94I, 525/59.94P, 625/50I, 625/50P, 1125/60I, 1125/59.94I, 1125/50I, 1125/30P, 1125/29.97P, 1125/25P, 1125/24P, 1125/23.98P, 1125/24PsF, 1125/23.98PsF, 750/60P, 750/59.94P, 750/50P, 750/30P, 750/29.97P, 750/25P, 750/24P, 750/23.98P
Timing Adjustment	Can be set separately for each of the 6 outputs
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)

2.3.9 Word-Clock Output

Timing Adjustment	
Adjustment Range	±1 AES/EBU frame
Adjustment Unit	512 fs (24.576 MHz)

2.3.10 AES/EBU Digital Audio Output

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 / 400Hz / 800Hz / 1kHz
Level	-60 to 0 dBFs (1 dBFs steps)
Audio Click	OFF, 1 to 4 sec
Lip Sync	Synchronization with SDI1
Sampling Clock Accuracy	Grade 2 (±10 ppm)

* The frequency, level, and audio click can be set for each channel.

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

2. SPECIFICATIONS

2.3.11 AES/EBU Silence Output

Timing Adjustment	
Adjustment Range	±1 AES/EBU frame
Adjustment Unit	512 fs (24.576 MHz)
Sampling Frequency	48 kHz sampling (syncd with the video signal)
Resolution	20 bits / 24 bits
Pre-emphasis	OFF
Frequency	SILENCE
Level	MUTE
Sampling Clock Accuracy	Grade 2 (±10 ppm)

2.3.12 Lip Sync Patterns

Value	SDI1+AES/EBU and SDI2 can be set separately.
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- * 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.

2.3.13 Preset Settings

Preset	Saves the panel settings (*1)
Number of Presets	10
Recall Method	Front panel
Copy Method	Copy from the LT 4610 to a USB memory device or copy from the USB memory device to the LT 4610

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

2.3.14 Logging Feature

Saved Items	Genlock status change
Copy Method	Copy from the LT 4610 to a USB memory device

2.3.15 Internal Reference Generator

Reference Frequency	13.5MHz
---------------------	---------

2.3.16 Internal Clock

Power Supply	Primary lithium battery
Battery Operation Period	Approx. 3 years (depending on the storage and operating environments)

2. SPECIFICATIONS

2.3.17 GPS Lock (SER01)

Corresponding Standard	SMPTE Draft ST 2059
GPS Input Connector	
Connector	BNC connector, 1 connectors
Input Impedance	50 Ω
Antenna, Pre-amp Power Supply	
Voltage	5V / 3.3V / OFF
Current	50 mA max. (built-in overcurrent protection circuit)
GPS Receiver	
Receive Frequency	1575.42MHz (L1)
Receive Code	C/A code
Receive Sensitivity	-130 dBm or more (input level to the antenna)
Status	NO SIGNAL, TRACKING, LOCKED, STAY IN SYNC
Holdover Function	Retains the previous frequency and phase when the GPS signal is interrupted

* The GPS function has been tested to work with a Furuno Electric AU-117A GPS antenna.

2.3.18 CW I/O (SER01)

CW I/O Connector	
Connector	BNC connector, 1 connectors (shared input and output)
Input Impedance	50 Ω
Input Signal Level	0.5 to 2 Vp-p
Input Signal Frequency	10 MHz
Locking Frequency Range	± 5 ppm
Output Signal Level	3.3V CMOS
Output Signal Frequency	10MHz / 1PPS
Holdover Function	Retains the previous frequency when the 10 MHz CW signal is interrupted

2.3.19 LTC I/O (SER01)

Corresponding Standard	SMPTE 12M-1
I/O Connectors	
Connector	D-SUB 15 pin (input and output shared)
LTC	
Number of Inputs	1
Input Impedance	10 k Ω balanced
Input Signal Level	0.5 to 4 Vp-p
Outputs	3
Output Impedance	600 Ω balanced
Output Signal Level	2 Vp-p $\pm 10\%$
Alarms	
Number of Outputs	2
Output Signal Level	5V CMOS

2. SPECIFICATIONS

2.3.20 Time Code (SER01)

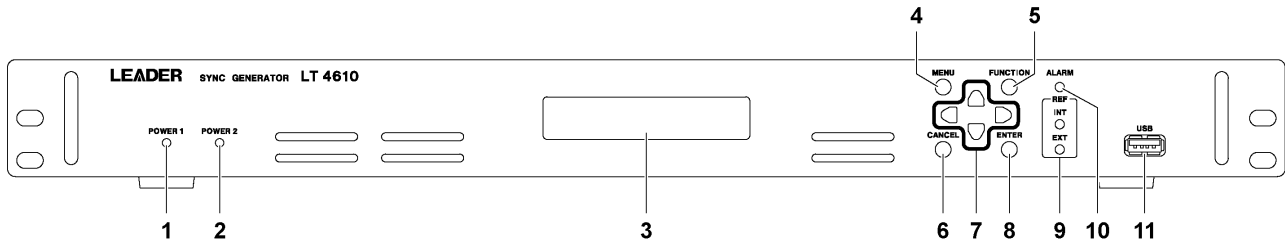
Reference Time	Internal / GPS / LTC / VITC
Frame Rate	Synchronizes to ANALOG BLACK 1 (LTC OUT)
Dropped Frame Mode	On / Off
ATC Setting	
LTC Insertion Setting	On / Off
LTC Setting	
Output Setting	On / Off
AES/EBU Time Code Insertion Setting	On / Off
Leap Second	
Application Setting	Set the application date/time with a timer
Daylight Savings Time	
Application Setting	Set the application date/time with a timer

2.3.21 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 Supply	
Voltage	90 to 250 VAC
Power Consumption	80 W max.
Dimensions	482 (W) × 44 (H) × 400 (D) mm (excluding protrusions)
Weight	3.6 kg (excluding SER01) 3.8 kg (including SER01)
Accessories	Power cord2 Cover/Inlet stopper2 CD-ROM (Logo App, instruction manual) 1

3. PANEL DESCRIPTION

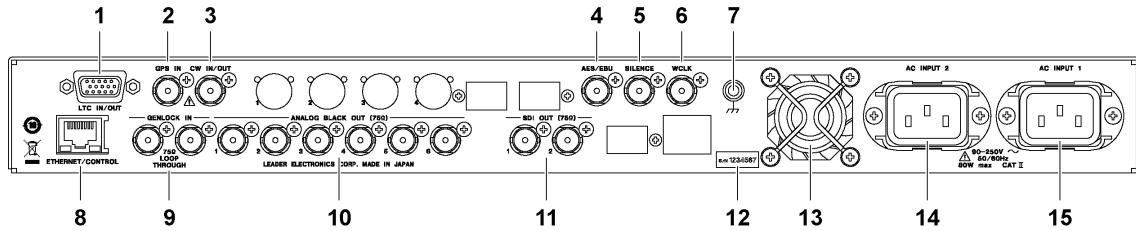
3.1 Front Panel



No.	Name	Description
1	POWER 1	Lights in green when the power to AC INPUT 1 is on. It lights in red when errors occur in AC INPUT 1 or when power to AC INPUT 2 is on and power to AC INPUT 1 is off.
2	POWER 2	Lights in green when the power to AC INPUT 2 is on. It lights in red when errors occur in AC INPUT 1 or when power to AC INPUT 1 is on and power to AC INPUT 2 is off.
3	LCD	Shows various information.
4	MENU	Switches the top menu or returns to the higher level menu.
5	FUNCTION	Clears the key lock.
6	CANCEL	Returns the setting to the its value.
7	Arrow keys	Used to move the cursor and to set values.
8	ENTER	Confirms values and enters a lower level menu.
9	REF	INT lights in green when the reference signal is internal. EXT lights or blinks in green when the reference signal is external. It blinks in red when operating in stay-in-sync mode.
10	ALARM	Blinks in red when an alarm occurs. It blinks in orange when an attention state occurs.
11	USB	USB port. Used to save and load various data.

3. PANEL DESCRIPTION

3.2 Rear Panel



No.	Name	Description
1	LTC IN/OUT (SER01)	Time code I/O connector. It also outputs alarms.
2	GPS IN (SER01)	GPS antenna input connector.
3	CW IN/OUT (SER01)	CW I/O connector. Input or output is used by switching. When set to input, it receives 10 MHz CW signals. When set to output, it outputs 10 MHz CW or 1PPS signals.
4	AES/EBU	AES/EBU signal output connector.
5	SILENCE	Muted AES/EBU signal output connector.
6	WCLK	48 kHz word-clock output connector.
7	Ground terminal	Connect to an external ground.
8	ETHERNET/CONTROL	Ethernet port. It supports SNMP.
9	GENLOCK IN	Genlock input connectors. They are loop-through connectors. They receive HD tri-level sync or NTSC/PAL black burst signals.
10	ANALOG BLACK OUT	Black output connectors. They output HD tri-level sync or NTSC/PAL black burst signals.
11	SDI OUT	SDI output connectors. Outputs SD, HD, and 3G signals.
12	Serial label	The serial number is printed on this label.
13	Fan	Cooling fan for the instrument.
14	AC INPUT 2	AC inlet for the second power supply.
15	AC INPUT 1	AC inlet for the first power supply.

4. BASIC OPERATION

4.1 Turning the Power On

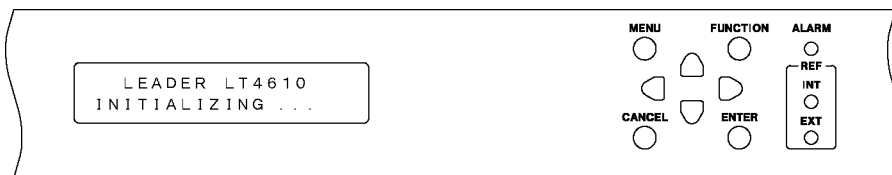
• Turning the Power On

The LT 4610 does not have a power switch. Connect the included power cords to DC INPUT 1 and DC INPUT 2 on the rear panel. Since the power supply is redundant, even if one of the power supplies fail, operation can continue with the other power supply.

POWER 1 and POWER 2 on the front panel light in green when the power is on and in red when it is not. When one of the power supplies is not on, an alarm is indicated in ALARM SYSTEM of the STATUS menu.

• Starting

When the power is turned on, the LT 4610 starts to initialize. During initialization, signals are not output, and you cannot use the keys.



• Startup Complete

When the following menu appears, the startup is complete.



4. BASIC OPERATION

● Power-on Settings

The settings vary depending on the POWER ON RECALL setting on the SYSTEM menu as follows:

(Y: Settings that were used when the power was turned off previously, P: Preset settings, N: Factor default settings)

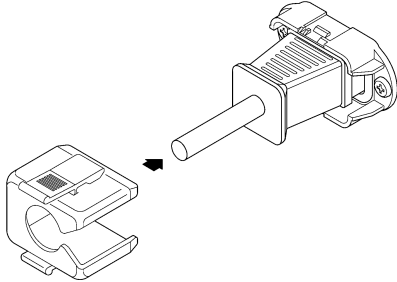
	POWER ON RECALL	
	OFF	NUMBER 0 to 9
GENLOCK menu	Y	P
LOG LIST (00 to 99)	N	N
BLACK menu	Y	P
SDI menu	Y	P
ID CHARACTER (INT_1 to INT_4)	Y	Y
LOGO (INT_1 to INT_4)	Y	Y
AES/EBU menu	Y	P
WCLK menu	Y	P
ETC menu	Y	P
GPS OPTION menu (SER01)	Y	P
CW IN/OUT	N	P
SYSTEM menu	Y	Y

4.2 Attaching the Cover Inlet Stopper

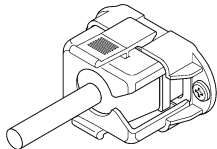
A cover/inlet stopper is included with the LT 4610. Use this device to prevent the power cord from being pulled free of the AC inlet. To attach the cover/inlet stopper, follow the procedure below.

• Attaching the Cover/Inlet Stopper

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



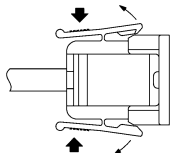
2. Push the cover/inlet stopper, until you hear a click, to attach it to the AC inlet.



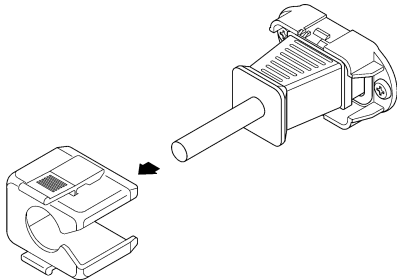
3. Check that the cover/inlet stopper is securely attached to the AC inlet.

• 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.

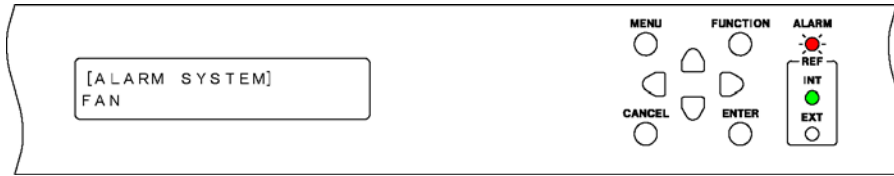


4.3 Alarm Indications

If an alarm occurs, the ALARM indicator on the front panel blinks in red.

If an attention state occurs, the ALARM indicator on the front panel blinks in orange.

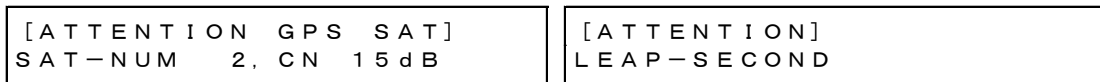
(If an alarm and attention state occur simultaneously, the alarm takes precedence, and the indicator blinks in red.)



You can check the alarm details with ALARM SYSTEM or ALARM SIGNAL (SER01) on the STATUS menu. See section 5.3, “Alarm Indications.”



You can check the attention details with ATTENTION GPS SAT (SER01) or ATTENTION (SER01) on the STATUS menu. See section 5.4, “Attention Display (SER01).”



4.4 Connecting a USB Memory Device

To write and read various types of data, you can use a USB memory device.

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.



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



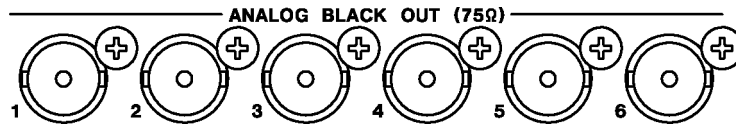
4.5 Signal I/O

4.5.1 Analog Black Signal Output

Six analog black signals synchronized to the reference signal are output from the ANALOG BLACK OUT connectors on the rear panel.

You can set the output signals on the BLACK menu.

[See also] Chapter 8, "BLACK MENU"

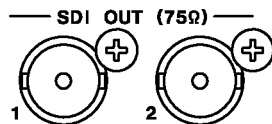


4.5.2 SDI Signal Output

Two SDI signals synchronized to the reference signal are output from the SDI OUT connectors on the rear panel.

You can set the output signals on the SDI menu.

[See also] Chapter 9, "SDI MENU"

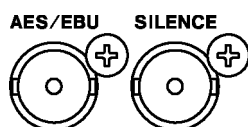


4.5.3 AES/EBU Signal Output

An AES/EBU signal synchronized to the reference signal is output from the AES/EBU connector on the rear panel. In addition, a muted AES/EBU signal is output from the SILENCE connector.

You can set the output signals on the AES/EBU menu.

[See also] Chapter 10, "AES/EBU MENU"

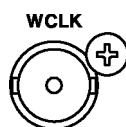


4.5.4 Word-Clock Signal Output

A word-clock signal synchronized to the reference signal is output from the WCLK connector on the rear panel.

You can set the output signals on the WCLK menu.

[See also] Chapter 11, "WCLK MENU"



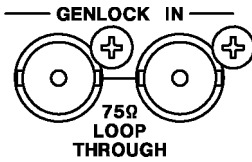
4.5.5 Genlock Signal Input

The GENLOCK IN connector on the rear panel receives HD tri-level sync or NTSC/PAL black burst signals as a genlock reference signal.

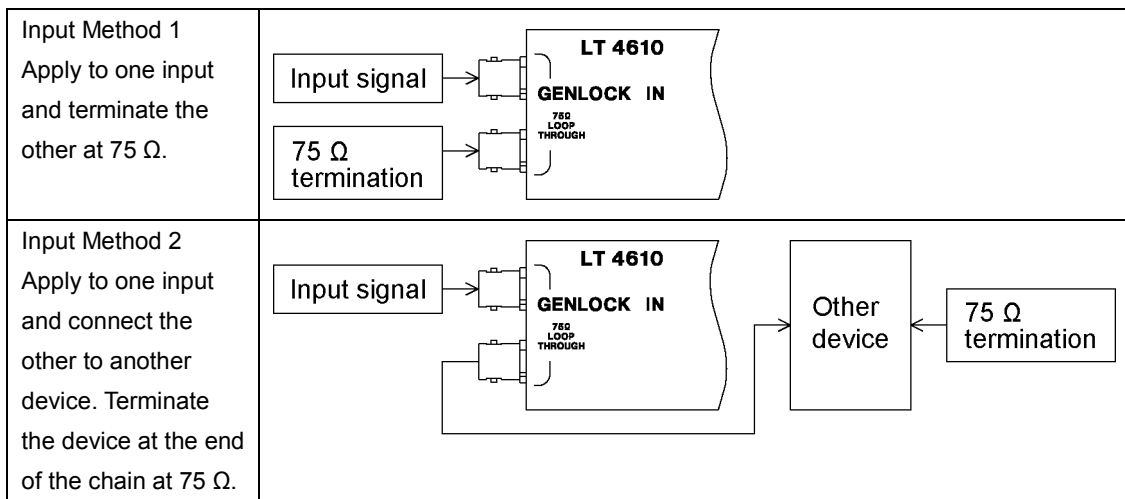
You can set the genlock on the GENLOCK menu.

In addition, it is possible to retrieve VITC from the genlock signal.

[See also] Chapter7, "GENLOCK MENU"



Apply the genlock signal using one of the following methods.



4.5.6 GPS Signal Input (SER01)

The GPS IN connector on the rear panel receives GPS antenna signals as a genlock reference signal.

You can set the genlock on the GENLOCK menu.

In addition, it is possible to insert time codes acquired from the GPS signal into black, SDI, or AES/EBU signals and output the time codes from the LTC IN/OUT connector on the rear panel.

[See also] Chapter7, "GENLOCK MENU"



4.5.7 CW Signal I/O (SER01)

CW IN/OUT on the rear panel is used by switching between input and output according to section 13.2.1, “Selecting Input or Output.”

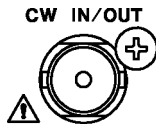
When set to input, the connector receives 10 MHz CW signals as a genlock reference signal.

You can set the genlock on the GENLOCK menu.

[See also] Chapter7, “GENLOCK MENU”

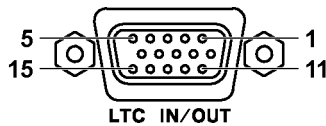
When set to output, the connector outputs 10 MHz CW or 1PPS signals.

[See also] Section 13.2.2, “Selecting the Output Frequency”



4.5.8 LTC Signal I/O (SER01)

LTC IN/OUT on the rear panel receives and outputs time codes and outputs alarms. On the LT 4610, input time codes are called LTC0 and output time codes LTC1 to LTC3.



Pin No.	Pin Name	I/O
1	LTC0+	I
2	LTC1+	O
3	LTC2+	O
4	LTC3+	O
5	GND	-

Pin No.	Pin Name	I/O
6	GND	-
7	LTC0-	I
8	LTC1-	O
9	LTC2-	O
10	LTC3-	O

Pin No.	Pin Name	I/O
11	SHIELD GND	-
12	ALARM1	O
13	ALARM2	O
14	OPEN	-
15	SHIELD GND	-

• Time Code I/O

It is possible to insert time codes received through LTC0 into black, SDI, or AES/EBU signals and output the time codes from the LTC1 to LTC3 connectors on the rear panel.

The LTC1 to LTC3 connectors output time codes synchronized to analog black signal 1. For the time code, you can select internal time, time codes retrieved from the GPS signal, time codes received through LTC0, or VITC retrieved from the genlock signal.

[See also] Chapter13, “GPS OPTION MENU (SER01)”


● **Alarm output**

If any of the alarms that are enabled according to section 14.8.2, “Turning Alarm Output On and Off” occur, a 5 V CMOS signal is output from ALARM1 or ALARM2. (The polarity can be inverted.)

Alarm	Alarm condition
POWER1	When power to AC INPUT 2 is on but power to AC INPUT 1 is off.
POWER2	When power to AC INPUT 1 is on but power to AC INPUT 2 is off.
FAN	When a fan error occurs
GENLOCK NO SIGNAL	When the genlock status becomes NO SIGNAL
GENLOCK ST IN SYNC	When the genlock status becomes STAY IN SYNC
GPS ANTENNA	When ANTENNA POWER is set to 3.3V or 5V and a short circuit occurs
GPS PLL	When the genlock mode is set to GPS and the internal PLL is unlocked
GPS SIGNAL	When the LT 4610 is configured to use GPS signals>(*1) but GPS signals are not being received
CW SIGNAL	When the genlock mode is set to 10MHzCW and CW signals are not being received.
LTC0 SIGNAL	When TIMECODE SOURCE is set to LTC0 but LTC signals are not being received
VITC SIGNAL	When TIMECODE SOURCE is set to VITC but VITC signals are not being received
ATTENTION	When a GPS or time code attention occurs

- *1 This signifies the setting in which any of the following is set to GPS.
- GENLOCK MODE on the GENLOCK menu
 - DATE&TIME SOURCE on the SYSTEM menu
 - TIMECODE SOURCE on the SYSTEM menu

4.6 Menu Operations

There are 11 main types of menus. The menu switches in order each time you press the MENU key and in reverse order each time you press the  key. (When the menu level is zero)

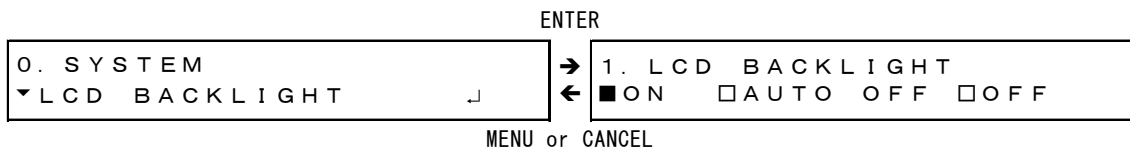
No.	Menu	Description	Reference
1	STATUS menu [STATUS] ▼ GENLOCK	Displays the LT 4610 status.	Chapter 5
2	INFO menu [INFO] ▼ GENLOCK	Displays the settings entered in the LT 4610.	Chapter 6
3	GENLOCK menu 0. GENLOCK ▼ MODE	Set the genlock.	Chapter 7
4	BLACK menu 0. BLACK ▼ BLK1	Set the black signal.	Chapter 8
5	SDI menu 0. SDI ▼ SDI1	Set the SDI signal.	Chapter 9
6	AES/EBU menu 0. AES/EBU ▼ AES/EBU	Set the AES/EBU signal.	Chapter 10
7	WCLK menu 0. WCLK TIMING	Set the word-clock signal.	Chapter 11
8	ETC menu 0. ETC LIPSYNC	Set the lip sync function.	Chapter 12
9	GPS OPTION menu 0. GPS OPTION ▼ LTC	Set the GPS signal.	Chapter 13
10	12G OPTION menu 0. 12G OPTION ▼ SDI 1	Set the SER02	*1
11	SYSTEM menu 0. SYSTEM ▼ LCD BACKLIGHT	Configures the settings	Chapter 14

*1 See the LT 4610SER02 instruction manual.

● **Menu Levels**

With some exceptions, the setting menus show a number in 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. To return to a higher level menu, press MENU or CANCEL.

Pressing MENU once causes the menu to return to a higher level. In contrast, pressing CANCEL once causes the top menu item in the same level to be selected, and pressing it again causes the menu to return to a higher level.



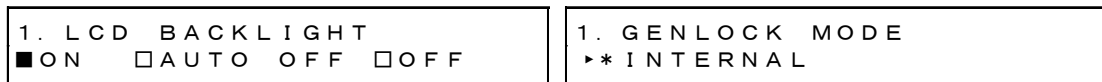
● **Specifying Values**

To specify values, use the ◀ and ▶ keys to move the cursor and the ▲ and ▼ keys to change the value. Hold down a key to change the value quickly. Value modifications are applied immediately, but the value is not confirmed until you press the ENTER key.



● **Selecting Items**

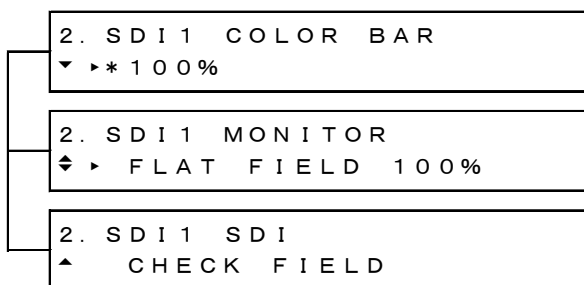
To select an item, use the ◀ and ▶ keys. An asterisk is attached to the currently selected value.



If a cursor (*) is displayed, use the ◀ and ▶ keys to move the cursor, the ▲ key to select on, and the ▼ key to select off.



To select a setting from multiple menus, use the ▲ and ▼ keys to select the menu, and then the ◀ and ▶ keys to select the item.



● **Confirming and Canceling Settings**

On a setting menu, press ENTER to confirm the setting.

4. BASIC OPERATION

Pressing MENU cancels the setting and returns to the higher level menu.
Pressing CANCEL returns the setting to its original value.

4.7 Genlock Operation

Genlock refers to the act of establishing synchronization using an external reference signal. Here, the procedure is explained separately for five different modes.

Genlock Mode	Reference signal	Description
Internal mode	Internal	The internal reference signal is used. The factory default setting is this mode.
Auto format 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. The LT 4610 automatically selects the reference signal format.
Manual format 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. Set the reference signal format manually.
GPS mode (SER01)	External (GPS signal)	An external reference signal received through GPS IN on the rear panel is used.
CW mode (SER01)	External (10 MHz CW signal)	An external reference signal received through CW IN/OUT on the rear panel is used.

4.7.1 Internal Mode

1. On the GENLOCK menu, set GENLOCK MODE to INTERNAL.

[See also] Section 7.1, "Selecting the Genlock Mode"



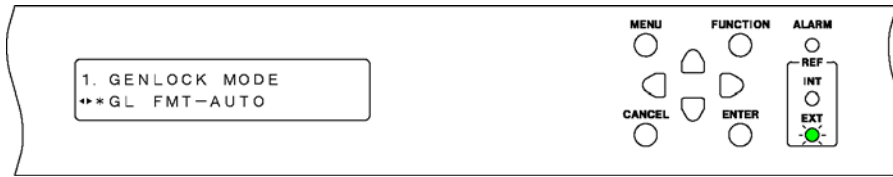
Under GENLOCK on the STATUS menu, INTERNAL appears, and INT on the front panel lights in green. You can begin using the instrument.



4.7.2 Auto Format Mode

1. On the GENLOCK menu, set GENLOCK MODE to GL FMT-AUTO.

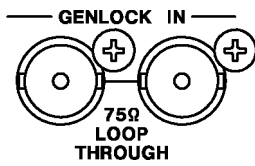
[See also] Section 7.1, "Selecting the Genlock Mode"



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

Apply an HD tri-level sync or NTSC/PAL black burst signal.

[See also] Section 4.5.5, "Genlock Signal Input"



When you apply the reference signal, TRACKING appears under GENLOCK on the STATUS menu, and EXT on the front panel blinks slowly in green. This indicates that the reference signal is being drawn in.



When the LT 4610 locks onto the signal, LOCKED appears under GENLOCK on the STATUS menu, and EXT on the front panel lights in green. In this state, you can begin using the instrument.



4. BASIC OPERATION

If an error occurs in the reference signal, the frequency that was in use immediately before the error occurred is maintained (stay-in-sync function).

Under GENLOCK on the STATUS menu, STAY IN SYNC appears, and EXT on the front panel blinks in red.



The operation that takes place when the reference signal recovers varies depending on the RECOVERY MODE setting on the GENLOCK menu.

When RECOVERY MODE is set to AUTO, the LT 4610 automatically locks when the reference signal recovers.

When RECOVERY MODE is set to MANUAL, the LT 4610 does not lock automatically even when the reference signal recovers. In this mode, you can lock the LT 4610 by setting GENLOCK RESET on the GENLOCK menu to OK. While relocking, all output signals are output.

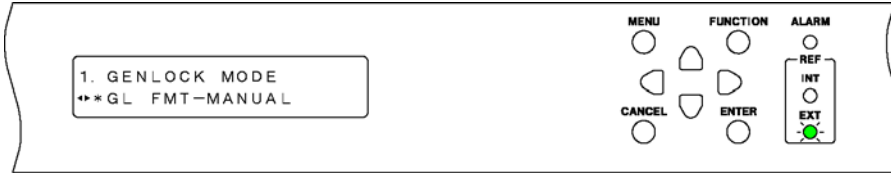
[See also] Section 7.4, "Setting the Recovery Operation"



4.7.3 Manual Format Mode

1. On the GENLOCK menu, set GENLOCK MODE to GL FMT-MANUAL.

[See also] Section 7.1, "Selecting the Genlock Mode"



2. Set FORMAT on the GENLOCK menu.

Select the format of the reference signal that will be applied to GENLOCK IN on the rear panel.

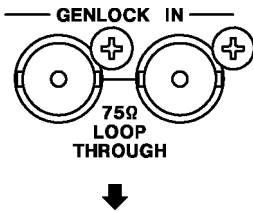
[See also] Section 7.2, "Selecting the Genlock Format"



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

Apply an HD tri-level sync or NTSC/PAL black burst signal.

[See also] Section 4.5.5, "Genlock Signal Input"



When you apply the reference signal, TRACKING appears under GENLOCK on the STATUS menu, and EXT on the front panel blinks slowly in green. The procedure from this point is the same as in section 4.7.2, "Auto Format Mode."



4.7.4 GPS mode (SER01)

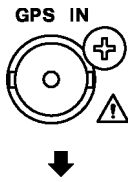
1. On the GENLOCK menu, set GENLOCK MODE to GPS.

If a GPS alarm, PLL alarm, GPS attention, or leap second attention state occurs, the ALARM indicator on the front panel blinks in red.

[See also] Section 7.1, “Selecting the Genlock Mode”



2. Apply a GPS antenna signal to GPS IN on the rear panel.



When you apply the GPS antenna signal, the GPS alarm and attention disappear, and under GENLOCK on the STATUS menu, an asterisk appears next to GPS.

ALARM indicator on the front panel keeps blinking in red or orange until the PLL alarm and leap second attention disappear. (It may take up to 12 minutes for the leap second attention to disappear after applying the GPS signal.)



When the PLL alarm and leap second attention disappear, TRACKING appears under GENLOCK on the STATUS menu, and EXT on the front panel blinks slowly in green.

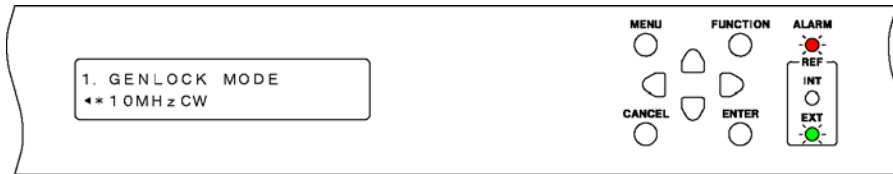
The procedure from this point is the same as in section 4.7.2, “Auto Format Mode.”



4.7.5 CW mode (SER01)

1. On the GENLOCK menu, set GENLOCK MODE to 10MHz CW.

A 10MHz CW alarm occurs, and the ALARM indicator on the front panel blinks in red.
 [See also] Section 7.1, "Selecting the Genlock Mode"



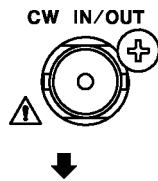
2. Set CW IN/OUT on the GPS OPTION menu to INPUT.

[See also] Section 13.2.1, "Selecting Input or Output"



3. Apply a 10MHz CW signal to CW IN/OUT on the rear panel.

To avoid damaging the instrument, do not apply a 10 MHz CW signal when OUTPUT is selected in step 2.



When you apply a 10MHz CW signal, TRACKING appears under GENLOCK on the STATUS menu, and EXT on the front panel blinks slowly in green. The procedure from this point is the same as in section 4.7.2, "Auto Format Mode."



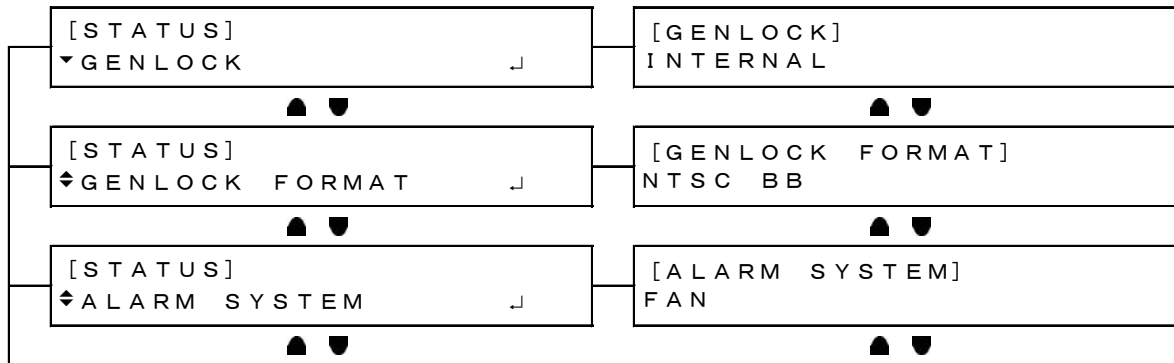
5. STATUS MENU

The STATUS menu shows the LT 4610 status. This menu is only for viewing; you cannot change the settings.

To display the STATUS menu, press MENU several times until the following menu appears.



On the STATUS menu, you can use the ▲ and ▼ keys to switch the menu even when you are in a lower level menu.



5.1 Genlock Status Display

The GENLOCK item displays the genlock status.

This section will explain the display details in conjunction with the front panel REF display.

Genlock mode	Menu example	Reference display	Description
INTERNAL	[GENLOCK] INTERNAL	REF INT ● EXT ○	[INT] Lit in green
GL FMT-AUTO GL FMT-MANUAL GPS (SER01) 10MHzCW (SER01)	[GENLOCK] GL-FMT- (A) NO SIGNAL	REF INT ○ EXT ●	[EXT] Blinking green (fast)
	[GENLOCK] GL-FMT- (A) TRACKING	REF INT ○ EXT ●	[EXT] Blinking green (slow)
	[GENLOCK] GL-FMT- (A) LOCKED	REF INT ○ EXT ●	[EXT] Lit in green
	[GENLOCK] GL-FMT- (A) STAY IN SYNC	REF INT ○ EXT ●	[EXT] Blinking red

When the genlock mode is set to GPS, an asterisk is displayed when a GPS signal is received. This is synchronized to the GPS alarm. When the asterisk is hidden, the GPS alarm is indicated, and vice versa.

[See also] Section 5.3, "Alarm Display"

```
[ G E N L O C K ] G P S *  
L O C K E D
```

5.2 Genlock Format Display

The GENLOCK FORMAT item displays the genlock format when the genlock mode is not INTERNAL.

When the genlock mode is set to GL FMT-AUTO, the format of the signal received through GENLOCK IN on the rear panel is displayed.

When the genlock mode is set to GL FMT-MANUAL, the format selected in section 7.2, "Selecting the Genlock Format," is displayed.

In either mode, if the signal is being tracked or the input signal cannot be recognized, "UNKNOWN" is displayed.

When the genlock mode is set to GPS (SER01) or 10MHzCW (SER01), the format of Black 1 selected in section 8.1, "Selecting the Black Format," is displayed.

```
[ G E N L O C K   F O R M A T ]  
N T S C   B B
```

5.3 Alarm Display

There are two types of alarm displays: one dealing with the LT 4610 and the other dealing with the signal. If an alarm occurs, the ALARM indicator on the front panel blinks in red. However, if a PWR1 or PWR2 alarm occurs, the ALARM indicator does not turn on. Instead POWER 1 or POWER 2 lights in red.

- **Alarm display related to the LT 4610**

ALARM SYSTEM shows alarms related to the LT 4610.

[A L A R M S Y S T E M] F A N

The following table lists the alarms related to the LT 4610.

Alarm	Display condition	Corrective action
FAN	When a fan error occurs	Contact your nearest LEADER agent.
PWR1	When power to AC INPUT 2 is on but power to AC INPUT 1 is off.	If this alarm appears even when power to AC INPUT 1 is turned on, contact your nearest LEADER agent.
PWR2	When power to AC INPUT 1 is on but power to AC INPUT 2 is off.	If this alarm appears even when power to AC INPUT 2 is turned on, contact your nearest LEADER agent.
ANT.	When ANTENNA POWER on the SYSTEM menu is set to 3.3V or 5V and a short circuit occurs (SER01)	Check the GPS antenna.

● **Alarm display related to signals (SER01)**

ALARM SIGNAL shows alarms related to signals.

[A L A R M S I G N A L] G P S

The following table lists the alarms related to the LT 4610 signals.

Alarm	Display condition	Corrective action
PLL	When the genlock mode is set to GPS and the internal PLL is unlocked	Contact your nearest LEADER agent.
GPS	When the LT 4610 is configured to use GPS signals,(*1) but GPS signals are not being received	Check that GPS signals are being applied to GPS IN on the rear panel.
10MHzCW	When the genlock mode is set to 10MHzCW and CW signals are not being received.	Check that 10 MHz CW signals are being applied to CW IN/OUT on the rear panel.
LTC0	When TIMECODE SOURCE on the SYSTEM menu is set to LTC0 but LTC signals are not being received	Check that LTC signals are being applied to LTC IN/OUT on the rear panel.
VITC	When TIMECODE SOURCE on the SYSTEM menu is set to VITC but VITC signals are not being received	Check that VITC signals are being applied to GENLOCK IN on the rear panel.

- *1 This signifies the setting in which any of the following is set to GPS.
- GENLOCK MODE on the GENLOCK menu
 - DATE&TIME SOURCE on the SYSTEM menu
 - TIMECODE SOURCE on the SYSTEM menu

5.4 Attention Display (SER01)

There are two types of attention displays: one dealing with the GPS and the other dealing with the time code. If an attention state occurs, the ALARM indicator on the front panel blinks in orange.

● Attention display related to GPS

The ATTENTION GPS SAT menu appears when the LT 4610 is configured to use GPS signals>(*1), and the number of used satellites is 2 or less or if the maximum CN value is 15 dB or less.

```
[ATTENTION GPS SAT]
SAT-NUM 2, CN 15 dB
```

● Attention display related to time codes

The ATTENTION item displays attention states related to time codes.

```
[ATTENTION]
LEAP-SECOND
```

The following table lists the attention states related to time codes.

Attention	Display condition
LEAP-SECOND	When the LT 4610 is configured to use GPS signals>(*1) but leap second information cannot be received (It may take up to 12 minutes for the leap second information to be received after applying the GPS signal.)
CLOCK	While settings are being changed when TIMECODE SOURCE is set to INTERNAL and DATE&TIME SOURCE is set to GPS (It will take some time for the LT 4610 to be able to use the time codes retrieved from the GPS signal after the settings have been changed.)

- *1 This signifies the setting in which any of the following is set to GPS.
- GENLOCK MODE on the GENLOCK menu
 - DATE&TIME SOURCE on the SYSTEM menu
 - TIMECODE SOURCE on the SYSTEM menu

5.5 Satellite Count Display (SER01)

The SATELLITE NUMBER item displays the number of GPS satellites.

The numerator indicates the number of satellites in the line of view, and the denominator the number of satellite that the LT 4610 can use.

```
[ S A T E L L I T E   N U M B E R ]
 8 / 1 1
```

5.6 CN Display (SER01)

The GPS CN item displays the CN of the GPS signal.

Of the satellites that the LT 4610 can use, MIN shows the minimum CN value and MAX the maximum value.

```
[ G P S   C N ]
M I N : 1 5   M A X : 3 5   [ d B ]
```

5.7 UTC Display (SER01)

The UTC TIME item displays the Coordinated Universal Time retrieved from the GPS signal.

```
[ U T C   T I M E ]
2 0 1 6 / 0 5 / 0 1   0 1 : 0 8 : 5 9
```

5.8 Local Time Display (SER01)

The LOCAL TIME item displays the time code selected in section 14.6.1, "Selecting the Time Code."

```
[ L O C A L   T I M E ]
2 0 1 6 / 0 5 / 0 1   1 0 : 0 8 : 5 9
```

5.9 Internal Clock Display (SER01)

The INTERNAL CLOCK item displays the internal clock selected in section 14.5.1, "Selecting the Date and Time."

```
[ I N T E R N A L   C L O C K ]
2 0 1 6 / 0 5 / 0 1   1 0 : 0 8 : 5 9
```

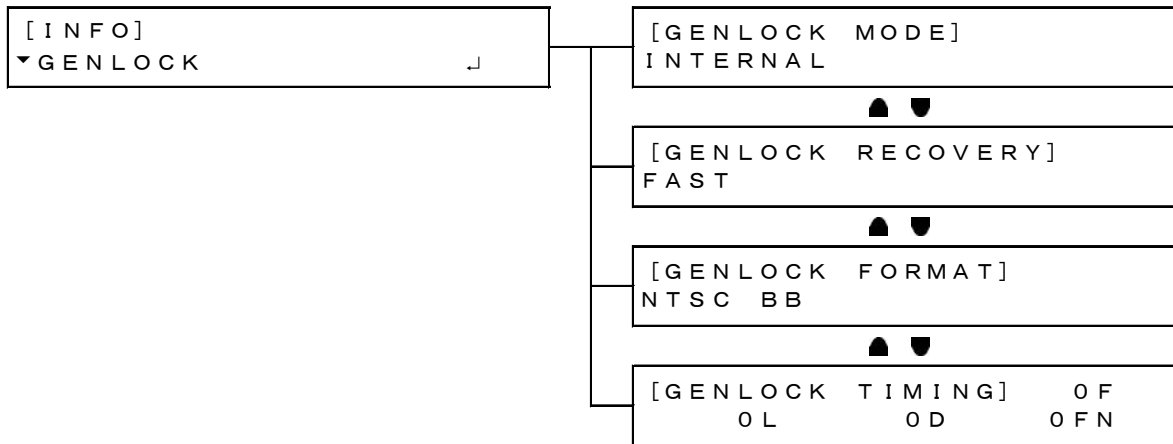

6. INFO MENU

The INFO item displays the settings entered in the LT 4610. This menu is only for viewing; you cannot change the settings.

To display the INFO menu, press MENU several times until the following menu appears.

```
[ INFO ]
▼ GENLOCK      ↵
```

On the INFO menu, you can use the ▲ and ▼ keys to switch after you enter a lower level menu.



6.1 Genlock Setting Display

The GENLOCK item displays the items set on the GENLOCK menu.

```
[ INFO ]
▼ GENLOCK      ↵
```

● GENLOCK MODE

The genlock mode selected in section 7.1, "Selecting the Genlock Mode," is displayed.

```
[ GENLOCK MODE ]
INTERNAL
```

● GENLOCK RECOVERY

When the genlock mode is not set to INTERNAL, the recovery mode selected in section 7.4.1, "Selecting the Recovery Mode," is displayed.

```
[ GENLOCK RECOVERY ]
FAST
```

●GENLOCK FORMAT

When the genlock mode is set to GL FMT-MANUAL, the genlock format selected in section 7.2, “Selecting the Genlock Format,” is displayed.

```
[ G E N L O C K   F O R M A T ]
N T S C   B B
```

●GENLOCK TIMING

When the genlock mode is set to GL or GPS (SER01), the timing selected in section 7.3, “Adjusting the Timing,” is displayed.

```
[ G E N L O C K   T I M I N G ]   O F
      O L           O D           O F N
```

6.2 Black Setting Display

The BLACK item displays the items set on the BLACK menu.

```
[ I N F O ]
◆ B L A C K                               ⌋
```

●BLK1 FORMAT

The Black 1 format selected in section 8.1, “Selecting the Black Format,” is displayed. The same holds true for BLK2 FORMAT to BLK6 FORMAT.

```
[ B L K 1   F O R M A T ]
N T S C   B B
```

●BLK1 TIMING

The Black 1 timing selected in section 8.2, “Adjusting the Timing,” is displayed. The same holds true for BLK2 TIMING to BLK6 TIMING.

```
[ B L K 1   T I M I N G ]
      O F           O L           O D
```

6.3 SDI Setting Display

The SDI item displays the items set on the SDI menu.

```
[ INFO ]
◆ SDI      ↵
```

●SDI1 FORMAT

The SDI1 format selected in section 9.1, “Setting the SDI Format,” is displayed.
The same hold true for SDI2 FORMAT.

```
[ SDI 1  FORMAT ]
1 0 8 0 : H D      / 5 9 . 9 4 I
```

●SDI1 TIMING

The SDI1 timing selected in section 9.2, “Adjusting the Timing,” is displayed.
The same hold true for SDI2 TIMING.

```
[ SDI 1  TIMING ]
           O L           O D
```

6.4 GPS Setting Display (SER01)

The GPS item displays the voltage supplied to the GPS antenna selected in section 14.7.2, “Selecting the Power Supply.”

```
[ INFO ]      [ GPS ANTENNA ]
▲ GPS        OFF
           ↵
```

6.5 12G Setting Display (SER02)

The 12G item displays the items set on the 12G OPTION menu.
For details, see the LT 4610SER02 instruction manual.

```
[ INFO ]
▲ 1 2 G      ↵
```

●12G 1 FORMAT

The SDI1 format is displayed.
The same applies to 12G 2 FORMAT, 12G 3 FORMAT, and 12G 4 FORMAT.

```
[ 1 2 G  1  FORMAT ]
2 1 6 0  1 2 G / 5 9 . 9 4 P
```

●12G 1 TIMING

The SDI1 timing is displayed.
The same applies to 12G 2 TIMING, 12G 3 TIMING, and 12G 4 TIMING.

```
[ 1 2 G  1  TIMING ]
           O L           O D
```

7. GENLOCK MENU

The GENLOCK item displays settings related to genlock operation.

To display the GENLOCK menu, press MENU several times until the following menu appears.

```
0. GENLOCK
▼MODE
```

7.1 Selecting the Genlock Mode

To select the genlock mode, follow the procedure below.

```
1. GENLOCK MODE
▶*INTERNAL
```

Procedure

GENLOCK → MODE

Parameter

INTERNAL:	The internal reference signal is used. (default setting)
GL FMT-AUTO:	An external reference signal received through GENLOCK IN on the rear panel is used. The LT 4610 automatically selects the format.
GL FMT-MANUAL:	An external reference signal received through GENLOCK IN on the rear panel is used. The format must be set manually.
GPS:	An external reference signal received through GPS IN on the rear panel is used. You can select this option when SER01 is installed.
10MHzCW:	An external reference signal received through CW IN/OUT on the rear panel is used. You can select this option when SER01 is installed.

7.2 Selecting the Genlock Format

When the genlock mode is set to GL FMT-MANUAL, to select the genlock format, follow the procedure below. To select items use the ▲, ▼, ◀, and ▶ keys.

The genlock formats are expressed in terms of the total number of lines, not the number of effective lines.

```
1. GENLOCK NTSC
▼ ▶ * NTSC BB
```

Procedure

GENLOCK → FORMAT

Parameter

NTSC:	NTSC BB (default setting) / NTSC BB+REF / NTSC BB+ID / NTSC BB+REF+ID
PAL:	PAL BB / PAL BB+REF
COMPONENT:	525/59.94I / 525/59.94P / 625/50I / 625/50P
1125:HD:	1125/60I / 1125/59.94I / 1125/50I / 1125/30P / 1125/29.97P / 1125/25P / 1125/24P / 1125/23.38P / 1125/24PsF / 1125/23.98PsF
750:HD:	750/60P / 750/59.94P / 750/50P / 750/30P / 750/29.97P / 750/25P / 750/24P / 750/23.98P

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

7.3 Adjusting the Timing

Under GENLOCK→TIMING, you can collectively adjust the timing of the output signals (ANALOG BLACK, SDI, AES/EBU, SILENCE, WCLK) relative to the reference signal. (You can also adjust them separately.)

This menu appears when the genlock mode is set to GL or GPS (SER01).

```
0. GENLOCK
◆ TIMING
```

7.3.1 Adjusting the Timing (Frame)

To adjust the output signals relative to the reference signal at the frame level, follow the procedure below.

This menu is displayed in the following situations.

- When the genlock mode is set to GL FMT-AUTO and the format of the signal applied to GENLOCK IN on the rear panel is NTSC or PAL
- When the genlock mode is set to GL FMT-MANUAL and the format selected in section 7.2, "Selecting the Genlock Format," is NTSC or PAL
- When the genlock mode is set to GPS and the Black 1 format selected in section 8.1, "Selecting the Black Format," is NTSC or PAL

```
2. GENLOCK TIMING F
  0 FRAME
```

Procedure

 GENLOCK → TIMING → FRAME

Parameter

 NTSC: ±5 (default value: 0)

 PAL: ±2 (default value: 0)

7.3.2 Adjusting the Timing (Line)

To adjust the output signals relative to the reference signal at the line level, follow the procedure below.

The variable range varies depending on the format.

```
2. GENLOCK TIMING V
  0 LINE
```

Procedure

 GENLOCK → TIMING → VERTICAL

Parameter

 ±1125 (default value: 0)

7.3.3 Adjusting the Timing (Dot)

To adjust the output signals relative to the reference signal at the dot level, follow the procedure below. To the right of DOT, the value obtained by converting dots into time is displayed.

The variable range varies depending on the format.

```
2. GENLOCK TIMING H
  0 DOT 0.0000 μs
```

Procedure

 GENLOCK → TIMING → HORIZONTAL

Parameter

 ±432 (default value: 0)

7.3.4 Finely Adjusting the Timing

To finely adjust the output signals relative to the reference signal, follow the procedure below.

One step is approximately 0.5 ns.

2. GENLOCK TIMING FN FINE: <u>0</u>
--

Procedure

GENLOCK → TIMING → FINE

Parameter

±100 (default value: 0)

7.4 Setting the Recovery Operation

Under GENLOCK→RECOVERY, you can set the recovery operation that takes place when the reference signal is lost during genlock operation.

This menu appears when the genlock mode is not set to INTERNAL.

```
1. GENLOCK RECOVERY
  ▼MODE                ⌋
```

7.4.1 Selecting the Recovery Mode

To select the relock operation to perform when the reference signal recovers after it is lost during genlock operation, follow the procedure below.

```
2. RECOVERY MODE
  ■AUTO   □MANUAL
```

Procedure

GENLOCK → RECOVERY → MODE

Parameter

AUTO: The LT 4610 quickly relocks onto the reference signal. (default setting)
 MANUAL: Stay-in-sync operation is held.

7.4.2 Selecting the Auto Setting

To select the relock operation to perform when the recovery mode is set to AUTO, follow the procedure below.

```
2. AUTO SETTING
  ▶*FAST
```

Procedure

GENLOCK → RECOVERY → AUTO SETTING

Parameter

IMMEDIATE: The LT 4610 immediately relocks onto the reference signal.
 FAST: The LT 4610 quickly relocks onto the reference signal. (default setting)
 SLOW: The LT 4610 slowly relocks onto the reference signal.

7.4.3 Selecting the Manual Setting

To select the relock operation to perform when the recovery mode is set to MANUAL, follow the procedure below.

```
2. MANUAL SETTING
▶ * IMMEDIATE
```

Procedure

GENLOCK → RECOVERY → MANUAL SETTING

Parameter

IMMEDIATE: The LT 4610 immediately relocks onto the reference signal. (default setting)

FAST: The LT 4610 quickly relocks onto the reference signal.

SLOW: The LT 4610 slowly relocks onto the reference signal.

7.4.4 Setting the Relock

To manually relock when the reference signal recovers after it is lost during genlock operation, select OK by following the procedure below. This setting is used when RECOVERY MODE is set to MANUAL.

```
2. GENLOCK RESET
  □ OK          ■ CANCEL
```

Procedure

GENLOCK → RECOVERY → GENLOCK RESET

7.5 Setting the Genlock Log

Under GENLOCK→LOG, you can set the genlock log.

The genlock log automatically records the changes in the genlock state in chronological order.

```
0. GENLOCK
  ^ LOG
```

7.5.1 Viewing the Log

To view the genlock log, follow the procedure below.

Press ▲ to view newer log entries, ▼ to view older log entries, and ENTER to view the details of 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 selected in section 14.5.1, “Setting the Date and Time.”

The genlock log is not cleared when the settings are initialized but is cleared when the power is turned off.

```
2. LOG LIST
00' 16/02/01 12:34:56
2016/02/01 12:34:56
00: MODE [INTERNAL]
```

Procedure

GENLOCK → LOG → LIST

7.5.2 Copying the Log to USB

To copy the genlock log in text format from the LT 4610 to a USB memory device, follow the procedure below.

This setting appears when a USB memory device is connected.

```
2. COPY LOG INT→USB
  ■ OK          □ CANCEL
```

Procedure

GENLOCK → LOG → COPY INT→USB

• USB Memory Device File Structure

The genlock log is copied to the LOG folder in the USB memory device.

The date and time of the file will be those selected in section 14.5.1, “Setting the Date and Time.”

```

├── USB memory device
│   └── LT4610_USER
│       └── LOG
│           └── YYYYMMDDhhmmss.txt
```

● **Example of YYYYMMDDhhmmss.txt**

```
00:2016/04/07 13:33:01 MODE[INTERNAL]
01:2016/04/07 13:33:01 FORMAT[NTSC BB]
02:2016/04/07 13:33:01 EPOCH[SMPTE]
03:2016/04/07 13:33:01 LOCK(NO SIGNAL)
04:2016/04/07 13:33:02 LOCK(INTERNAL)
05:2016/04/07 13:33:23 MODE[GENLOCK-FMT-AUTO]
06:2016/04/07 13:33:23 LOCK(NO SIGNAL)
07:2016/04/07 13:33:37 LOCK(TRACKING)
08:2016/04/07 13:33:46 LOCK(EXT.)[1125/59.94I]
09:2016/04/07 13:34:13 LOCK(STAY IN SYNC)
10:2016/04/07 13:34:28 LOCK(TRACKING)
11:2016/04/07 13:34:51 LOCK(EXT.)[1125/59.94I]
```

7.5.3 Clearing the Log

To clear the genlock log, select OK by following the procedure below.

```
2. DELETE LOG
   ■ OK          □ CANCEL
```

Procedure

GENLOCK → LOG → DELETE

8. BLACK MENU

The BLACK menu is used to specify settings related to black output.

To display the BLACK menu, press MENU several times until the following menu appears.

```
0. BLACK
  ▾ BLK 1
```

On the BLACK menu, you can set Black 1 to 6 separately. The procedure below is for Black 1, but the same procedure can be applied to Black 2 to 6.

8.1 Selecting the Black Format

To select the black signal format, follow the procedure below. To select items use the ▲, ▼, ◀, and ▶ keys.

The black formats are expressed in terms of the total number of lines, not the number of effective lines.

```
2. BLK 1 NTSC
  ▾ ▶ * NTSC BB
```

When the genlock mode is set to GPS (SER01) or 10MHzCW (SER01), for Black 1 only, the following message will appear if the value is changed. If OK is selected, the LT 4610 unlocks from the signal if it is locked and switches to tracking operation.

```
CHANGE BLK 1 FORMAT ?
  ■ OK          □ CANCEL
```

Procedure

BLACK → BLK1 → FORMAT

Parameter

NTSC:	NTSC BB (default setting) / 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
PAL:	PAL BB / PAL BB+REF
COMPONENT:	525/59.94I / 525/59.94P / 625/50I / 625/50P
1125:HD:	1125/60I / 1125/59.94I / 1125/50I / 1125/30P / 1125/29.97P / 1125/25P / 1125/24P / 1125/23.38P / 1125/24PsF / 1125/23.98PsF
750:HD:	750/60P / 750/59.94P / 750/50P / 750/30P / 750/29.97P / 750/25P / 750/24P / 750/23.98P

* REF and R represent the field reference pulse, ID represents the field ID, and S represents setup.

* The default setting is NTSC BB when FORMAT SETTING is NTSC and PAL BB when FORMAT SETTING is PAL.

8.2 Adjusting the Timing

Under BLACK→BLK1→TIMING, you can adjust the black signal relative to the reference signal.

```
1. BLACK BLK1
  ^ TIMING      ⌵
```

8.2.1 Adjusting the Timing (Frame)

When the black format is set to NTSC or PAL, to adjust the black signal relative to the reference signal at the frame level, follow the procedure below.

```
3. BLK1 TIMING F
   0 FRAME
```

Procedure

BLACK → BLK1 → TIMING → FRAME

Parameter

NTSC: ±5 (default value: 0)
 PAL: ±2 (default value: 0)

8.2.2 Adjusting the Timing (Line)

To adjust the black signal relative to the reference signal at the line level, follow the procedure below.

The variable range varies depending on the format.

```
3. BLK1 TIMING V
   0 LINE
```

Procedure

BLACK → BLK1 → TIMING → VERTICAL

Parameter

±1124 (default value: 0)

8.2.3 Adjusting the Timing (Dot)

To adjust the black signal relative to the reference signal at the dot level, follow the procedure below. To the right of DOT, the value obtained by converting dots into time is displayed.

The variable range varies depending on the format.

```
3. BLK1 TIMING H
   0 DOT        0.0000 μs
```

Procedure

BLACK → BLK1 → TIMING → HORIZONTAL

Parameter

±4124 (default value: 0)

8.3 Turing the Time Code On and Off (SER01)

When the black format is NTSC or PAL, to turn on or off the time code insertion selected in section 14.6.1, "Selecting the Time Code," follow the procedure below.

Black 2 to 6 can be turned on or off when the format is the same type as Black 1 (NTSC or PAL).

2. BLK1 VITC
<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF

Procedure

BLACK → BLK1 → VITC

Parameter

ON / OFF (default setting)

8.4 Common Black Signal Settings

You can synchronize the Black 2 settings to the Black 1 settings by following the procedure below to select ON. If you synchronize the settings, you cannot set the format or timing of Black 2 separately.

Likewise, Black 3 to 6 settings can also be synchronized to the Black 1 settings.

2. BLK2 EQUAL TO BLK1
<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF

Procedure

BLACK → BLK2 → EQUAL TO BLK1

Parameter

ON / OFF (default setting)

9. SDI MENU

The SDI menu is used to specify settings related to SDI output.

To display the SDI menu, press MENU several times until the following menu appears.

```
0. SDI
  ▾ SDI1
```

On the SDI menu, you can set SDI1 and SDI2 separately. The procedure below is for SDI1, but the same procedure can be applied to SDI2.

Note that for 3G-B or HD(DL), SDI2 cannot be set because only one output is available.

9.1 Setting the SDI Format

Under SDI→SDI1→FORMAT, you can set the SDI signal format.

For the available combinations of IMAGE, STRUCTURE, and RATE, see section 2.3.2, “SDI Formats and Standards.”

```
1. SDI1
  ▾ FORMAT
```

9.1.1 Selecting the Image

To select the SDI signal image, follow the procedure below.

For SDI2, you cannot select 1920x1080:3G-B-DL or 1920x1080:HD-DL.

Changing this setting also changes the STRUCTURE And RATE settings.

```
3. SDI1 IMAGE
  ◀ * 1920 x 1080 : HD
```

Procedure

SDI → SDI1 → FORMAT → IMAGE

Parameter

720x487:SD / 720x576:SD / 1280x720:HD / 1920x1080:HD (default setting) /
1280x720:3G-A / 1920x1080:3G-A / 1920x1080:3G-B-DL / 1920x1080:HD-DL

9.1.2 Selecting the Color System

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

Changing this setting also changes the RATE settings.

```
3. SDI1 STRUCTURE
  ◀ * 422 (YCbCr) 10-bit
```

Procedure

SDI → SDI1 → FORMAT → STRUCTURE

Parameter

422(YCbCr)10-bit (default setting) / 422(YCbCr)12-bit / 444(YCbCr)10-bit /
444 (YCbCr) 12-bit / 444 (RGB) 10-bit / 444 (RGB) 12-bit

9.1.3 Selecting the Frame Frequency

To select the SDI signal frame (field) frequency, follow the procedure below.

```
3. SDI1 RATE
◀ * 59.94I
```

Procedure

SDI → SDI1 → FORMAT → RATE

Parameter

60I / 59.94I (default setting) / 50I / 60P / 59.94P / 50P / 30P / 29.97P / 25P / 24P /
23.98P / 30PsF / 29.97PsF / 25PsF / 24PsF / 23.98PsF

- * The default setting is 59.94I when FORMAT SETTING is NTSC and 50I when FORMAT SETTING is PAL.

9.2 Adjusting the Timing

Under SDI→SDI1→TIMING, you can adjust the SDI signal relative to the reference signal.

```
1. SDI1
◆ TIMING
```

9.2.1 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.

```
3. SDI1 OH TIMING
  ■ SERIAL □ LEGACY
```

Procedure

SDI → SDI1 → TIMING → OH TIMING

Parameter

SERIAL: Signals are output at the timing defined in the signal standard. (default setting)

LEGACY: Signals are output at the same timing as LEADER's conventional signal generators.

9.2.2 Adjusting the Timing (Line)

To adjust the SDI signal relative to the reference signal at the line level, follow the procedure below.

The variable range varies depending on the format.

```
3. SDI1 TIMING V
  0 LINE
```

Procedure

SDI → SDI1 → TIMING → VERTICAL

Parameter

±1124 (default value: 0)

9.2.3 Adjusting the Timing (Dot)

To adjust the SDI signal relative to the reference signal at the dot level, follow the procedure below. To the right of DOT, the value obtained by converting dots into time is displayed.

The variable range varies depending on the format.

3 . S D I 1 T I M I N G H
<u>0</u> D O T 0 . 0 0 0 0 μ s

Procedure

SDI → SDI1 → TIMING → HORIZONTAL

Parameter

±4124 (default value: 0)

9.3 Selecting the Pattern

To select the output pattern, follow the procedure below. To select items use the ▲, ▼, ◀, ▶ and ► keys.



Procedure

SDI → SDI1 → PATTERN

Parameter

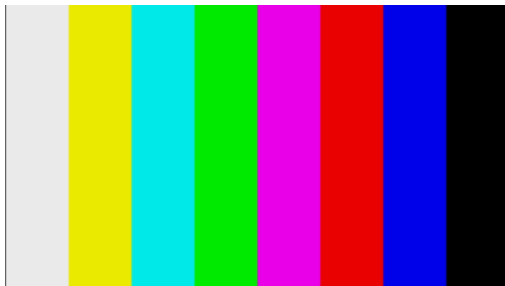
COLOR BAR: 100% (default setting) / 75% / MULTI 100% / MULTI 75% / MULTI (+) / SMPTE / EBU / BBC
 MONITOR: FLAT FIELD 100% / FLAT FIELD 0% / RED FIELD 100% / GREEN FILED 100% / BLUE FIELD 100%
 SDI: CHECK FIELD

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

Pattern		SDI format		
		Other than those on the right	720x487:SD	720x576:SD
COLOR BAR	100%	Y	Y	Y
	75%	Y	Y	N
	MULTI 100%	Y	N	N
	MULTI 75%	Y	N	N
	MULTI (+)	Y	N	N
	SMPTE	N	Y	N
	EBU	N	N	Y
	BBC	N	N	Y
MONITOR	-	Y	Y	Y
SDI	-	Y	Y	Y

(Y: Can be selected N: Cannot be selected)

100%



75%



9. SDI MENU

MULTI 100%



MULTI 75%



MULTI (+)



SMPTE



EBU



BBC

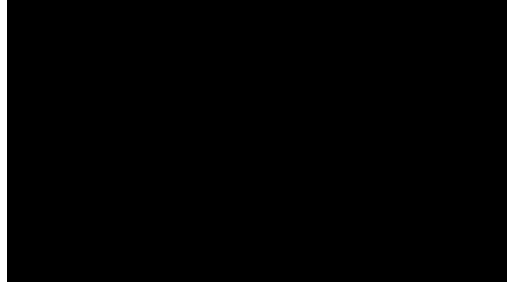


9. SDI MENU

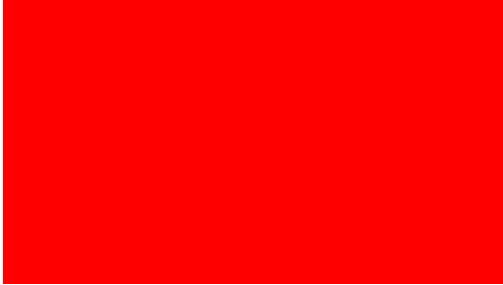
FLAT FIELD 100%



FLAT FIELD 0%



RED FIELD 100%



GREEN FIELD 100%



BLUE FIELD 100%



CHECK FIELD



9.4 Turning YCbCr On and Off

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

This is invalid when the pattern is check field.



Procedure

SDI → SDI1 → VIDEO → COMPONENT

Parameter

ON (default setting) / OFF

9.5 Turning Safety Area Markers On and Off

To turn on and off the 90% marker, 80% marker, and 4:3 marker separately, follow the procedure below.

If the 4:3 marker is off, the 90% marker and 80% marker are displayed at the outer frame of the picture. If it is on, the 4:3 marker is assumed to be 100%.

For SD, you cannot set the 4:3 marker. Moreover, this is invalid when the pattern is check field or when LIPSYNC on the ETC menu is set to ON.

```

3. SDI 1 SAFETY AREA
  *  90%  80%  4:3
  
```

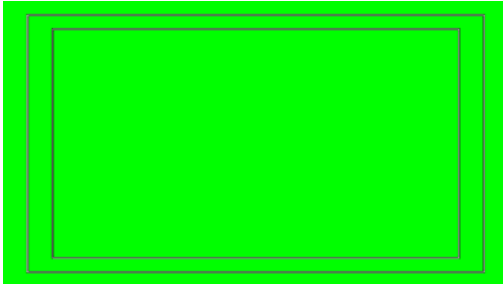
Procedure

SDI → SDI1 → VIDEO → SAFETY AREA

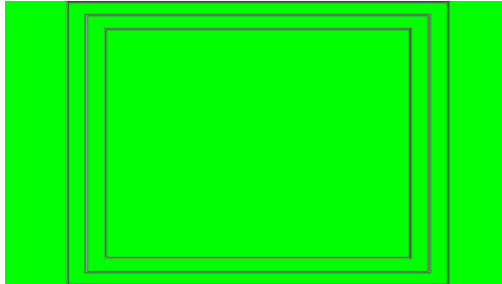
Parameter

ON / OFF (default setting)

90%, 80%



90%, 80%, 4:3



9.6 Configuring the Pattern Scroll Feature

Under SDI→SDI1→VIDEO→SCROLL, you can configure pattern scrolling. This is invalid when the pattern is check field.

```

2. SDI 1 VIDEO
  ◆ SCROLL
  
```

9.6.1 Turning Scrolling On and Off

To turn scrolling on and off, follow the procedure shown below.

```

4. SCROLL
    ON  OFF
  
```

Procedure

SDI → SDI1 → VIDEO → SCROLL → ON/OFF

Parameter

ON / OFF (default setting)

9.6.2 Setting the Vertical Scroll Speed

To select the pattern scroll speed and direction, follow the procedure below.
The unit is line/field (frame). Setting a positive value scrolls upward and a negative value downward.

```
4. SCROLL V-SPEED
   0 [LINE]
```

Procedure

SDI → SDI1 → VIDEO → SCROLL → V-SPEED

Parameter

±256 (default value: 0)

9.6.3 Setting the Horizontal Scroll Speed

To select the pattern scroll speed and direction, follow the procedure below.
The unit is dot/field (frame). Setting a positive value scrolls to the right and a negative value to the left. You can set the value in 2-dot steps.

```
4. SCROLL H-SPEED
   0 [DOT]
```

Procedure

SDI → SDI1 → VIDEO → SCROLL → H-SPEED

Parameter

±256 (default value: 0)

9.7 Setting the Pattern Change

Under SDI→SDI1→VIDEO→PATTERN CHANGE, you can set the pattern change.
This is invalid when the pattern is check field.

```
2. SDI1 VIDEO
  ◆ PATTERN CHANGE  J
```

9.7.1 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 color bar patterns for the current format.

```
4. PATTERN CHANGE
   □ ON          ■ OFF
```

Procedure

SDI → SDI1 → VIDEO → PATTERN CHANGE → ON/OFF

Parameter

ON / OFF (default setting)

9.7.2 Setting the Pattern Change Speed

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

```
4. PATTERN CHG SPEED
      +1 [SEC]
```

Procedure

SDI → SDI1 → VIDEO → PATTERN CHANGE → SPEED

Parameter

+1 to +255 (default value: +1)

9.8 Setting ID Characters

Under SDI→SDI1→VIDEO→ID CHARACTER, set the ID characters.

A character string that you created on the LT 4610 can be displayed in a pattern.

This is invalid when the pattern is check field or when LIPSYNC on the ETC menu is set to ON.

```
2. SDI1 VIDEO
  ◆ ID CHARACTER      」
```



9.8.1 Turning ID Characters On and Off

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

```
4. ID CHARACTER
   □ ON      ■ OFF
```

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → ON/OFF

Parameter

ON / OFF (default setting)

9.8.2 Recalling ID Characters

To recall ID characters that have been saved in the LT 4610 using the STORE menu, follow the procedure below.

```
4. ID RECALL
▶ LT4610. id      INT_1
```

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → RECALL

Parameter

INT_1 to INT_4

9.8.3 Creating ID Characters

To create ID characters, follow the procedure below. You can enter up to 20 characters.

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.

```
4. ID SET
LT4610◀
```

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → SET

Parameter

◀ !"# \$%&' () *+, -./ 0123456789 : ; <=>?@
 ABCDEFGHIJKLMNOPQRSTUVWXYZ [¥] ^ _ → ←
 (Default setting: LT4610 ◀)

ID SET = LT4610 ◀



ID SET = LT4610



9.8.4 Setting the Vertical Position of ID Characters

To set the vertical position of the ID characters, follow the procedure below.

The value represents the coordinate at the top of the ID characters. The top of the pattern is 0.

```
4. ID V-POS I
      0 [LINE]
```

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → V-POS I

Parameter

0 to 1079 (default value: 0)

9.8.5 Setting the Horizontal Position of ID Characters

To set the horizontal position of the ID characters, follow the procedure below.

The value represents the coordinate at the left end of the ID characters. The left end of the pattern is 0.

```
4. ID H-POS I
      0 [DOT]
```

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → H-POS I

Parameter

0 to 1919 (default value: 0)

9.8.6 Selecting the Size of ID Characters

To set the size of ID characters, follow the procedure below.

The size of x1 is 32×32 dot/character.

```
4. ID SIZE
  ■ x 1   □ x 2   □ x 4   □ x 8
```

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → SIZE

Parameter

x1 (default setting) / x2 / x4 / x8

9.8.7 Selecting the Level of ID Characters

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

4. I D L E V E L <input checked="" type="checkbox"/> 1 0 0 % <input type="checkbox"/> 7 5 %
--

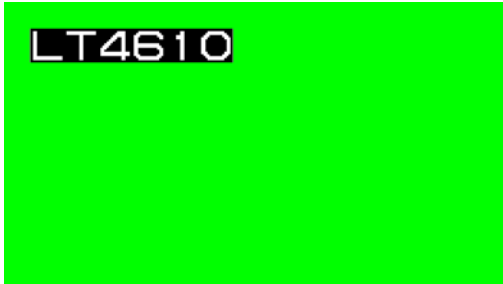
Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → LEVEL

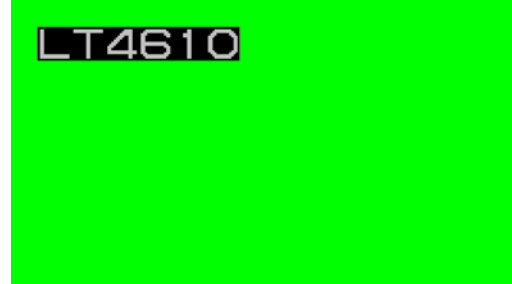
Parameter

100% (default setting) / 75%

ID LEVEL = 100%



ID LEVEL = 75%



9.8.8 Turning ID Character Blinking On and Off

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

5. I D B L I N K <input type="checkbox"/> O N <input checked="" type="checkbox"/> O F F
--

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → BLINK → ON/OFF

Parameter

ON / OFF (default setting)

9.8.9 Setting the ID Character On-Time

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

5. I D B L I N K O N T I M E <u>1</u> [S E C]
--

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → BLINK → ON TIME

Parameter

1 to 9 (default value: 1)

9.8.10 Setting the ID Character Off-Time

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

```
5. I D B L I N K   O F F   T I M E
      1 [ S E C ]
```

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → BLINK → OFF TIME

Parameter

1 to 9 (default value: 1)

9.8.11 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.

```
5. I D S C R O L L
    O N       O F F
```

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → SCROLL → ON/OFF

Parameter

ON / OFF (default setting)

9.8.12 Setting ID Character Scroll Speed

To set the ID character scroll speed and direction, follow the procedure below.
The unit is dot/field (frame). Setting a positive value scrolls to the right and a negative value to the left. You can set the value in 2-dot steps.

```
5. I D S C R O L L   S P E E D
      0 [ D O T ]
```

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → SCROLL → SPEED

Parameter

±256 (default value: 0)

9.8.13 Saving ID Characters

To store up to four sets of ID characters that you create on the SET menu, follow the procedure below.

Only the characters are saved. Position, size, and the like are not saved.

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → STORE

To save ID characters, follow the procedure below.

1. Enter a file name.

Select STORE. The file name input menu appears. This is the name assigned to the ID characters and is also the file name when the ID characters are copied to a USB memory device.

The characters that you can use are as follows. Up to eight characters can be entered.

▲0123456789ABCDEFGHIJKLMNPOQRSTUVWXYZ_

Enter “▲” to clear characters that follow it. “▲” is not entered in the file name.

4. I D S T O R E L T 4 6 1 0 ◀

2. Select the save destination in the LT 4610.

Select from INT_1 to INT_4. If there are already ID characters stored at the destination, they are overwritten.

5. I D S T O R E ▶ N O D A T A I N T _ 1

3. Select the OK.

6. I D S T O R E ■ O K □ C A N C E L

9.8.14 Copying ID Characters to the LT 4610

To copy up to four sets of ID characters from a USB memory device to the LT 4610, follow the procedure below. This feature is useful when you want to use multiple LT 4610s with the same settings. (Copy the ID characters to the USB memory device in advance by using the COPY INT→USB menu.)

This setting appears when a USB memory device is connected.

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → COPY USB→INT

To copy ID characters, follow the procedure below.

1. Select the copy destination in the LT 4610.

Select from INT_1 to INT_4. If there are already ID characters stored in the LT 4610, they are overwritten.

```
4. ID COPY USB→INT
▶NO DATA          INT_1
```

2. Select the copy source in the USB memory device.

The id file in the ID folder of the USB memory device is displayed here.

```
5. ID COPY USB→INT
▶LT4610. id        1 / 1
```

3. Select the OK.

```
6. ID COPY USB→INT
   OK          CANCEL
```

• USB Memory Device File Structure

ID characters are copied from the ID folder of the USB memory device.

```
└─ USB memory device
   └─ LT4610_USER
      └─ ID
         └─ *****.id
```

9.8.15 Copying ID Characters to a USB Memory Device

To copy ID characters in id format (dedicated format) from the LT 4610 to a USB memory device, follow the procedure below. This feature is useful when you want to use multiple LT 4610s with the same settings. (Save the ID characters in the LT 4610 in advance by using the STORE menu.)

This setting appears when a USB memory device is connected.

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → COPY INT→USB

To copy ID characters, follow the procedure below.

1. Select the copy source in the LT 4610.

Select ALL or from INT_1 to INT_4.

```
4. I D   C O P Y   I N T → U S B
   ▶ A L L
```

2. Select the OK.

If there are already ID characters with the same file names stored in the USB memory device, they will be overwritten. If ALL is selected and ID characters with the same file name are saved in INT_1 to INT_4, only a single set with the largest number (INT_*) is saved.

```
5. I D   C O P Y   I N T → U S B
   ■ O K           □ C A N C E L
```

● **USB Memory Device File Structure**

ID characters are copied to the ID folder of the USB memory device. (See section 9.8.14, “Copying ID Characters to the LT 4610.”)

The date and time of the file will be those selected in section 14.5.1, “Setting the Date and Time.”

● **“*****.id” example**

```
LT4610
```

9.8.16 Clearing ID Characters

To clear ID characters that have been saved in the LT 4610 using the STORE menu, follow the procedure below.

Procedure

SDI → SDI1 → VIDEO → ID CHARACTER → DELETE

To clear ID characters, follow the procedure below.

1. Select the ID characters you want to clear.

Select ALL or from INT_1 to INT_4.

```
4. I D   D E L E T E
   ▶ A L L
```

2. Select the OK.

```
5. I D   D E L E T E
   ■ O K           □ C A N C E L
```

9.9 Setting Logos

Under SDI→SDI1→VIDEO→LOGO, you can set the logo.

A 4-level monochrome image that you created on your PC can be displayed in a pattern. This is invalid when the pattern is check field or when LIPSYNC on the ETC menu is set to ON.



9.9.1 Display procedure

This section describes the procedure from creating a logo to displaying it in a pattern. In this example, the logo file name is "LEADER.bmp."

1. Create a logo on your PC.

Create an image in bmp format according to the following conditions.

File name: Up to eight characters (excluding the extension) consisting of alphanumeric characters or underscore.

File format: 24 bits, 256 colors or 16 colors

File size: Up to 320 dots × 240 lines (width × height)

LEADER.bmp



2. Using the accompanying Logo App, convert it to lg format.

The image is converted into 4-level monochrome data.

[See also] Chapter 15, "LOGO APP"

LEADER.lg

**3. Place the converted logo in the USB memory device.**

USB memory device

└─ LT4610_USER

└─ LOGO

└─ LEADER.lg

4. On the COPY USB→INT menu, import the logo into the LT 4610.

In this example, the file is imported into INT_1 of the LT 4610.

[See also] Section 9.9.8, "Copying Logos to the LT 4610"

```
4. LOGO COPY USB→INT
  ▶NO DATA          INT_1
```



```
5. LOGO COPY USB→INT
  ▶LEADER. lg       1 / 1
```

5. On the SELECT menu, select the logo.

[See also] Section 9.9.3, "Selecting a Logo"

```
4. LOGO SELECT
  ▶*LEADER. lg      INT_1
```

6. On the ON/OFF menu, select ON.

[See also] Section 9.9.2, "Turning the Logo On and Off"

```
4. LOGO
   ■ON          □OFF
```


9.9.2 Turning the Logo On and Off

To turn the logo on and off, follow the procedure below.

```
4. LOGO
   □ ON      ■ OFF
```

Procedure

SDI → SDI1 → VIDEO → LOGO → ON/OFF

Parameter

ON / OFF (default setting)

9.9.3 Selecting a Logo

To select the logo to be displayed, follow the procedure below.

A logo must be copied to INT_1 to INT_4 in advance using the COPY USB→INT menu.

```
4. LOGO SELECT
   ▶ * LEADER. I g      INT_1
```

Procedure

SDI → SDI1 → VIDEO → LOGO → SELECT

Parameter

INT_1 to INT_4 (default setting: INT_1)

9.9.4 Setting the Vertical Logo Position

To set the vertical logo position, follow the procedure below.

The value represents the coordinate at the top of the logo. The top of the pattern is 0.

```
4. LOGO V-POS I
      0 [LINE]
```

Procedure

SDI → SDI1 → VIDEO → LOGO → V-POS I

Parameter

0 to 1079 (default value: 0)

9.9.5 Setting the Horizontal Logo Position

To set the horizontal logo position, follow the procedure below.

The value represents the coordinate at the left end of the logo. The left end of the pattern is 0.

```
4. LOGO H-POS I
      0 [DOT]
```

Procedure

SDI → SDI1 → VIDEO → LOGO → H-POS I

Parameter

0 to 1919 (default value: 0)

9.9.6 Setting the Logo Level

To set the logo intensity level, follow the procedure below.

Logos are made of 4-level monochrome data (LEVEL0, LEVEL1, LEVEL2, LEVEL3). You can set the display intensity level for each level.

When LOGO BACKGND is set to ON, LEVEL0 is invalid.

```
5. LOGO LEVEL 0
      100h ( 0%)
```

```
5. LOGO LEVEL 1
      590h ( 33%)
```

```
5. LOGO LEVEL 2
      A20h ( 66%)
```

```
5. LOGO LEVEL 3
      EB0h (100%)
```

Procedure

SDI → SDI1 → VIDEO → LOGO → LEVEL → LEVEL0 / LEVEL1 / LEVEL2 / LEVEL3

Parameter

100h(0%) to EB0h(100%)

(LEVEL0 default value: 100h(0%), LEVEL1 default value: 590h(33%),

LEVEL2 default value: A20h(66%), LEVEL3 default value: EB0h(100%))

9.9.7 Setting the Logo Transparency

To select whether to make the area set to LEVEL0 transparent, follow the procedure below.

**Procedure**

SDI → SDI1 → VIDEO → LOGO → BACKGND

Parameter

ON: The area is made transparent.

OFF: The area is not made transparent. (default setting)

LOGO BACKGND = ON



LOGO BACKGND = OFF



9.9.8 Copying Logos to the LT 4610

To copy up to four logos from a USB memory device to the LT 4610, follow the procedure below. (Copy the logos to the USB memory device or place the logos created on your PC in advance by using the COPY INT→USB menu.)

This setting appears when a USB memory device is connected.

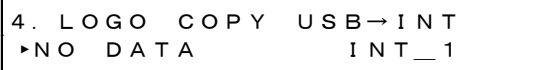
Procedure

SDI → SDI1 → VIDEO → LOGO → COPY USB→INT

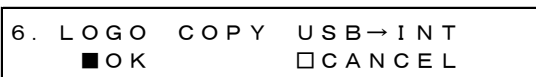
To copy logos, follow the procedure below.

1. Select the copy destination in the LT 4610.

Select from INT_1 to INT_4. If there are already logos stored at the destination, they are overwritten.

**2. Select the copy source in the USB memory device.**

The lg file in the LOGO folder of the USB memory device is displayed here.

**3. Select the OK.**

● USB Memory Device File Structure

Logos are copied from the LOGO folder of the USB memory device.

```

└─ USB memory device
  └─ LT4610_USER
    └─ LOGO
      └─ *****.lg
  
```

9.9.9 Copying Logos to a USB Memory Device

To copy logos in lg format (dedicated format) from the LT 4610 to a USB memory device, follow the procedure below. Copy a logo to the LT 4610 in advance using the COPY USB→INT menu.

This setting appears when a USB memory device is connected.

Procedure

SDI → SDI1 → VIDEO → LOGO → COPY INT→USB

To copy logos, follow the procedure below.

1. Select the copy source in the LT 4610.

Select ALL or from INT_1 to INT_4.

```

4. LOGO COPY INT→USB
  ▶ ALL
  
```

2. Select the OK.

If there are already logos with the same file names stored in the USB memory device, they will be overwritten. If ALL is selected and logos with the same file name are saved in INT_1 to INT_4, only a single set with the largest number (INT_*) is saved.

```

5. LOGO COPY INT→USB
   █ OK          □ CANCEL
  
```

● USB Memory Device File Structure

Logos are copied to the LOGO folder of the USB memory device. (See section 9.9.8, “Copying Logos to the LT 4610.”)

The date and time of the file will be those selected in section 14.5.1, “Setting the Date and Time.”

9.9.10 Clearing a Logo

To clear the logos that you copied to the LT 4610 using the COPY USB→INT menu, follow the procedure below.


Procedure

SDI → SDI1 → VIDEO → LOGO → DELETE

To clear logos, follow the procedure below.

1. Select the logos you want to clear.

Select ALL or from INT_1 to INT_4.



4. LOGO DELETE
▶ ALL

2. Select the OK.

5. LOGO DELETE
■ OK □ CANCEL

9.10 Configuring Embedded Audio

16 (HD(DL)) audio channels (32 channels for 3G-B) can be embedded in an SDI signal. (Embedding is not possible when the pattern is a check field.)

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.

SDI signal	Link A (HD(DL), 3G-B only)	Group 1	1ch
			2ch (can also be set equal to Ch1)
			3ch (can also be set equal to Ch1)
			4ch (can also be set equal to Ch1)
		Group 2 (can also be set equal to group 1)	5ch
			6ch (can also be set equal to Ch5)
			7ch (can also be set equal to Ch5)
			8ch (can also be set equal to Ch5)
		Group 3 (can also be set equal to group 1)	9ch
			10ch (can also be set equal to Ch9)
			11ch (can also be set equal to Ch9)
			12ch (can also be set equal to Ch9)
	Group 4 (can also be set equal to group 3)	13ch	
		14ch (can also be set equal to Ch13)	
		15ch (can also be set equal to Ch13)	
		16ch (can also be set equal to Ch13)	
Link B (HD(DL), 3G-B only) (can also be set to link A)	Same as link A		

9.10.1 Turning the Audio On and Off

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



Procedure

SDI → SDI1 → AUDIO (→ LINK-A / LINK-B) → ON/OFF

Parameter

ON (default setting) / OFF

9.10.2 Selecting the Resolution

To select the resolution for the selected group, follow the procedure below.

If the output signal is 525/59.94I, not all groups can be set to 24BIT. Up to three groups can be set to 24BIT.

4. G 1 R E S O L U T I O N <input checked="" type="checkbox"/> 2 0 B I T <input type="checkbox"/> 2 4 B I T
--

Procedure

SDI → SDI1 → AUDIO (→ LINK-A / LINK-B) → G1 / G2 / G3 / G4 → RESOLUTION

Parameter

20BIT (default setting) / 24BIT

9.10.3 Selecting the Pre-emphasis Mode

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

4. G 1 E M P H A S I S <input type="checkbox"/> 5 0 / 1 5 <input type="checkbox"/> C C I T T <input checked="" type="checkbox"/> O F F

Procedure

SDI → SDI1 → AUDIO (→ LINK-A / LINK-B) → G1 / G2 / G3 / G4 → EMPHASIS

Parameter

50/15 / CCITT / OFF (default setting)

9.10.4 Selecting the Frequency

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

5. G 1 / C H 1 F R E Q <input checked="" type="checkbox"/> * 1 k H z

Procedure

SDI → SDI1 → AUDIO (→ LINK-A / LINK-B)
 → G1 → CH1 / CH2 / CH3 / CH4 → FREQ
 → G2 → CH5 / CH6 / CH7 / CH8 → FREQ
 → G3 → CH9 / CH10 / CH11 / CH12 → FREQ
 → G4 → CH13 / CH14 / CH15 / CH16 → FREQ

Parameter

SILENCE / 400Hz / 800Hz / 1kHz (default setting)

9.10.5 Setting the Level

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

```
5. G 1 / CH 1  L E V E L
      - 2 0  [ d B F S ]
```

Procedure

SDI → SDI1 → AUDIO (→ LINK-A / LINK-B)
 → G1 → CH1 / CH2 / CH3 / CH4 → LEVEL
 → G2 → CH5 / CH6 / CH7 / CH8 → LEVEL
 → G3 → CH9 / CH10 / CH11 / CH12 → LEVEL
 → G4 → CH13 / CH14 / CH15 / CH16 → LEVEL

Parameter

-60 to 0 (default value: -20)

9.10.6 Setting Clicks

You can insert click sounds into the selected channel. Follow the procedure below to set the insertion interval to a value other than OFF.

This is invalid when LIPSYNC on the ETC menu is set to ON.

```
5. G 1 / CH 1  C L I C K
  ▶ * O F F
```

Procedure

SDI → SDI1 → AUDIO (→ LINK-A / LINK-B)
 → G1 → CH1 / CH2 / CH3 / CH4 → CLICK
 → G2 → CH5 / CH6 / CH7 / CH8 → CLICK
 → G3 → CH9 / CH10 / CH11 / CH12 → CLICK
 → G4 → CH13 / CH14 / CH15 / CH16 → CLICK

Parameter

OFF (default setting) / 1sec / 2sec / 4sec

9.10.7 Settings Shared by Links

If the output signal is HD(DL) or 3G-B, the link B settings can be linked to link A settings by following the procedure below to select ON. In this situation, link B cannot be set.

```
4. S D I 1  L - B  E Q U A L  L - A
      ■ O N          □ O F F
```

Procedure

SDI → SDI1 → AUDIO → LINK-B → EQUAL TO LINK-A

Parameter

ON / OFF (default setting)

9.10.8 Settings Shared by Groups

You can link the group 2 settings to the group 1 settings by following the procedure below to set G2 EQUAL TO G1 to ON. In this situation, group 2 cannot be set.

The same holds true for G3 EQUAL TO G1 and G4 EQUAL TO G3.

4. G 2 EQUAL TO G 1 <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	4. G 3 EQUAL TO G 1 <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF
4. G 4 EQUAL TO G 3 <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	

Procedure

SDI → SDI1 → AUDIO (→ LINK-A / LINK-B)

→ G2 → EQUAL TO G1

→ G3 → EQUAL TO G1

→ G4 → EQUAL TO G3

Parameter

ON / OFF (default setting)

9.10.9 Settings Shared by Channels

You can link the channel 2 setting to the channel 1 setting by following the procedure below to set G1/CH2 EQUAL CH1 to ON. In this situation, channel 2 cannot be set.

The same holds true for the other similar settings.

5. G 1 / CH 2 EQUAL CH 1 <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	5. G 2 / CH 6 EQUAL CH 5 <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF
5. G 3 / CH 10 EQUAL CH 9 <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	5. G 4 / CH 14 EQUAL CH 13 <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF

Procedure

SDI → SDI1 → AUDIO (→ LINK-A / LINK-B)

→ G1 → CH2 / CH3 / CH4 → EQUAL TO CH1

→ G2 → CH6 / CH7 / CH8 → EQUAL TO CH5

→ G3 → CH10 / CH11 / CH12 → EQUAL TO CH9

→ G4 → CH14 / CH15 / CH16 → EQUAL TO CH13

Parameter

ON / OFF (default setting)

9.11 Turning the Time Code On and Off (SER01)

To turn on or off the time code insertion selected in section 14.6.1, "Selecting the Time Code," follow the procedure below.

3. ANC ATC-LTC <input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF

Procedure

SDI → SDI1 → ANC → ATC-LTC ON/OFF

Parameter

ON / OFF (default setting)

9.12 Common SDI Signal Settings

You can link the SDI2 setting to the SDI1 setting by following the procedure below to select ON.

In this situation, SDI2 cannot be set.

2. SDI2 EQUAL TO SDI1 <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF
--

Procedure

SDI → SDI2 → EQUAL TO SDI1

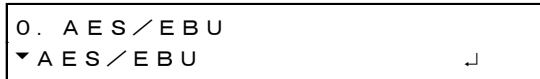
10. AES/EBU MENU

The AES/EBU menu is used to specify settings related to AES/EBU output and silence output. To display the AES/EBU menu, press MENU several times until the following menu appears.



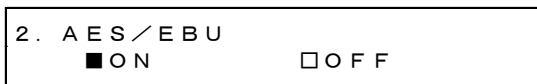
10.1 Setting the AES/EBU Output

Under AES/EBU→AES/EBU, you can set the AES/EBU output.



10.1.1 Turning the Audio Output On and Off

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



Procedure

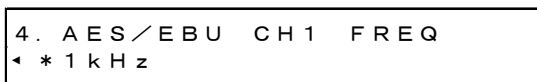
AES/EBU → AES/EBU → ON/OFF

Parameter

ON (default setting) / OFF

10.1.2 Selecting the Frequency

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



Procedure

AES/EBU → AES/EBU → SETTING → CH1 / CH2 → FREQ

Parameter

SILENCE / 400Hz / 800Hz / 1kHz (default setting)

10.1.3 Setting the Level

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

```
4. AES / EBU CH 1 LEVEL
    - 20 [dBFS]
```

Procedure

AES/EBU → AES/EBU → SETTING → CH1 / CH2 → LEVEL

Parameter

-60 to 0 (default value: -20)

10.1.4 Setting Clicks

You can insert click sounds into the selected channel. Follow the procedure below to set the insertion interval to a value other than OFF.

This is invalid when LIPSYNC SDI1+AES on the ETC menu is set to ON.

```
4. AES / EBU CH 1 LEVEL
    - 20 [dBFS]
```

Procedure

AES/EBU → AES/EBU → SETTING → CH1 / CH2 → CLICK

Parameter

OFF (default setting) / 1sec / 2sec / 4sec

10.1.5 Settings Shared by Channels

You can link the channel 2 setting to the channel 1 setting by following the procedure below to select ON. In this situation, channel 2 cannot be set.

```
4. CH 2 EQUAL TO CH 1
    ■ ON □ OFF
```

Procedure

AES/EBU → AES/EBU → SETTING → CH2 → EQUAL TO CH1

Parameter

ON / OFF (default setting)

10.1.6 Selecting the Resolution

To select the resolution, follow the procedure below.

```

3. AES/EBU RESOLUTION
   ■ 20BIT   □ 24BIT
  
```

Procedure

AES/EBU → AES/EBU → SETTING → RESOLUTION

Parameter

20BIT (default setting) / 24BIT

10.1.7 Selecting the Pre-emphasis Mode

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

```

3. AES/EBU EMPHASIS
   □ 50/15 □ CCITT ■ OFF
  
```

Procedure

AES/EBU → AES/EBU → SETTING → EMPHASIS

Parameter

50/15 / CCITT / OFF (default setting)

10.1.8 Turning the Time Code On and Off

To turn on or off the time code insertion selected in section 14.6.1, "Selecting the Time Code," follow the procedure below.

```

3. AES/EBU TIMECODE
   □ ON      ■ OFF
  
```

Procedure

AES/EBU → AES/EBU → SETTING → TIMECODE

Parameter

ON / OFF (default setting)

10.1.9 Adjusting the Timing

To adjust the AES/EBU signal timing relative to the reference signal in the range of ± 1 AES/EBU frame, follow the procedure below.

```

2. AES/EBU TIMING
   0 [FS]
  
```

Procedure

AES/EBU → AES/EBU → TIMING

Parameter

± 511 (default value: 0)

10.2 Setting the Silence Output

Under AES/EBU→SILENCE, you can set the silence output.

```
0. AES / EBU
^ SILENCE
```

10.2.1 Selecting the Resolution

To select the resolution, follow the procedure below.

```
3. SILENCE RESOLUTION
   ■ 20BIT   □ 24BIT
```

Procedure

AES/EBU → SILENCE → SETTING → RESOLUTION

Parameter

20BIT (default setting) / 24BIT

10.2.2 Adjusting the Timing

To adjust the silence signal timing relative to the reference signal in the range of ± 1 AES/EBU frame, follow the procedure below.

```
2. SILENCE TIMING
   0 [FS]
```

Procedure

AES/EBU → SILENCE → TIMING

Parameter

± 511 (default value: 0)

11. WCLK MENU

The WCLK menu is used to specify settings related to WCLK output.

To display the WCLK menu, press MENU several times until the following menu appears.

```
0. WCLK
   TIMING      ↵
```

11.1 Adjusting the Timing

To adjust the word-clock signal relative to the reference signal in the range of $\pm 1\text{AES/EBU}$ frame, follow the procedure below.

```
1. WCLK TIMING  0 [FS]
```

Procedure

WCLK → TIMING

Parameter

± 511 (default value: 0)

12. ETC MENU

The ETC menu is used to specify settings related to lip sync.

To display the ETC menu, press MENU several times until the following menu appears.



12.1 Turning Lip Sync On and Off

To turn lip sync pattern on and off, follow the procedure below. It can be turned on and off separately for SDI1+AES/EBU signals and SDI2 signals.

When turned on, the LT 4610 outputs lip sync patterns. Combining this with our lip-sync-compatible waveform monitor makes it possible to measure the offset between the video signal and the audio signal that occurs in the transfer route for each channel. For details, see the instruction manual of the waveform monitor.

This is invalid when the SDI signal pattern is check field.



Procedure

ETC → LIPSYNC → SDI1+AES / SDI2

Parameter

ON / OFF (default setting)

If set to ON, set all audio channels as follows on the SDI menu for SDI signals and the AES/EBU menu for AES/EBU signals.

These settings are factory default settings.

	Item	Value
SDI menu	AUDIO ON/OFF	ON
	FREQ	1kHz
	LEVEL	-20
	RESOLUTION	20 BIT
	EMPHASIS	OFF
AES/EBU menu	AES/EBU ON/OFF	ON
	FREQ	1kHz
	LEVEL	-20
	RESOLUTION	20 BIT
	EMPHASIS	OFF

12.2 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.

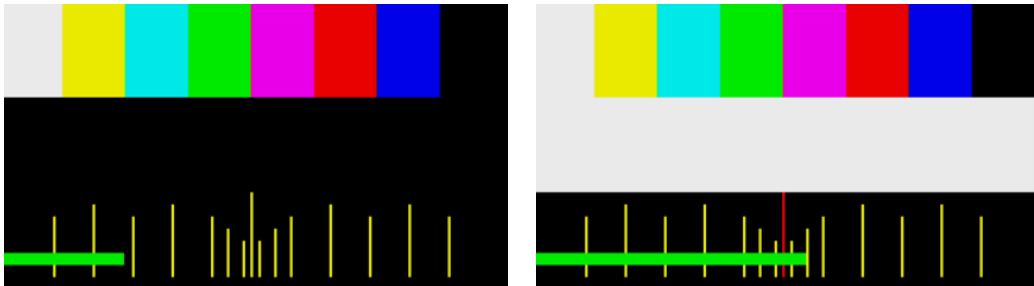
- **Pattern**

The pattern specified by PATTERN on the SDI menu is displayed.

Safety area markers, ID characters, and logo are not displayed even if they are set to ON.

- **Raster**

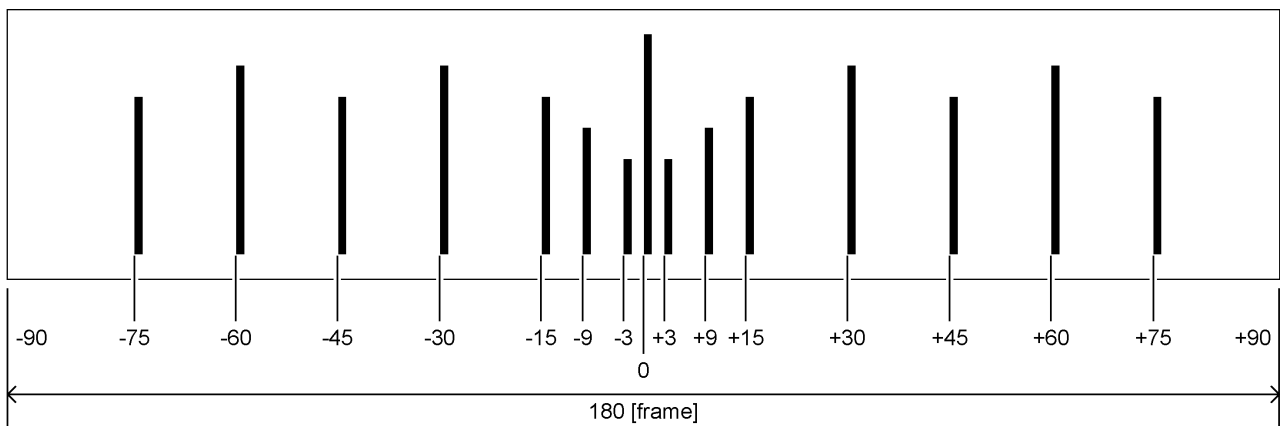
If the scale slide bar is between 0 and +15 [frames], a white raster is displayed. If not, a black raster is displayed.



- **Scale**

A green slide bar scrolls from left to right (approximately 6 seconds for 1080/59.94i).

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 click setting is invalid.

13. GPS OPTION MENU (SER01)

The GPS OPTION menu is used to specify settings related to LTC output and CW I/O. To display the GPS OPTION menu, press MENU several times until the following menu appears.

```

0. GPS OPTION
▼ LTC
  
```

13.1 Setting the LTC Output

Under GPS OPTION→LTC, you can set the LTC output.

```

0. GPS OPTION
▼ LTC
  
```

13.1.1 Turning the Time Code Output On and Off

To turn the time code outputs (LTC1 to LTC3) on and off, follow the procedure below. The time code selected in section 14.6.1, "Selecting the Time Code," is output from LTC IN/OUT on the rear panel.

```

2. LTC
   □ ON      ■ OFF
  
```

Procedure

GPS OPTION → LTC → ON/OFF

Parameter

ON / OFF (default setting)

13.1.2 Adjusting the Time Code Output Timing (Frame)

To adjust the time code outputs (LTC1 to LTC3) at the frame level, follow the procedure below.

```

3. LTC TIMING FRAME
   0 FRAME
  
```

Procedure

GPS OPTION → LTC → TIMING → FRAME

Parameter

-29 to 29 ((default value: 0))

13.1.3 Adjusting the Time Code Output Timing (Bit)

To adjust the time code outputs (LTC1 to LTC3) at the bit level, follow the procedure below. To the right of BIT, the value obtained by converting bits into time is displayed.

```
3. LTC TIMING BIT
   0 BIT      0.000ms
```

Procedure

GPS OPTION → LTC → TIMING → BIT

Parameter

-39 to 39 (default value: 0)

13.1.4 Adjusting the LTC2 Offset

To adjust the LTC2 offset relative to LTC1, follow the procedure below.

```
2. LTC2 OFFSET
+00:00:00 [HH:MM:SS]
```

Procedure

GPS OPTION → LTC → LTC2 OFFSET

Parameter

±23:59:59 (default value: +00:00:00)

13.1.5 Adjusting the LTC3 Offset

To adjust the LTC3 offset relative to LTC1, follow the procedure below.

```
2. LTC3 OFFSET
+00:00:00 [HH:MM:SS]
```

Procedure

GPS OPTION → LTC → LTC3 OFFSET

Parameter

±23:59:59 (default value: +00:00:00)

13.2 Setting the CW I/O

Under GPS OPTION→CW SETTING, you can set the CW I/O.

```
0. GPS OPTION
^ CW SETTING      ↓
```

13.2.1 Selecting Input or Output

To select whether to use CW IN/OUT on the rear panel as an input connector or output connector, follow the procedure below.

This setting is not saved in the last memory. Even if output is selected, it will be set to input the next time you start the LT 4610. (When POWER ON RECALL on the SYSTEM menu is set to OFF)

2. CW IN/OUT
<input checked="" type="checkbox"/> INPUT <input type="checkbox"/> OUTPUT

Procedure

GPS OPTION → CW SETTING → CW IN/OUT

Parameter

INPUT (default setting) / OUTPUT

13.2.2 Selecting the Output Frequency

When CW IN/OUT is set to OUTPUT, to select the output frequency, follow the procedure below.

2. OUTPUT FREQ
<input checked="" type="checkbox"/> CW <input type="checkbox"/> 1 P P S

Procedure

GPS OPTION → CW SETTING → OUTPUT FREQ

Parameter

CW (default setting) / 1PPS

14. SYSTEM MENU

The SYSTEM menu is used to configure the LT 4610.

To display the SYSTEM menu, press MENU several times until the following menu appears.

These settings are not stored to presets.

```

0. SYSTEM
▼ LCD BACKLIGHT  ⌋
  
```

14.1 Setting the Backlight

To set the backlight, follow the procedure below.

```

1. LCD BACKLIGHT
■ ON  □ AUTO OFF  □ OFF
  
```

Procedure

SYSTEM → LCD BACKLIGHT

Parameter

ON: The backlight is on at all times. (default setting)

AUTO OFF: The backlight turns off if none of the keys are used for 30 seconds. It turns back on when a key is used.

OFF: The backlight is off at all times.

14.2 Turning Key Lock On and Off

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

```

1. KEY LOCK
   □ ON                    ■ OFF
  
```

Procedure

SYSTEM → KEY LOCK

Parameter

ON: The LT 4610 locks its keys after 30 seconds of inactivity (no key operations). When key lock is enabled, you can temporarily disable key lock by holding down FUNCTION for 3 seconds.

OFF: Key lock is disabled. (default setting)

14.3 Configuring Presets

Under SYSTEM→PRESET, you can set presets.

A preset is a collection of LT 4610 settings that are registered. It can be recalled automatically at startup.

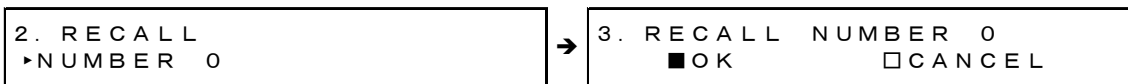


The following settings are stored in a preset. (Y: Saved, N: Not saved)

GENLOCK MENU		Y
	LOG LIST (00 to 99)	N
BLACK MENU		Y
SDI menu		Y
	ID CHARACTER (INT_1 to INT_4)	N
	LOGO (INT_1 to INT_4)	N
AES/EBU menu		Y
WCLK menu		Y
ETC menu		Y
GPS OPTION MENU (SER01)		Y
SYSTEM MENU		N

14.3.1 Load presets

To recall a preset that you saved according to the procedure in section 14.3.2, “Saving Presets,” follow the procedure below.



Procedure

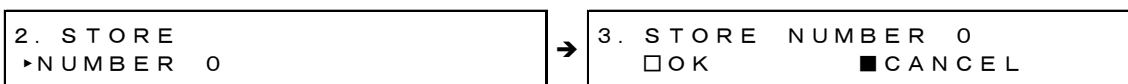
SYSTEM → PRESET → RECALL

Parameter

NUMBER 0 to NUMBER 9

14.3.2 Saving Presets

You can save up to 10 presets by following the procedure below.



Procedure

SYSTEM → PRESET → STORE

Parameter

NUMBER 0 to NUMBER 9

14.3.3 Power-on Settings

To select the preset to use for starting the LT 4610, follow the procedure below. For details, see section 4.1, “Turning the Power On.”



Procedure

SYSTEM → PRESET → POWER ON RECALL

Parameter

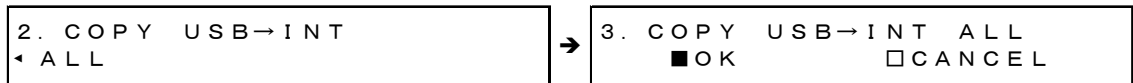
OFF: The LT 4610 starts with the same settings that were set when it was last turned OFF. (default setting)

NUMBER 0 to NUMBER 9:
The LT 4610 starts with the selected preset.

14.3.4 Copying Presets to the LT 4610

To copy presets from a USB memory device to the LT 4610, follow the procedure below. This feature is useful when you want to use multiple LT 4610s with the same settings. (Copy the presets to the USB memory device in advance by using the COPY INT→USB menu.)

If there is already a preset stored in the LT 4610, it will be overwritten. This setting appears when a USB memory device is connected.



Procedure

SYSTEM → PRESET → COPY USB→INT

Parameter

ALL / NUMBER 0 to NUMBER 9

● **USB Memory Device File Structure**

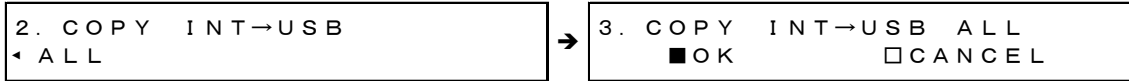
Presets are copied from the PSET folder of the USB memory device.

- 📁 USB memory device
 - └─ 📁 LT4610_USER
 - └─ 📁 PSET
 - ├─ 📄 PRESET_00.PRE
 - ├─ ...
 - └─ 📄 PRESET_09.PRE

14.3.5 Copying Presets to a USB Memory Device

To copy presets in pre format (dedicated format) from the LT 4610 to a USB memory device, follow the procedure below. This feature is useful when you want to use multiple LT 4610s with the same settings. (Save the presets in the LT 4610 in advance by using the STORE menu.)

If there is already a preset stored in the USB memory device, it will be overwritten. This setting appears when a USB memory device is connected.

**Procedure**

SYSTEM → PRESET → COPY INT→USB

Parameter

ALL / NUMBER 0 to NUMBER 9

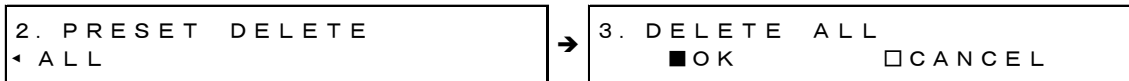
- **USB Memory Device File Structure**

Presets are copied from the PSET folder of the USB memory device. (See section 14.3.4, “Copying Presets to the LT 4610.”)

The date and time of the file will be those selected in section 14.5.1, “Setting the Date and Time.”

14.3.6 Clearing Presets

To clear presets stored in the LT 4610, follow the procedure below.

**Procedure**

SYSTEM → PRESET → DELETE

Parameter

ALL / NUMBER 0 to NUMBER 9

14.4 Configuring Ethernet Settings

Under SYSTEM→ETHERNET, you can set Ethernet parameters.

0. SYSTEM	┘
└ ETHERNET	

14.4.1 Setting the IP Address

To set the IP address, subnet mask, and default gateway, follow the procedure below.

2. IP ADDRESS 192.168.000.00 <u>1</u>	→	2. SUBNET MASK 255.255.255.00 <u>0</u>	→
2. DEFAULT GATEWAY 000.000.000.00 <u>0</u>	→	3. CONFIRM <input checked="" type="checkbox"/> OK <input type="checkbox"/> CANCEL	

Procedure

SYSTEM → ETHERNET → IP ADDRESS

Parameter

000.000.000.000 to 255.255.255.255

(IP ADDRESS default value: 192.168.000.001, SUBNET MASK default value:
255.255.255.000,

DEFAULT GATEWAY default value: 000.000.000.000)

14.4.2 Viewing the MAC Address

To view the MAC address of the LT 4610, follow the procedure below.

2. MAC ADDRESS * * : * * : * * : * * : * * : * *

Procedure

SYSTEM → ETHERNET → MAC ADDRESS

14.4.3 Turning TRAP Transmission On and Off

To turn the SNMP TRAP transmission on and off, follow the procedure below.

2. SNMP TRAP <input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF

Procedure

SYSTEM → ETHERNET → SNMP TRAP

Parameter

ON / OFF (default setting)

14.4.4 Setting the TRAP Transmission Destination

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

```
2. SNMP MANAGER IP
  0 0 0 . 0 0 0 . 0 0 0 . 0 0 0
```

Procedure

SYSTEM → ETHERNET → SNMP MANAGER IP

Parameter

000.000.000.000 to 255.255.255.255 (default value: 000.000.000.000)

14.4.5 Copying MIB Files to a USB Memory Device

To copy an MIB file, which is used for SNMP, from the LT 4610 to a USB memory device, select OK by following the procedure below.

If there is already a MIB file stored in the USB memory device, it will be overwritten.

This setting appears when a USB memory device is connected.

```
2. COPY MIB INT→USB
   ■ OK          □ CANCEL
```

Procedure

SYSTEM → ETHERNET → COPY MIB INT→USB

- **USB Memory Device File Structure**

The MIB file is saved in the MIB folder of the USB memory device.

```

├─ USB memory device
├─ LT4610
│   └─ MIB
│       └─ lt4610.my
```

14.4.6 Setting READ COMMUNITY

To change the SNMP READ COMMUNITY name, follow the procedure below.

```
3. READ COMMUNITY
  LDRUser ◀
```

Procedure

SYSTEM → ETHERNET → SNMP COMMUNITY → READ COMMUNITY

Parameter

◀ 0 1 2 3 4 5 6 7 8 9
 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
 a b c d e f g h i j k l m n o p q r s t u v w x y z
 (default setting: LDRUser ◀)

* Changes to COMMUNITY is applied when SNMP is restarted or the next time the power is turned on.

14.4.7 Setting WRITE COMMUNITY

To change the SNMP WRITE COMMUNITY name, follow the procedure below.

```
3. WRITE COMMUNITY
  LDRAdm◀
```

Procedure

SYSTEM → ETHERNET → SNMP COMMUNITY → WRITE COMMUNITY

Parameter

```
◀ 0 1 2 3 4 5 6 7 8 9
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
(default setting: LDRAdm ◀)
```

* Changes to COMMUNITY is applied when SNMP is restarted or the next time the power is turned on.

14.4.8 Setting TRAP COMMUNITY

To change the SNMP TRAP COMMUNITY name, follow the procedure below.

```
3. TRAP COMMUNITY
  LDRUser◀
```

Procedure

SYSTEM → ETHERNET → SNMP COMMUNITY → TRAP COMMUNITY

Parameter

```
◀ 0 1 2 3 4 5 6 7 8 9
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
(default setting: LDRUser ◀)
```

* Changes to COMMUNITY is applied when SNMP is restarted or the next time the power is turned on.

14.4.9 Restarting SNMP

To restart SNMP, follow the procedure below.

```
3. SNMP RESTART
  ◻ ON          ◼ OFF
```

Procedure

SYSTEM → ETHERNET → SNMP COMMUNITY → SNMP RESTART

14.5 Date and time settings

Under SYSTEM→DATE&TIME, you can set the internal time.

```
0. SYSTEM
  ▾ DATE&TIME
```

14.5.1 Selecting the Date

To select the internal time type, follow the procedure below.

The internal time can be saved to a USB memory device. The time is used in the genlock log.

```
2. DATE&TIME SOURCE
  ▶ * INTERNAL
```

Procedure

SYSTEM → DATA&TIME → SOURCE

Parameter

INTERNAL: The date and time adjusted using the ADJUST menu are used. (default setting)

GPS: The date and time in the GPS signal received through GPS IN on the rear panel are used. You can select this option when SER01 is installed.

14.5.2 Adjusting the Date and Time

When DATE&TIME SOURCE is set to INTERNAL, to adjust the date and time, follow the procedure below.

```
2. DATE&TIME ADJUST
  2016/02/01 12:34:56
```

Procedure

SYSTEM → DATA&TIME → ADJUST

Parameter

2000/01/01 00:00:00 to 2099/12/31 23:59:59

14.6 Setting the Time Code (SER01)

Under SYSTEM→TIMECODE, you can set the time code.

```
0. SYSTEM
  ◆ TIMECODE
```

14.6.1 Selecting the Time Code

To select the time code type, follow the procedure below.

Time codes are inserted into black, SDI, and AES/EBU signals and are also output from LTC IN/OUT on the rear panel.

```
2. TIMECODE SOURCE
  ◀ * INTERNAL
```

Procedure

SYSTEM → TIMECODE → TIMECODE SOURCE

Parameter

GPS:	The date and time in the GPS signal received through GPS IN on the rear panel are used.
INTERNAL:	The date and time selected in section 14.5.1, “Setting the Date and Time,” are used. (default setting)
LTC0:	The date and time in the LTC signal received through LTC IN/OUT on the rear panel are used.
VITC:	The date and time in the VITC signal received through GENLOCK IN on the rear panel are used.

14.6.2 Setting Dropped Frames

To select the dropped frame setting, follow the procedure below.

For time codes inserted into SDI signals, this setting is valid when the SDI signal frame (field) frequency is 59.94 or 29.97. For LTC output, this setting is valid when the Black 1 format is NTSC, 59.94, or 29.97.

```
2. DROP FRAME
  ■ ON      □ OFF
```

Procedure

SYSTEM → TIMECODE → DROP FRAME

Parameter

ON:	Dropped frame time code is used. (default setting)
OFF:	Non-dropped frame time code is used.

14.6.3 Turning Jam Sync On and Off

To turn the jam sync function on and off, follow the procedure below.

When set to ON, the time code is reset once a day at the time set on the ADJUST menu.

```

3. J A M   S Y N C
    O N        O F F
  
```

Procedure

SYSTEM → TIMECODE → JAM SYNC → ON/OFF

Parameter

ON (default setting) / OFF

14.6.4 Setting the Jam Sync Time

To set when to reset the time code using the jam sync function, follow the procedure below.

This setting is valid when JAM SYNC is set to ON.

```

3. J A M   S Y N C   A D J U S T
   0 0 : 0 0 : 0 0 [ H H : M M : S S ]
  
```

Procedure

SYSTEM → TIMECODE → JAM SYNC → ADJUST

Parameter

00:00:00 to 23:59:59 (default value: 00:00:00)

14.6.5 Turning the Daylight Savings Time On and Off

When TIMECODE SOURCE is set to GPS, to set whether to apply Daylight Savings Time, follow the procedure below.

```

3. D A Y L I G H T   S A V I N G
    O N        O F F
  
```

Procedure

SYSTEM → TIMECODE → DAYLIGHT SAVING → ON/OFF

Parameter

ON / OFF (default setting)

14.6.6 Setting the Daylight Savings Time Start Date

When TIMECODE SOURCE is set to GPS, to set the Daylight Saving Time start date, follow the procedure below. (You cannot set seconds.)

```
3. CHANGE DAY
   01 / 01  00 : 00 : 00
```

Procedure

SYSTEM → TIMECODE → DAYLIGHT SAVING → CHANGE DAY

Parameter

01/01 00:00:00 to 12/31 23:59:00 (default value: 01/01 00:00:00)

14.6.7 Sets the Daylight Saving Time Offset

When TIMECODE SOURCE is set to GPS, to set the Daylight Saving Time offset, follow the procedure below.

```
3. TIMECODE OFFSET
+00 : 00 : 00 [HH : MM : SS]
```

Procedure

SYSTEM → TIMECODE → DAYLIGHT SAVING → TIMECODE OFFSET

Parameter

±23:59:59 (default value: +00:00:00)

14.6.8 Setting the Daylight Savings Time End Date

When TIMECODE SOURCE is set to GPS, to set the Daylight Saving Time end date, follow the procedure below. (You cannot set seconds.)

```
3. RETURN DAY
   01 / 01  00 : 00 : 00
```

Procedure

SYSTEM → TIMECODE → DAYLIGHT SAVING → RETURN DAY

Parameter

01/01 00:00:00 to 12/31 23:59:00 (default value: 01/01 00:00:00)

14.6.9 Setting the Leap Second

When TIMECODE SOURCE is set to GPS, to set when to insert leap seconds, follow the procedure below. (You cannot set seconds.)

A leap second is inserted automatically when the specified time elapses from a predetermined execution time.

```
2. SCHEDULED TIME
  00:00:00 [HH:MM:SS]
```

Procedure

SYSTEM → TIMECODE → LEAP SECOND

Parameter

00:00:00 to 23:59:00 (default value: 00:00:00)

14.7 Setting the GPS (SER01)

Under SYSTEM→GPS OPTION, you can set the GPS.

```
0. SYSTEM
  ↕ GPS OPTION      ↵
```

14.7.1 Selecting the Time Zone

To select the time zone, follow the procedure below. Select it according to your region.

```
2. TIMEZONE OFFSET
  ↳ *UTC+09:00
```

Procedure

SYSTEM → GPS OPTION → TIMEZONE OFFSET

Parameter

UTC-12:00 to UTC+12:00 (default value: UTC+09:00)

14.7.2 Setting the Power Supply

To select the supply voltage to apply to the GPS antenna, follow the procedure below. Select OFF to not supply power.

```
2. ANTENNA POWER
  ■ OFF   □ 3.3V   □ 5V
```

Procedure

SYSTEM → GPS OPTION → ANTENNA POWER

Parameter

OFF (default setting) / 3.3V / 5V

14.7.3 Selecting the Operating Environment

To select the operating environment of the GPS antenna, follow the procedure below.

```
2. PLATFORM MODE
  ▶ * STATIONARY
```

Procedure

SYSTEM → GPS OPTION → PLATFORM MODE

Parameter

STATIONARY: Stationary environment such as in a room (default setting)
 AUTOMOTIVE: Mobile environment such as in an outside broadcast van

14.7.4 Selecting the Epoch

To select the starting date and time, follow the procedure below.

```
2. EPOCH
  ■ SMPTE   □ TAI
```

Procedure

SYSTEM → GPS OPTION → EPOCH

Parameter

SMPTE: Conforms to PTP 1970 (SMPTE Epoch) (default setting)
 TAI: Conforms to TAI 1958

14.8 Setting Alarms (SER01)

Under SYSTEM→ALARM, you can set the alarms output from LTC IN/OUT on the rear panel. INDICATOR 1 and INDICATOR 2 correspond to alarm output 1 and alarm output 2, respectively.

[See also] Section 4.5.8, "LTC Signal I/O (SER01)"



14.8.1 Selecting the Polarity

To select the polarity of the alarm output from the selected connector, follow the procedure below.



Procedure

SYSTEM → ALARM → INDICATOR 1 / INDICATOR 2 → ALARM POLARITY

Parameter

POSITIVE (default setting) / NEGATIVE

14.8.2 Turning the Alarm Output On and Off

To turn on or off the alarm output from the selected connector, follow the procedure below. If any of the alarms that are enabled occurs, an alarm is output.



Procedure

SYSTEM → ALARM → INDICATOR 1 / INDICATOR 2 → ALARM OPTION
 → POWER1
 → POWER2
 → FAN
 → GENLOCK NO SIGNAL
 → GENLOCK ST IN SYNC
 → GPS ANNTENA
 → GPS PLL
 → GPS SIGNAL
 → CW SIGNAL
 → LTC0 SIGNAL
 → VITC SIGNAL
 → ATTENTION

Parameter

ENABLE: An alarm is output when an alarm occurs. (default setting)
 DISABLE: Alarms are not output.

14.9 Turning the Web Browser On and Off

To turn the Web browser on and off, follow the procedure below.



Procedure

SYSTEM → WEB BROWSER

Parameter

ON:	The Web browser is turned on.
OFF:	The Web browser is turned off. (default setting)

14.10 Initialization

Under SYSTEM→INITIALIZE, you can initialize the settings.



There are two types of initialization: CLEAR SETTING and DEFAULT SETTING. They differ in the settings that are initialized as follows. (Y: initialized, N: not initialized)

Note that the black signal format and SDI signal frame frequency are fixed to the values selected with FORMAT SETTING.

	CLEAR SETTING	DEFAULT SETTING
GENLOCK MENU	Y	Y
LOG LIST (00 to 99)	N	N
BLACK MENU	Y	Y
SDI menu	Y	Y
ID CHARACTER (INT_1 to INT_4)	N	Y
LOGO (INT_1 to INT_4)	N	Y
AES/EBU menu	Y	Y
WCLK menu	Y	Y
ETC menu	Y	Y
GPS OPTION MENU (SER01)	Y	Y
12G OPTION MENU	Y	Y
USER PATTERN (INT1 to INT8)	N	N
ID CHARACTER (INT_1 to INT_4)	N	Y
LOGO (INT_1 to INT_4)	N	Y
SYSTEM MENU	N	Y
DATE&TIME ADJUST	N	N

14.10.1 Initializing Settings

To initialize the settings (except for some settings such as those on the SYSTEM menu), select OK by following the procedure below.

**Procedure**

SYSTEM → INITIALIZE → CLEAR SETTING

14.10.2 Factory Default Initialization

To initialize the settings (except for some settings), select OK by following the procedure below.

**Procedure**

SYSTEM → INITIALIZE → DEFAULT SETTING

14.10.3 Selecting the Format

To select the format that is applied when CLEAR SETTING or DEFAULT SETTING is used to initialize the instrument, follow the procedure below.

**Procedure**

SYSTEM → INITIALIZE → FORMAT SETTING



Parameter

NTSC: The black signal format is set to NTSC BB, and the SDI signal frame frequency is set to 59.94I.

PAL: The black signal format is set to PAL BB, and the SDI signal frame frequency is set to 50I.

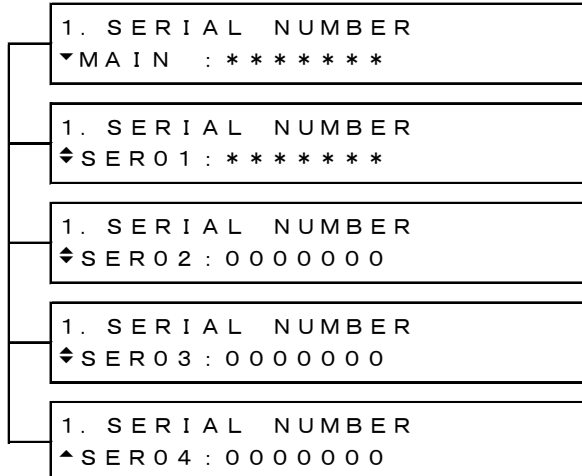
14.11 Viewing the Serial Numbers

To view the serial numbers of the main unit and SER01 to SER04, follow the procedure below.

To switch menus, use the  and  keys.

You can also view the serial number of the main unit on the rear panel.

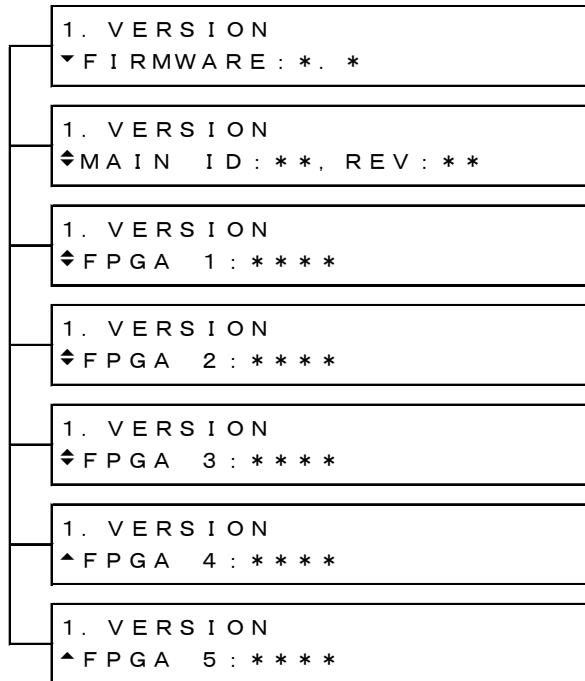
For SER01, the serial number is displayed when it is installed and "0000000" when it is not. SER03 and SER04 are planned to be supported in the future.

**Procedure**

SYSTEM → SERIAL NUMBER

14.12 Viewing the Version Information

To view the firmware version and FPGA version, follow the procedure below.
To switch menus, use the **▲** and **▼** keys.

**Procedure**

SYSTEM → VERSION DISPLAY

15. 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 4610. It is used to overlay logos created on the PC on SDI signals. If necessary, install the application from the accompanying CD-ROM.

Note that the model name indicated on the Logo App is LT 4600, but the application can be used with the LT 4610 without any problems.

[See also] Section 9.9, "Setting Logos"

15.1 Installation

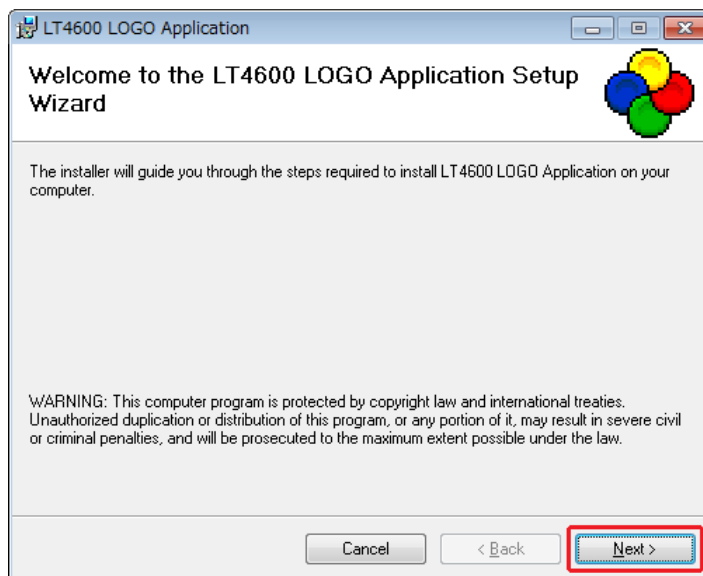
Follow the procedure below to install Logo App in your PC.
The required PC operating environment is as follows.

- Microsoft Windows 7 / Vista
- Microsoft .Net Framework 3.5 or later must be installed.

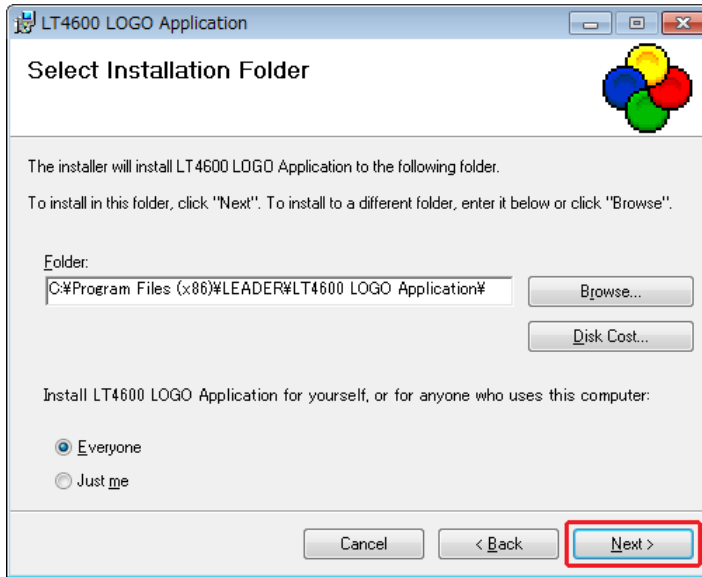
**1. Load the CD-ROM supplied with the LT 4610, and run
LT4600_LOGO_Application_Installer.msi.**

- ⊙ CD-ROM
 - | □ Instruction_Manual_for_LT_4610
 - └ □ LOGO_Application_v1.0
 - └ □ LT4600 LOGO Application Installer.msi

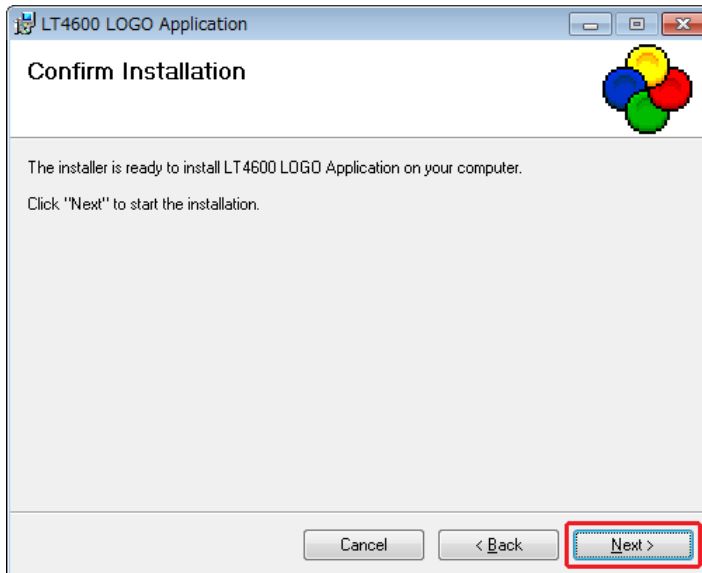
2. When the following window appears, click Next.



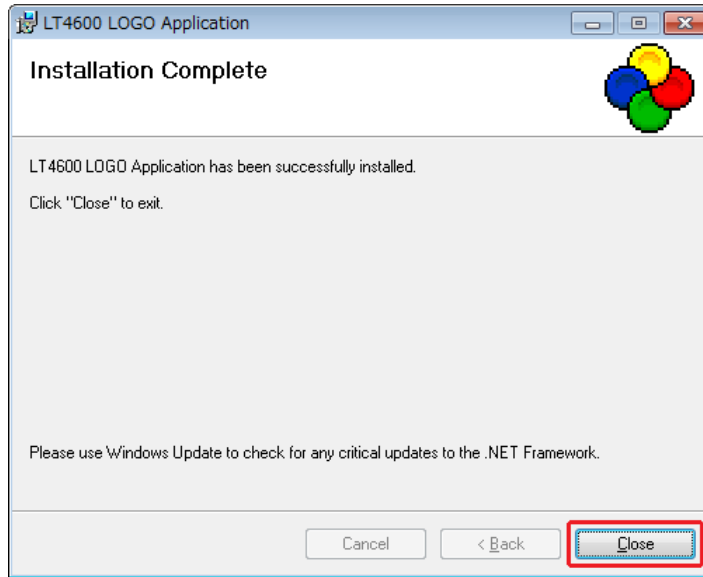
3. When the following window appears, select the installation folder, and click Next.



4. When the following window appears, click Next.

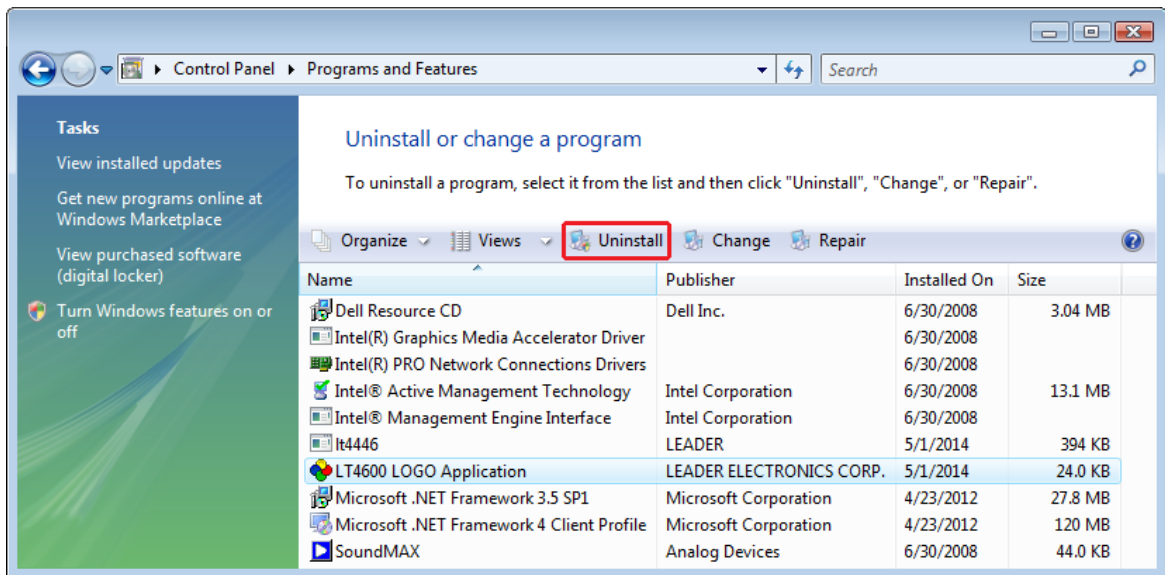


5. When the following window appears, the installation is complete. Click Close.



15.2 UNINSTALLATION

To uninstall the software, select "LT4600 LOGO Application" in Programs and Features of Control Panel, and click Uninstall.



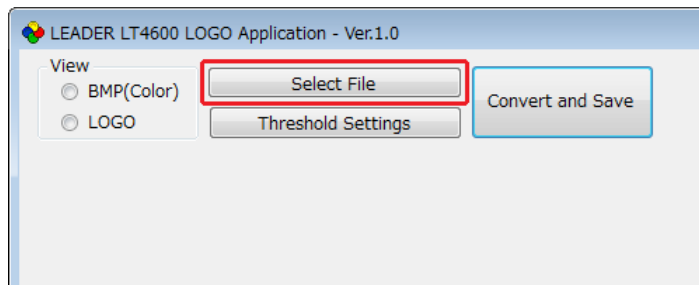
15.3 HOW TO USE

To convert bitmap data (*.bmp) into 4-level monochrome data (*.lg), follow the procedure below.

1. **Start “LT4600 LOGO Application” on the PC desktop.**



2. **Click Select File.**



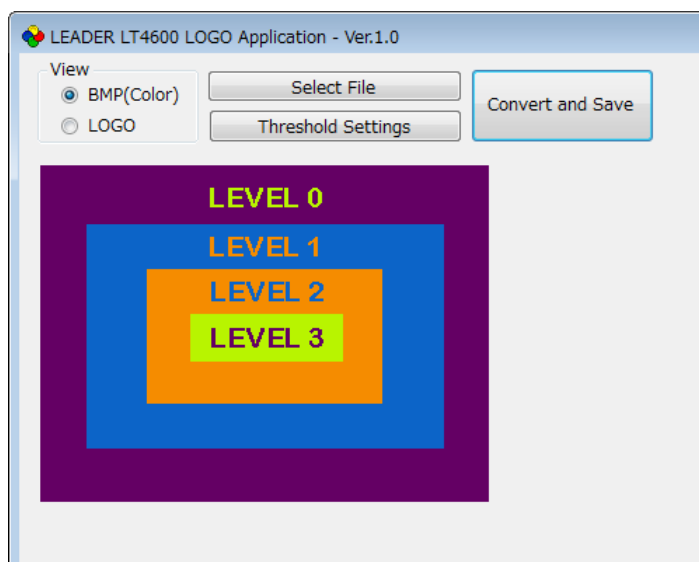
3. **Select a bitmap file (*.bmp).**

Select a file that meets the following conditions. You cannot select a file (*.lg) that has already been converted.

File name: Up to eight characters (excluding the extension) consisting of alphanumeric characters or underscore.

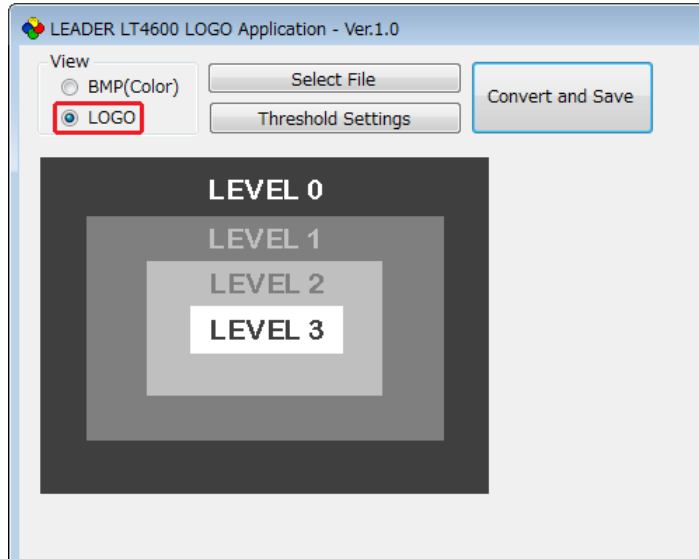
File format: 24 bits, 256 colors or 16 colors

File size: Up to 320 dots × 240 lines (width × height)



4. Click LOGO to view the data after conversion.

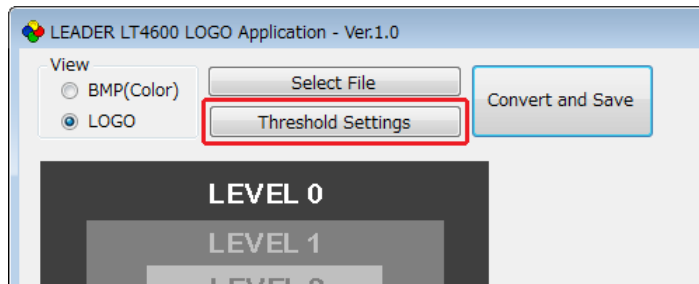
If the data after the conversion appears okay, save the data. Proceed to step 7. Here, only check that the colors have been separated into four grayscale levels. The intensity used to display the data on the actual LT 4610 can be adjusted from the menu, so it will be different from what appears here.



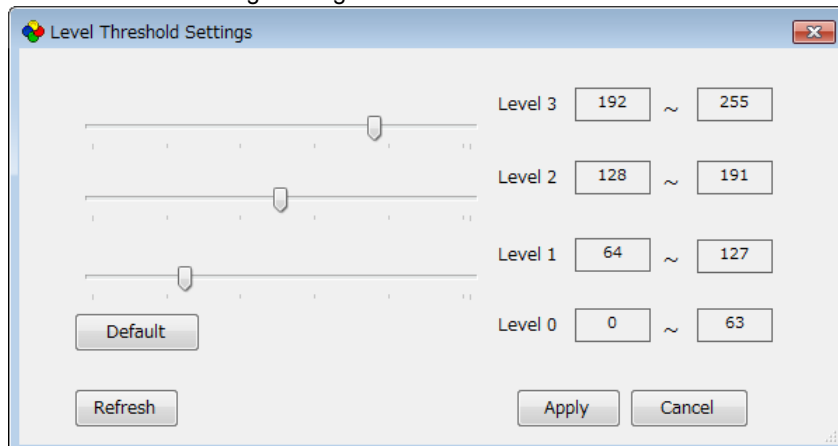
5. Click Threshold Settings to set the conversion thresholds.

Use the sliders to set the thresholds.

Main Window



Level Threshold Settings Dialog Box



• **Threshold**

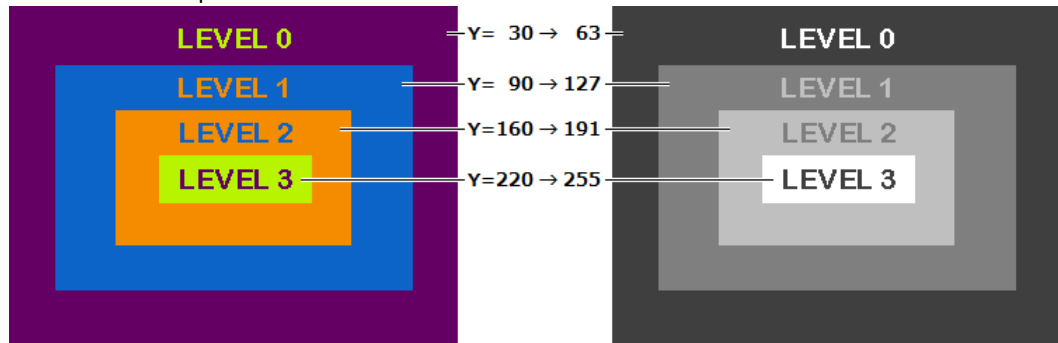
The threshold represents the intensity (Y). If we assume R, G, and B to take on values between 0 and 255, it can be derived from the following formula.

$$Y = 0.212 * R + 0.701 * G + 0.087 * B$$

For example, if the thresholds are set as shown in the above figure, Logo App converts data according to the following rules.

- Intensities 0 to 63 are converted to level 0 and displayed at intensity 63.
- Intensities 64 to 127 are converted to level 1 and displayed at intensity 127.
- Intensities 128 to 191 are converted to level 2 and displayed at intensity 191.
- Intensities 192 to 255 are converted to level 3 and displayed at intensity 255.

Conversion Example



• **Description of the Level Threshold Settings Dialog Box**

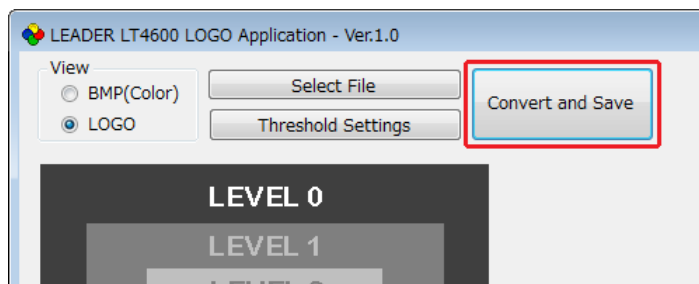
Item	Description
Default	The thresholds are reset to the following values. Level 3: 192 to 255 Level 2: 128 to 191 Level 1: 64 to 127 Level 0: 0 to 63
Refresh	The result of the conversion by applying the specified thresholds is displayed in the main window. The values are not applied until you click Apply.
Apply	The values are applied, and the Level Threshold Settings dialog box closes.
Cancel	The values are canceled, and the Level Threshold Settings dialog box closes.

6. **Click Apply to apply the settings.**

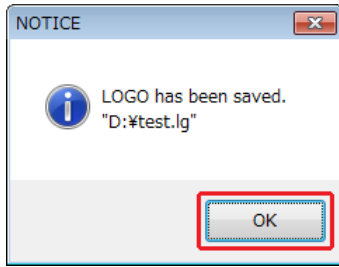
7. **Click Convert and Save to convert and save the data.**

The data is saved in the same location as the original data with the same file name but with a different extension.

Example: test.bmp → test.lg



8. When the following confirmation message appears, click **OK**.



16. SNMP

By using SNMP (Simple Network Management Protocol), you can control an LT 4610 from SNMP managers. In addition, when the fan stops or other errors occur, traps can be sent from the LT 4610 to an SNMP manager.

- * The Ethernet features of the LT 4610 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.

16.1 SNMP Version

SNMPv2c

16.2 SMI Definitions

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

16.3 How to Use

1. On the LT 4610, set the IP address.

Set it under SYSTEM→ETHERNET→IP ADDRESS.

2. Connect the LT 4610's ETHERNET/CONTROL connector to the network device.

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 4610. Please obtain it separately. For details on how to use the SNMP manager, see its instruction manual.

The community names are shown below. (default setting)

Read Community: LDRUser

Write Community: LDRAdm

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

OID: 1.3.6.1.4.1.leader(20111).lt4610(36).trap(100).target(1).

trapManagerIp(1).0

You can also set it from the LT 4610 menu.

5. On the SNMP manager, enable the TRAP transmission destinations.

OID: 1.3.6.1.4.1.leader(20111).lt4610(36).trap(100).target(1).trapAction(2).0

You can also set it from the LT 4610 menu.

6. Restart the LT 4610.**7. When the LT 4610 restarts, check that the standard trap "ColdStart" is received by the SNMP manager.**

16.4 Enterprise MIB

• Retrieving the MIB File

Copy the file from the LT 4610 to a USB memory device.

Connect a USB memory device to the LT 4610, and from the menu, select SYSTEM > ETHERNET > COPY MIB INT > USB > OK. The file lt4610.my 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.

[See also] Section 14.4.5, "Copying MIB Files to a USB Memory Device"

• Enterprise Number

Leader's enterprise number is 20111.

iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).leader(20111)

• MIB Structure

lt4610	OBJECT IDENTIFIER ::= { leader 36 }
notification	OBJECT IDENTIFIER ::= { lt4610 0 }
trapContent	OBJECT IDENTIFIER ::= { notification 1 }
error	OBJECT IDENTIFIER ::= { trapContent 1 }
normal	OBJECT IDENTIFIER ::= { trapContent 2 }
trapStr	OBJECT IDENTIFIER ::= { notification 2 }
standard	OBJECT IDENTIFIER ::= { lt4610 1 }
status	OBJECT IDENTIFIER ::= { standard 1 }
reference	OBJECT IDENTIFIER ::= { standard 2 }
genlockRef	OBJECT IDENTIFIER ::= { reference 1 }
blackRef	OBJECT IDENTIFIER ::= { reference 2 }
black1Ref	OBJECT IDENTIFIER ::= { blackRef 1 }
black2Ref	OBJECT IDENTIFIER ::= { blackRef 2 }
black3Ref	OBJECT IDENTIFIER ::= { blackRef 3 }
black4Ref	OBJECT IDENTIFIER ::= { blackRef 4 }
black5Ref	OBJECT IDENTIFIER ::= { blackRef 5 }
black6Ref	OBJECT IDENTIFIER ::= { blackRef 6 }
sdiRef	OBJECT IDENTIFIER ::= { reference 3 }
sdi1Ref	OBJECT IDENTIFIER ::= { sdiRef 1 }
sdi1Format	OBJECT IDENTIFIER ::= { sdi1Ref 1 }
sdi1Timing	OBJECT IDENTIFIER ::= { sdi1Ref 2 }
sdi1Pattern	OBJECT IDENTIFIER ::= { sdi1Ref 3 }
sdi1Component	OBJECT IDENTIFIER ::= { sdi1Ref 4 }

sdi1SafetyArea	OBJECT IDENTIFIER ::= { sdi1Ref 5 }
sdi1Scroll	OBJECT IDENTIFIER ::= { sdi1Ref 6 }
sdi1PatternChange	OBJECT IDENTIFIER ::= { sdi1Ref 7 }
sdi1Id	OBJECT IDENTIFIER ::= { sdi1Ref 8 }
sdi1Logo	OBJECT IDENTIFIER ::= { sdi1Ref 9 }
sdi1Audio	OBJECT IDENTIFIER ::= { sdi1Ref 10 }
sdi2Ref	OBJECT IDENTIFIER ::= { sdiRef 2 }
sdi2Format	OBJECT IDENTIFIER ::= { sdi2Ref 1 }
sdi2Timing	OBJECT IDENTIFIER ::= { sdi2Ref 2 }
sdi2Pattern	OBJECT IDENTIFIER ::= { sdi2Ref 3 }
sdi2Component	OBJECT IDENTIFIER ::= { sdi2Ref 4 }
sdi2SafetyArea	OBJECT IDENTIFIER ::= { sdi2Ref 5 }
sdi2Scroll	OBJECT IDENTIFIER ::= { sdi2Ref 6 }
sdi2PatternChange	OBJECT IDENTIFIER ::= { sdi2Ref 7 }
sdi2Id	OBJECT IDENTIFIER ::= { sdi2Ref 8 }
sdi2Logo	OBJECT IDENTIFIER ::= { sdi2Ref 9 }
sdi2Audio	OBJECT IDENTIFIER ::= { sdi2Ref 10 }
lipsync	OBJECT IDENTIFIER ::= { reference 4 }
gps	OBJECT IDENTIFIER ::= { lt4610 2 }
gpsStat	OBJECT IDENTIFIER ::= { gps 1 }
gpsRef	OBJECT IDENTIFIER ::= { gps 2 }
system	OBJECT IDENTIFIER ::= { lt4610 3 }
presetRef	OBJECT IDENTIFIER ::= { system 1 }
sdi12g	OBJECT IDENTIFIER ::= { lt4610 4 }
sdi12g1Ref	OBJECT IDENTIFIER ::= { sdi12g 1 }
sdi12g1Format	OBJECT IDENTIFIER ::= { sdi12g1Ref 1 }
sdi12g1Timing	OBJECT IDENTIFIER ::= { sdi12g1Ref 2 }
sdi12g1Pattern	OBJECT IDENTIFIER ::= { sdi12g1Ref 3 }
sdi12g1Component	OBJECT IDENTIFIER ::= { sdi12g1Ref 4 }
sdi12g1SafetyArea	OBJECT IDENTIFIER ::= { sdi12g1Ref 5 }
sdi12g1Scroll	OBJECT IDENTIFIER ::= { sdi12g1Ref 6 }
sdi12g1PatternChange	OBJECT IDENTIFIER ::= { sdi12g1Ref 7 }
sdi12g1Id	OBJECT IDENTIFIER ::= { sdi12g1Ref 8 }
sdi12g1Logo	OBJECT IDENTIFIER ::= { sdi12g1Ref 9 }
sdi12g1MvBox	OBJECT IDENTIFIER ::= { sdi12g1Ref 10 }
sdi12g1Audio	OBJECT IDENTIFIER ::= { sdi12g1Ref 11 }
sdi12g1Lipsync	OBJECT IDENTIFIER ::= { sdi12g1Ref 12 }
sdi12g2Ref	OBJECT IDENTIFIER ::= { sdi12g 2 }
sdi12g2Timing	OBJECT IDENTIFIER ::= { sdi12g2Ref 2 }
sdi12g2Pattern	OBJECT IDENTIFIER ::= { sdi12g2Ref 3 }
sdi12g2Id	OBJECT IDENTIFIER ::= { sdi12g2Ref 8 }
sdi12g2Logo	OBJECT IDENTIFIER ::= { sdi12g2Ref 9 }
sdi12g2Audio	OBJECT IDENTIFIER ::= { sdi12g2Ref 11 }
sdi12g2Lipsync	OBJECT IDENTIFIER ::= { sdi12g2Ref 12 }
sdi12g3Ref	OBJECT IDENTIFIER ::= { sdi12g 3 }

sdi12g3Timing	OBJECT IDENTIFIER ::= { sdi12g3Ref 2 }
sdi12g3Pattern	OBJECT IDENTIFIER ::= { sdi12g3Ref 3 }
sdi12g3Id	OBJECT IDENTIFIER ::= { sdi12g3Ref 8 }
sdi12g3Logo	OBJECT IDENTIFIER ::= { sdi12g3Ref 9 }
sdi12g3Audio	OBJECT IDENTIFIER ::= { sdi12g3Ref 11 }
sdi12g3Lipsync	OBJECT IDENTIFIER ::= { sdi12g3Ref 12 }
sdi12g4Ref	OBJECT IDENTIFIER ::= { sdi12g 4 }
sdi12g4Timing	OBJECT IDENTIFIER ::= { sdi12g4Ref 2 }
sdi12g4Pattern	OBJECT IDENTIFIER ::= { sdi12g4Ref 3 }
sdi12g4Id	OBJECT IDENTIFIER ::= { sdi12g4Ref 8 }
sdi12g4Logo	OBJECT IDENTIFIER ::= { sdi12g4Ref 9 }
sdi12g4Audio	OBJECT IDENTIFIER ::= { sdi12g4Ref 11 }
sdi12g4Lipsync	OBJECT IDENTIFIER ::= { sdi12g4Ref 12 }
trap	OBJECT IDENTIFIER ::= { It4610 100 }
target	OBJECT IDENTIFIER ::= { trap 1 }

- **ACCESS**

ACCESS	Description
R/O	Read only
R/W	Read and write

16.4.1 status Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
fanStat	status.1	INTEGER	R/O	1	OPERATION
				2	STOP
genlockStat	status.2	INTEGER	R/O	1	INTERNAL
				2	NO SIGNAL
				3	TRACKING
				4	LOCKED
				5	STAY IN SYNC
power1	status.3	INTEGER	R/O	1	OFF
				2	ON
power2	status.4	INTEGER	R/O	1	OFF
				2	ON
genlockFormatStat	status.5	INTEGER	R/O	1	1125/60I
				2	1125/59.94I
				3	1125/50I
				7	1125/30P
				8	1125/29.97P
				9	1125/25P
				10	1125/24P
				11	1125/23.98P
				15	1125/24PsF
				16	1125/23.98PsF
				21	750/60P
				22	750/59.94P
				23	750/50P
				24	750/30P
				25	750/29.97P
				26	750/25P
				27	750/24P
				28	750/23.98P
				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	525/59.94I
				50	525/59.94P
61	PAL BB				
62	PAL BB+REF				
63	625/50I				
64	625/50P				

16. SNMP

MIB	OID	SYNTAX	ACCESS	VALUE	Description
				100	UNKNOWN

16.4.2 genlockRef Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
genlockModeRef	genlockRef.1	INTEGER	R/W	1	INTERNAL
				2	GL FMT-AUTO
				3	GL FMT-MANUAL
				4	GPS
				5	10MHzCW
genlockFormatRef	genlockRef.2	INTEGER	R/W	1	1125/60I
				2	1125/59.94I
				3	1125/50I
				7	1125/30P
				8	1125/29.97P
				9	1125/25P
				10	1125/24P
				11	1125/23.98P
				15	1125/24PsF
				16	1125/23.98PsF
				21	750/60P
				22	750/59.94P
				23	750/50P
				24	750/30P
				25	750/29.97P
				26	750/25P
				27	750/24P
				28	750/23.98P
				41	NTSC BB
				42	NTSC BB+REF
				43	NTSC BB+ID
				44	NTSC BB+REF+ID
				49	525/59.94I
				50	525/59.94P
61	PAL BB				
62	PAL BB+REF				
63	625/50I				
64	625/50P				

16.4.3 black*Ref Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
black1FormatRef	black1Ref.1	INTEGER	R/W	1	1125/60I
black2FormatRef	black2Ref.1			2	1125/59.94I
black3FormatRef	black3Ref.1			3	1125/50I
black4FormatRef	black4Ref.1			7	1125/30P
black5FormatRef	black5Ref.1			8	1125/29.97P
black6FormatRef	black6Ref.1			9	1125/25P
				10	1125/24P
				11	1125/23.98P
				15	1125/24PsF
				16	1125/23.98PsF
				21	750/60P
				22	750/59.94P
				23	750/50P
				24	750/30P
				25	750/29.97P
				26	750/25P
				27	750/24P
				28	750/23.98P
				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	525/59.94I
				50	525/59.94P
		61	PAL BB		
		62	PAL BB+REF		
		63	625/50I		
		64	625/50P		
black1VitcRef	black1Ref.2	INTEGER	R/W	1	OFF
black2VitcRef	black2Ref.2			2	ON
black3VitcRef	black3Ref.2				
black4VitcRef	black4Ref.2				
black5VitcRef	black5Ref.2				
black6VitcRef	black6Ref.2				

16.4.4 sdi*Format Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1ImageRef sdi2ImageRef	sdi1Format.1 sdi2Format.1	INTEGER	R/W	1	720x487:SD
				2	720x576:SD
				3	1280x720:HD
				4	1920x1080:HD
				5	1280x720:3G-A
				6	1920x1080:3G-A
				7	1920x1080:3G-B-DL
				8	1920x1080:HD-DL
sdi1StructureRef sdi2StructureRef	sdi1Format.2 sdi2Format.2	INTEGER	R/W	1	422 (YCbCr) 10-bit
				2	422 (YCbCr) 12-bit
				3	444 (YCbCr) 10-bit
				4	444 (YCbCr) 12-bit
				5	444 (RGB) 10-bit
				6	444 (RGB) 12-bit
sdi1FramerateRef sdi2FramerateRef	sdi1Format.3 sdi2Format.3	INTEGER	R/W	1	1080/60I
				2	1080/59.94I
				3	1080/50I
				4	1080/60P
				5	1080/59.94P
				6	1080/50P
				7	1080/30P
				8	1080/29.97P
				9	1080/25P
				10	1080/24P
				11	1080/23.98P
				12	1080/30PsF
				13	1080/29.97PsF
				14	1080/25PsF
				15	1080/24PsF
				16	1080/23.98PsF
				21	720/60P
				22	720/59.94P
				23	720/50P
				24	720/30P
				25	720/29.97P
				26	720/25P
				27	720/24P
				28	720/23.98P
				49	525/59.94I
				63	625/50I

16.4.5 sdi*Timing Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1TimingVRef sdi2TimingVRef	sdi1Timing.2 sdi2Timing.2	INTEGER	R/W	±1124	-
sdi1TimingHRef sdi2TimingHRef	sdi1Timing.3 sdi2Timing.3	INTEGER	R/W	±4124	-

16.4.6 sdi*Pattern Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1PatternRef sdi2PatternRef	sdi1Pattern.1 sdi2Pattern.1	INTEGER	R/W	1	COLOR BAR 100%
				2	COLOR BAR 75%
				3	COLOR BAR MULTI 100%
				4	COLOR BAR MULTI 75%
				5	COLOR BAR MULTI (+1)
				7	COLOR BAR SMPTE
				8	COLOR BAR EBU
				9	COLOR BAR BBC
				15	FLAT FIELD 100%
				17	FLAT FIELD 0%
				18	RED FIELD 100%
				19	GREEN FIELD 100%
				20	BLUE FIELD 100%
				23	CHECK FIELD

16.4.7 sdi*Component Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1ComponentRef sdi2ComponentRef	sdi1Component.1 sdi2Component.1	INTEGER	R/W	1	<input type="checkbox"/> Y/G <input type="checkbox"/> Cb/B <input type="checkbox"/> Cr/R
				2	<input checked="" type="checkbox"/> Y/G <input type="checkbox"/> Cb/B <input type="checkbox"/> Cr/R
				3	<input type="checkbox"/> Y/G <input checked="" type="checkbox"/> Cb/B <input type="checkbox"/> Cr/R
				4	<input checked="" type="checkbox"/> Y/G <input checked="" type="checkbox"/> Cb/B <input type="checkbox"/> Cr/R
				5	<input type="checkbox"/> Y/G <input type="checkbox"/> Cb/B <input checked="" type="checkbox"/> Cr/R
				6	<input checked="" type="checkbox"/> Y/G <input type="checkbox"/> Cb/B <input checked="" type="checkbox"/> Cr/R
				7	<input type="checkbox"/> Y/G <input checked="" type="checkbox"/> Cb/B <input checked="" type="checkbox"/> Cr/R
				8	<input checked="" type="checkbox"/> Y/G <input checked="" type="checkbox"/> Cb/B <input checked="" type="checkbox"/> Cr/R

16.4.8 sdi*SafetyArea Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1Safety90AreaRef sdi2Safety90AreaRef	sdi1SafetyArea.1 sdi2SafetyArea.1	INTEGER	R/W	1	OFF
				2	ON
sdi1Safety80AreaRef sdi2Safety80AreaRef	sdi1SafetyArea.2 sdi2SafetyArea.2	INTEGER	R/W	1	OFF
				2	ON
sdi1Safety43AreaRef sdi2Safety43AreaRef	sdi1SafetyArea.3 sdi2SafetyArea.3	INTEGER	R/W	1	OFF
				2	ON

16.4.9 sdi*Scroll Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1ScrollRef	sdi1Scroll.1	INTEGER	R/W	1	OFF
sdi2ScrollRef	sdi2Scroll.1			2	ON

16.4.10 sdi*PatternChange Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1PatternChangeRef	sdi1PatternChange.1	INTEGER	R/W	1	OFF
sdi2PatternChangeRef	sdi2PatternChange.1			2	ON

16.4.11 sdi*Id Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1IdRef	sdi1Id.1	INTEGER	R/W	1	OFF
sdi2IdRef	sdi2Id.1			2	ON

16.4.12 sdi*Logo Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1LogoRef	sdi1Logo.1	INTEGER	R/W	1	OFF
sdi2LogoRef	sdi2Logo.1			2	ON

16.4.13 sdi*Audio Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1AudioG1Ref	sdi1Audio.1	INTEGER	R/W	1	OFF
sdi2AudioG1Ref	sdi2Audio.1			2	ON
sdi1AudioG2Ref	sdi1Audio.2	INTEGER	R/W	1	OFF
sdi2AudioG2Ref	sdi2Audio.2			2	ON
sdi1AudioG3Ref	sdi1Audio.3	INTEGER	R/W	1	OFF
sdi2AudioG3Ref	sdi2Audio.3			2	ON
sdi1AudioG4Ref	sdi1Audio.4	INTEGER	R/W	1	OFF
sdi2AudioG4Ref	sdi2Audio.4			2	ON
sdi1AudioG5Ref	sdi1Audio.5	INTEGER	R/W	1	OFF
				2	ON
sdi1AudioG6Ref	sdi1Audio.6	INTEGER	R/W	1	OFF
				2	ON
sdi1AudioG7Ref	sdi1Audio.7	INTEGER	R/W	1	OFF
				2	ON
sdi1AudioG8Ref	sdi1Audio.8	INTEGER	R/W	1	OFF
				2	ON

16.4.14 Lipsync Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi1LipsyncRef	Lipsync.1	INTEGER	R/W	1	OFF
				2	ON
sdi2LipsyncRef	Lipsync.2	INTEGER	R/W	1	OFF
				2	ON

16.4.15 gpsStat Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
antennaAlarm	gpsStat.1	INTEGER	R/O	1	NORMAL
				2	ALARM
gpsSignalAlarm	gpsStat.2	INTEGER	R/O	1	NORMAL
				2	ALARM
ltcSignalAlarm	gpsStat.3	INTEGER	R/O	1	NORMAL
				2	ALARM
cwSignalAlarm	gpsStat.4	INTEGER	R/O	1	NORMAL
				2	ALARM
satNumAlarm	gpsStat.5	INTEGER	R/O	1	NORMAL
				2	ALARM
satCnAlarm	gpsStat.6	INTEGER	R/O	1	NORMAL
				2	ALARM
vitcSignalAlarm	gpsStat.7	INTEGER	R/O	1	NORMAL
				2	ALARM

16.4.16 gpsRef Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
satNumber	gpsRef.1	DisplayString	R/O	*/*	Number of used satellites/number of satellites in the line of view
satCnValue	gpsRef.2	DisplayString	R/O	*, *	MAX CN, MIN CN
gpsAntennaPower	gpsRef.3	INTEGER	R/W	1	OFF
				2	3.3V
				3	5V
gpsPlatformMode	gpsRef.4	INTEGER	R/W	1	STATIONARY
				2	AUTOMOTIVE
gpsCwInout	gpsRef.5	INTEGER	R/W	1	INPUT
				2	OUTPUT
gpsCwOutputFreq	gpsRef.6	INTEGER	R/W	1	CW
				2	1PPS

16.4.17 presetRef Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
powerOnRecall	presetRef.1	INTEGER	R/W	-1	OFF
				0 to 9	-
presetRecall	presetRef.2	INTEGER	R/W	0 to 9	-
presetStore	presetRef.3	INTEGER	R/W	0 to 9	-

16.4.18 target Group

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

16.4.19 sdi12g*Format Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1ImageRef	sdi12g1Format.1	INTEGER	R/W	1	720x487:SD
				2	720x576:SD
				3	1280x720:HD
				4	1920x1080:HD
				5	1280x720:3G-A
				6	1920x1080:3G-A
				7	2048x1080:3G-A
				8	1920x1080:3G-B-DL
				9	2048x1080:3G-B-DL
				10	1920x1080:HD-DL
				11	2048x1080:HD-DL
				12	1280x720:3G-B-DS
				13	1920x1080:3G-B-DS
				14	1920x1080:3G-2K-A
				15	2048x1080:3G-2K-A
				16	1920x1080:3G-2K-B
				17	2048x1080:3G-2K-B
				18	3840x2160:3G-4K-DS-SQD
				19	3840x2160:3G-4K-DS-2SI
				20	4096x2160:3G-4K-DS-SQD
				21	4096x2160:3G-4K-DS-2SI
				22	3840x2160:HD-QL-SQD
				24	4096x2160:HD-QL-SQD
				26	3840x2160:3G-QL-A-SQD
				27	3840x2160:3G-QL-A-2SI
				28	4096x2160:3G-QL-A-SQD
				29	4096x2160:3G-QL-A-2SI
				30	3840x2160:3G-QL-B-DL-SQD
				31	3840x2160:3G-QL-B-DL-2SI
				32	4096x2160:3G-QL-B-DL-SQD

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MIB	OID	SYNTAX	ACCESS	VALUE	Description
				33	4096x2160:3G-QL-B-DL-2SI
				34	3840x2160:12G-A
				35	4096x2160:12G-A
sdi12g1StructureRef	sdi12g1Format.2	INTEGER	R/W	1	422(YCbCr)10-bit
				2	422(YCbCr)12-bit
				3	444(YCbCr)10-bit
				4	444(YCbCr)12-bit
				5	444(RGB)10-bit
				6	444(RGB)12-bit
sdi12g1FramerateRef	sdi12g1Format.3	INTEGER	R/W	1	60I
				2	59.94I
				3	50I
				4	60P
				5	59.94P
				6	50P
				7	30P
				8	29.97P
				9	25P
				10	24P
				11	23.98P
				12	30PsF
				13	29.97PsF
				14	25PsF
				15	24PsF
				16	23.98PsF

16.4.20 sdi12g*Timing Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1TimingVRef	sdi12g1Timing.2	INTEGER	R/W	± 1124	-
sdi12g2TimingVRef	sdi12g2Timing.2				
sdi12g3TimingVRef	sdi12g3Timing.2				
sdi12g4TimingVRef	sdi12g4Timing.2				
sdi12g1TimingHRef	sdi12g1Timing.3	INTEGER	R/W	± 4124	-
sdi12g2TimingHRef	sdi12g2Timing.3				
sdi12g3TimingHRef	sdi12g3Timing.3				
sdi12g4TimingHRef	sdi12g4Timing.3				

16.4.21 sdi12g*Pattern Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1PtnFixRef	sdi12g1Pattern.1	INTEGER	R/W	1	COLOR BAR 100%
sdi12g2PtnFixRef	sdi12g2Pattern.1			2	COLOR BAR 75%
sdi12g3PtnFixRef	sdi12g3Pattern.1			3	COLOR BAR MULTI 100%
sdi12g4PtnFixRef	sdi12g4Pattern.1			4	COLOR BAR MULTI 75%
				5	COLOR BAR MULTI (+I)
				6	COLOR BAR SMPTE
				7	COLOR BAR EBU
				8	COLOR BAR BBC
				9	FLAT FIELD 100%
				10	FLAT FIELD 0%
				11	RED FIELD 100%
				12	GREEN FIELD 100%
				13	BLUE FIELD 100%
				14	CHECK FIELD
				15	COLOR BAR UHDTV STD-B66-2

16.4.22 sdi12g*Component Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1ComponentRef	sdi12g1Component.1	INTEGER	R/W	1	<input type="checkbox"/> Y/G <input type="checkbox"/> Cb/B <input type="checkbox"/> Cr/R
				2	<input checked="" type="checkbox"/> Y/G <input type="checkbox"/> Cb/B <input type="checkbox"/> Cr/R
				3	<input type="checkbox"/> Y/G <input checked="" type="checkbox"/> Cb/B <input type="checkbox"/> Cr/R
				4	<input checked="" type="checkbox"/> Y/G <input checked="" type="checkbox"/> Cb/B <input type="checkbox"/> Cr/R
				5	<input type="checkbox"/> Y/G <input type="checkbox"/> Cb/B <input checked="" type="checkbox"/> Cr/R
				6	<input checked="" type="checkbox"/> Y/G <input type="checkbox"/> Cb/B <input checked="" type="checkbox"/> Cr/R
				7	<input type="checkbox"/> Y/G <input checked="" type="checkbox"/> Cb/B <input checked="" type="checkbox"/> Cr/R
				8	<input checked="" type="checkbox"/> Y/G <input checked="" type="checkbox"/> Cb/B <input checked="" type="checkbox"/> Cr/R

16.4.23 sdi12g*SafetyArea Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1Safety90AreaRef	sdi12g1SafetyArea.1	INTEGER	R/W	1	OFF
				2	ON
sdi12g1Safety80AreaRef	sdi12g1SafetyArea.2	INTEGER	R/W	1	OFF
				2	ON
sdi12g1Safety43AreaRef	sdi12g1SafetyArea.3	INTEGER	R/W	1	OFF
				2	ON

16.4.24 sdi12g*Scroll Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1ScrollRef	sdi12g1Scroll.1	INTEGER	R/W	1	OFF
				2	ON
Sdi12g1ScrollVspdRef	sdi12g1Scroll.2	INTEGER	R/W	± 256	
Sdi12g1ScrollHspdRef	sdi12g1Scroll.3	INTEGER	R/W	± 256	

16.4.25 sdi12g*PatternChange Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
Sdi12g1PtnChangeRef	sdi12g1PatternChange.1	INTEGER	R/W	1	OFF
				2	ON
sdi12g1PtnChangeSpdRef	sdi12g1PatternChange.2	INTEGER	R/W	+255	

16.4.26 sdi12g*Id Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description	
sdi12g1IdRef	sdi12g1Id.1	INTEGER	R/W	1	OFF	
sdi12g2IdRef	sdi12g2Id.1			2	ON	
sdi12g3IdRef	sdi12g3Id.1					
sdi12g4IdRef	sdi12g4Id.1					
sdi12g1IdVposiRef	sdi12g1Id.2	INTEGER	R/W	+2159		
sdi12g2IdVposiRef	sdi12g2Id.2					
sdi12g3IdVposiRef	sdi12g3Id.2					
sdi12g4IdVposiRef	sdi12g4Id.2					
sdi12g1IdHposiRef	sdi12g1Id.3	INTEGER	R/W	+4095		
sdi12g2IdHposiRef	sdi12g2Id.3					
sdi12g3IdHposiRef	sdi12g3Id.3					
sdi12g4IdHposiRef	sdi12g4Id.3					
sdi12g1IdSizeRef	sdi12g1Id.4	INTEGER	R/W	1	x1	
sdi12g2IdSizeRef	sdi12g2Id.4			2	x2	
sdi12g3IdSizeRef	sdi12g3Id.4			3	x4	
sdi12g4IdSizeRef	sdi12g4Id.4			4	x8	
sdi12g1IdLevelRef	sdi12g1Id.5	INTEGER	R/W	1	100%	
sdi12g2IdLevelRef	sdi12g2Id.5			2	75%	
sdi12g3IdLevelRef	sdi12g3Id.5					
sdi12g4IdLevelRef	sdi12g4Id.5					
sdi12g1IdBlink	sdi12g1Id.6	Aggregate	---	---	---	
sdi12g2IdBlink	sdi12g2Id.6					
sdi12g3IdBlink	sdi12g3Id.6					
sdi12g4IdBlink	sdi12g4Id.6					
sdi12g1BlinkRef	sdi12g1IdBlink.1	INTEGER	R/W	1	OFF	
sdi12g2BlinkRef	sdi12g2IdBlink.1			2	ON	
sdi12g3BlinkRef	sdi12g3IdBlink.1					
sdi12g4BlinkRef	sdi12g4IdBlink.1					
sdi12g1BlinkOntimeRef	sdi12g1IdBlink.2	INTEGER	R/W	+9		
sdi12g2BlinkOntimeRef	sdi12g2IdBlink.2					
sdi12g3BlinkOntimeRef	sdi12g3IdBlink.2					
sdi12g4BlinkOntimeRef	sdi12g4IdBlink.2					
sdi12g1BlinkOfftimeRef	sdi12g1IdBlink.3	INTEGER	R/W	+9		
sdi12g2BlinkOfftimeRef	sdi12g2IdBlink.3					
sdi12g3BlinkOfftimeRef	sdi12g3IdBlink.3					
sdi12g4BlinkOfftimeRef	sdi12g4IdBlink.3					
sdi12g1IdScroll	sdi12g1Id.7	Aggregate	---	---	---	
sdi12g2IdScroll	sdi12g2Id.7					
sdi12g3IdScroll	sdi12g3Id.7					
sdi12g4IdScroll	sdi12g4Id.7					
sdi12g1IdScrollRef	sdi12g1IdScroll.1	INTEGER	R/W	1	OFF	
sdi12g2IdScrollRef	sdi12g2IdScroll.1			2	ON	
sdi12g3IdScrollRef	sdi12g3IdScroll.1					
sdi12g4IdScrollRef	sdi12g4IdScroll.1					

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1IdScrollSpdRef	sdi12g1IdScroll.2	INTEGER	R/W	± 256	
sdi12g2IdScrollSpdRef	sdi12g2IdScroll.2				
sdi12g3IdScrollSpdRef	sdi12g3IdScroll.2				
sdi12g4IdScrollSpdRef	sdi12g4IdScroll.2				

16.4.27 sdi12g*Logo Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1LogoRef	sdi12g1Logo.1	INTEGER	R/W	1	OFF
sdi12g2LogoRef	sdi12g2Logo.1			2	ON
sdi12g3LogoRef	sdi12g3Logo.1				
sdi12g4LogoRef	sdi12g4Logo.1				
sdi12g1LogoSelRef	sdi12g1Logo.2	INTEGER	R/W	1..4	
sdi12g2LogoSelRef	sdi12g2Logo.2				
sdi12g3LogoSelRef	sdi12g3Logo.2				
sdi12g4LogoSelRef	sdi12g4Logo.2				
sdi12g1LogoVposiRef	sdi12g1Logo.3	INTEGER	R/W	+2159	
sdi12g2LogoVposiRef	sdi12g2Logo.3				
sdi12g3LogoVposiRef	sdi12g3Logo.3				
sdi12g4LogoVposiRef	sdi12g4Logo.3				
sdi12g1LogoHposiRef	sdi12g1Logo.4	INTEGER	R/W	+4095	
sdi12g2LogoHposiRef	sdi12g2Logo.4				
sdi12g3LogoHposiRef	sdi12g3Logo.4				
sdi12g4LogoHposiRef	sdi12g4Logo.4				
sdi12g1LogoLevel	sdi12g1Logo.5	Aggregate	---	---	---
sdi12g2LogoLevel	sdi12g2Logo.5				
sdi12g3LogoLevel	sdi12g3Logo.5				
sdi12g4LogoLevel	sdi12g4Logo.5				
sdi12g1LogoLevelLv0 Ref	sdi12g1LogoLevel.1	INTEGER	R/W	100h	
sdi12g2LogoLevelLv0 Ref	sdi12g2LogoLevel.1			.	
sdi12g3LogoLevelLv0 Ref	sdi12g3LogoLevel.1			EB0h	
sdi12g4LogoLevelLv0 Ref	sdi12g4LogoLevel.1				
sdi12g1LogoLevelLv1 Ref	sdi12g1LogoLevel.2	INTEGER	R/W	100h	
sdi12g2LogoLevelLv1 Ref	sdi12g2LogoLevel.2			.	
sdi12g3LogoLevelLv1 Ref	sdi12g3LogoLevel.2			EB0h	
sdi12g4LogoLevelLv1 Ref	sdi12g4LogoLevel.2				
sdi12g1LogoLevelLv2 Ref	sdi12g1LogoLevel.3	INTEGER	R/W	100h	
	sdi12g2LogoLevel.3			.	

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MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g2LogoLevelLv2 Ref sdi12g3LogoLevelLv2 Ref sdi12g4LogoLevelLv2 Ref	sdi12g3LogoLevel.3 sdi12g4LogoLevel.3			EB0h	
sdi12g1LogoLevelLv3 Ref sdi12g2LogoLevelLv3 Ref sdi12g3LogoLevelLv3 Ref sdi12g4LogoLevelLv3 Ref	sdi12g1LogoLevel.4 sdi12g2LogoLevel.4 sdi12g3LogoLevel.4 sdi12g4LogoLevel.4	INTEGER	R/W	100h . EB0h	
sdi12g1LogoBg sdi12g2LogoBg sdi12g3LogoBg sdi12g4LogoBg	sdi12g1Logo.6 sdi12g2Logo.6 sdi12g3Logo.6 sdi12g4Logo.6	Aggregate	---	---	---
sdi12g1BgRef sdi12g2BgRef sdi12g3BgRef sdi12g4BgRef	sdi12g1LogoBg.1 sdi12g2LogoBg.1 sdi12g3LogoBg.1 sdi12g4LogoBg.1	INTEGER	R/W	1 2	OFF ON
sdi12g1BgYLevelRef sdi12g2BgYLevelRef sdi12g3BgYLevelRef sdi12g4BgYLevelRef	sdi12g1LogoBg.2 sdi12g2LogoBg.2 sdi12g3LogoBg.2 sdi12g4LogoBg.2	INTEGER	R/W	100h . EB0h	
sdi12g1BgCbLevelRef sdi12g2BgCbLevelRef sdi12g3BgCbLevelRef sdi12g4BgCbLevelRef	sdi12g1LogoBg.3 sdi12g2LogoBg.3 sdi12g3LogoBg.3 sdi12g4LogoBg.3	INTEGER	R/W	100h . EB0h	
sdi12g1BgCrLevelRef sdi12g2BgCrLevelRef sdi12g3BgCrLevelRef sdi12g4BgCrLevelRef	sdi12g1LogoBg.4 sdi12g2LogoBg.4 sdi12g3LogoBg.4 sdi12g4LogoBg.4	INTEGER	R/W	100h . EB0h	

16.4.28 sdi12g*MvBox Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1MvBoxRef	sdi12g1MvBox.1	INTEGER	R/W	1 2	OFF ON
sdi12g1MvBoxColorRef	sdi12g1MvBox.2	INTEGER	R/W	1 2 3 4 5 6	WHITE YELLOW CYAN GREEN BLUE RED

MIB	OID	SYNTAX	ACCESS	VALUE	Description
				7	MAGENTA
				8	BLACK
sdi12g1MvBoxVspdRef	sdi12g1MvBox.3	INTEGER	R/W	1	LOW
				2	MIDDLE
				3	HIGH
sdi12g1MvBoxHspdRef	sdi12g1MvBox.4	INTEGER	R/W	1	LOW
				2	MIDDLE
				3	HIGH
sdi12g1MvBoxVsizeRef	sdi12g1MvBox.5	INTEGER	R/W	1	SIZE 1
				2	SIZE 2
				3	SIZE 3
				4	SIZE 4
				5	SIZE 5
sdi12g1MvBoxHsizeRef	sdi12g1MvBox.6	INTEGER	R/W	1	SIZE 1
				2	SIZE 2
				3	SIZE 3
				4	SIZE 4
				5	SIZE 5

16.4.29 sdi12g *Audio Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1AudioG1Ref	sdi12g1Audio.1	INTEGER	R/W	1	OFF
sdi12g2AudioG1Ref	sdi12g2Audio.1			2	ON
sdi12g3AudioG1Ref	sdi12g3Audio.1				
sdi12g4AudioG1Ref	sdi12g4Audio.1				
sdi12g1AudioG2Ref	sdi12g1Audio.2	INTEGER	R/W	1	OFF
sdi12g2AudioG2Ref	sdi12g2Audio.2			2	ON
sdi12g3AudioG2Ref	sdi12g3Audio.2				
sdi12g4AudioG2Ref	sdi12g4Audio.2				
sdi12g1AudioG3Ref	sdi12g1Audio.3	INTEGER	R/W	1	OFF
sdi12g2AudioG3Ref	sdi12g2Audio.3			2	ON
sdi12g3AudioG3Ref	sdi12g3Audio.3				
sdi12g4AudioG3Ref	sdi12g4Audio.3				
sdi12g1AudioG4Ref	sdi12g1Audio.4	INTEGER	R/W	1	OFF
sdi12g2AudioG4Ref	sdi12g2Audio.4			2	ON
sdi12g3AudioG4Ref	sdi12g3Audio.4				
sdi12g4AudioG4Ref	sdi12g4Audio.4				

16.4.30 sdi12g*Lipsync Group

MIB	OID	SYNTAX	ACCESS	VALUE	Description
sdi12g1LipsyncRef	sdi12g1Lipsync.1	INTEGER	R/W	1	OFF
sdi12g2LipsyncRef	sdi12g2Lipsync.1			2	ON
sdi12g3LipsyncRef	sdi12g3Lipsync.1				
sdi12g4LipsyncRef	sdi12g4Lipsync.1				

16.5 Extended TRAP

●index 1

OID: iso(1).org(3).dod(6).internet(1).mib-2(1).system(1).sysUpTime(1).0
 Syntax: TimeTicks
 Range: 1 to 4294967295 (overflow occurs if this range is exceeded)
 Description: Elapsed time after starting the SNMP agent

●index 2

OID: iso(1).org(3).dod(6).internet(1).snmpV2(6).snmpModules(3).
 snmpMIB(1).snmpMIBObjects(1).snmpTrap(4).snmpTrapOID(1).0
 Syntax: Object Identifier
 Description: Trap identification field

●index 3

OID: leader(20111).It4610(36).notification(0).trapStr(2).trapCounter(1).0
 Syntax: Counter32
 Range: 1 to 4294967295
 Description: The total number of enterprise traps sent after starting up

●index 4

OID: leader(20111).It4610(36).notification(0).trapStr(2).
 trapIntTimestamp(2).0
 Syntax: DisplayString(1..20)
 Range: Up to 20 characters
 Description: Date and time of error occurrence

● **index 5**

OID: leader(20111).It4610(36).notification(0).trapContent(1).error(1).X
 leader(20111).It4610(36).notification(0).trapContent(1).normal(2).X

Syntax: STRING

Range: Up to 16 characters

Description: Error information character string
 The OID or trapContent(1).error(1).X and error information character string when an error occurs or the OID of trapContent(1).normal(2).X and error information character string when the error recovers are sent.

Error Number (*1)	Error Information Character String	Description
1	FAN_STATUS	Fan status error detection
2	GENLOCK_STATUS	Genlock status error detection
3	POWER1_STATUS	Power supply 1 error detection
4	POWER2_STATUS	Power supply 2 error detection
5	GPS_ANTENNA_STATUS	GPS antenna error detection
6	GPS_SIGNAL_STATUS	GPS signal error detection

*1 OID number of error(1) and that of normal(2) of trapContent(1).

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17.1 List of Settings

A list of settings that you can specify on the LT 4610 with the SER01 installed is provided below.

Settings may not be displayed depending on other settings. In addition, the available values that you can select and the variable range may vary depending on other settings. For details, see the LT 4610 instruction manual.

17.1.1 GENLOCK Menu

Setting	Value	Factory Default Value
GENLOCK MODE	INTERNAL / GL FMT-AUTO / GL FMT-MANUAL / GPS / 10MHzCW	INTERNAL
GENLOCK NTSC	NTSC BB / NTSC BB+REF / NTSC BB+ID / NTSC BB+REF+ID	NTSC BB
GENLOCK PAL	PAL BB / PAL BB+REF	
GENLOCK COMPONENT	525/59.94I / 525/59.94P / 625/50I / 625/50P	
GENLOCK 1125:HD	1125/60I / 1125/59.94I / 1125/50I / 1125/30P / 1125/29.97P / 1125/25P / 1125/24P / 1125/23.98P / 1125/24PsF / 1125/23.98PsF	
GENLOCK 750:HD	750/60P / 750/59.94P / 750/50P / 750/30P / 750/29.97P / 750/25P / 750/24P / 750/23.98P	
GENLOCK TIMING F	±5	0
GENLOCK TIMING V	±1125	0
GENLOCK TIMING H	±432	0
GENLOCK TIMING FN	±100	0
RECOVERY MODE	AUTO / MANUAL	AUTO
AUTO SETTING	IMMEDIATE / FAST / SLOW	FAST
MANUAL SETTING	IMMEDIATE / FAST / SLOW	IMMEDIATE

17.1.2 BLACK Menu

Setting	Value	Factory Default Value
BLK1 NTSC	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	NTSC BB
BLK1 PAL	PAL BB / PAL BB+REF	
BLK1 COMPONENT	525/59.94I / 525/59.94P / 625/50I / 625/50P	
BLK1 1125:HD	1125/60I / 1125/59.94I / 1125/50I / 1125/30P / 1125/29.97P / 1125/25P / 1125/24P / 1125/23.98P / 1125/24PsF / 1125/23.98PsF	
BLK1 750:HD	750/60P / 750/59.94P / 750/50P / 750/30P / 750/29.97P / 750/25P / 750/24P / 750/23.98P	
BLK1 TIMING F	±5	0
BLK1 TIMING V	±1124	0
BLK1 TIMING H	±4124	0
BLK1 VITC	ON / OFF	OFF
BLK2 EQUAL TO BLK1	ON / OFF	OFF
BLK3 EQUAL TO BLK1	ON / OFF	OFF
BLK4 EQUAL TO BLK1	ON / OFF	OFF
BLK5 EQUAL TO BLK1	ON / OFF	OFF
BLK6 EQUAL TO BLK1	ON / OFF	OFF

* BLK2 to BLK6 settings are the same as BLK1 settings.

17.1.3 SDI Menu

Setting	Value	Factory Default Value
SDI1 IMAGE	720x487:SD / 720x576:SD / 1280x720:HD / 1920x1080:HD / 1280x720:3G-A / 1920x1080:3G-A / 1920x1080:3G-B-DL / 1920x1080:HD-DL	1920x1080:HD
SDI1 STRUCTURE	422 (YCbCr) 10-bit / 422 (YCbCr) 12-bit / 444 (YCbCr) 10-bit / 444 (YCbCr) 12-bit / 444 (RGB) 10-bit / 444 (RGB) 12-bit	422 (YCbCr) 10-bit
SDI1 RATE	60I / 59.94I / 50I / 60P / 59.94P / 50P / 30P / 29.97P / 25P / 24P / 23.98P / 30PsF / 29.97PsF / 25PsF / 24PsF / 23.98PsF	59.94I
SDI1 0H TIMING	SERIAL / LEGACY	SERIAL
SDI1 TIMING V	±1124	0
SDI1 TIMING H	±4124	0
SDI1 COLOR BAR	100% / 75% / MULTI 100% / MULTI 75% / MULTI (+) / SMPTE / EBU / BBC	COLOR BAR 100%
SDI1 MONITOR	FALT FIELD 100% / FLAT FIELD 0% / RED FIELD 100% / GREEN FIELD 100% / BLUE FIELD 100%	
SDI1 SDI	CHECK FIELD	
SDI1 COMPONENT	ON / OFF	All ON
SDI1 SAFETY AREA	ON / OFF	All OFF
SCROLL	ON / OFF	OFF
SCROLL V-SPEED	±256	0
SCROLL H-SPEED	±256	0
PATTERN CHANGE	ON / OFF	OFF

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Setting	Value	Factory Default Value
PATTERN CHG SPEED	+1 to +255	+1
ID CHARACTER	ON / OFF	OFF
ID SET	◀ !"# \$%&' () *+, -./ 0123456789 : ; <=> ?@ ABCDEFGHIJKLMNOPQRSTUVWXYZ [¥] ^ _ → ←	LT4610 ◀
ID V-POSI	0 to 1079	0
ID H-POSI	0 to 1919	0
ID SIZE	x1 / x2 / x4 / x8	x1
ID LEVEL	100% / 75%	100%
ID BLINK	ON / OFF	OFF
ID BLINK ON TIME	1 to 9	1
ID BLINK OFF TIME	1 to 9	1
ID SCROLL	ON / OFF	OFF
ID SCROLL SPEED	±256	0
LOGO	ON / OFF	OFF
LOGO SELECT	INT_1 to INT_4	INT_1
LOGO V-POSI	0 to 1079	0
LOGO H-POSI	0 to 1919	0
LOGO LEVEL0	100 to EB0	100
LOGO LEVEL1	100 to EB0	590
LOGO LEVEL2	100 to EB0	A20
LOGO LEVEL3	100 to EB0	EB0
LOGO BACKGND	ON / OFF	OFF
SDI1 AUDIO ON/OFF	ON / OFF	All ON
L-* AUDIO ON/OFF	ON / OFF	All ON
G*/CH* FREQ	SILENCE / 400Hz / 800Hz / 1kHz	1kHz
L-* G*/CH* FREQ	SILENCE / 400Hz / 800Hz / 1kHz	1kHz
G*/CH* LEVEL	-60 to 0	-20
L-* G*/CH* LEVEL	-60 to 0	-20
G*/CH* CLICK	OFF / 1sec / 2sec / 4sec	OFF
L-* G*/CH* CLICK	OFF / 1sec / 2sec / 4sec	OFF
G1/CH* EQUAL CH1	ON / OFF	OFF
G2/CH* EQUAL CH5	ON / OFF	OFF
G3/CH* EQUAL CH9	ON / OFF	OFF
G4/CH* EQUAL CH13	ON / OFF	OFF
G* RESOLUTION	20 BIT / 24 BIT	20 BIT
L-* G* RESOLUTION	20 BIT / 24 BIT	20 BIT
G* EMPHASIS	50/15 / CCITT / OFF	OFF
L-* G* EMPHASIS	50/15 / CCITT / OFF	OFF
G2 EQUAL TO G1	ON / OFF	OFF
G3 EQUAL TO G1	ON / OFF	OFF
G4 EQUAL TO G3	ON / OFF	OFF
SDI1 L-B EQUAL L-A	ON / OFF	OFF
ANC ATC-LTC	ON / OFF	OFF
SDI2 EQUAL TO SDI1	ON / OFF	OFF

* SDI2 settings are similar to the SDI1 settings.

17.1.4 AES/EBU Menu

Setting	Value	Factory Default Value
AES/EBU	ON / OFF	OFF
AES/EBU CH* FREQ	SILENCE / 400Hz / 800Hz / 1kHz	1kHz
AES/EBU CH* LEVEL	-60 to 0	-20
AES/EBU CH* CLICK	OFF / 1sec / 2sec / 4sec	OFF
CH2 EQUAL TO CH1	ON / OFF	OFF
AES/EBU RESOLUTION	20 BIT / 24 BIT	20 BIT
AES/EBU EMPHASIS	50/15 / CCITT / OFF	OFF
AES/EBU TIMECODE	ON / OFF	OFF
AES/EBU TIMING	±511	0
SILENCE RESOLUTION	20BIT / 24BIT	20BIT
SILENCE TIMING	±511	0

17.1.5 WCLK Menu

Setting	Value	Factory Default Value
WCLK TIMING	±511	0

17.1.6 ETC Menu

Setting	Value	Factory Default Value
LIPSYNC SDI1+AES	ON / OFF	OFF
LIPSYNC SDI2	ON / OFF	OFF

17.1.7 GPS OPTION Menu

Setting	Value	Factory Default Value
LTC	ON / OFF	OFF
FRAME	-29 to 29	0
BIT	-39 to 39	0
LTC2 OFFSET	±23:59:59	+00:00:00
LTC3 OFFSET	±23:59:59	+00:00:00
CW IN/OUT	INPUT / OUTPUT	INPUT
OUTPUT FREQ	CW / 1PPS	CW

17.1.8 SYSTEM Menu

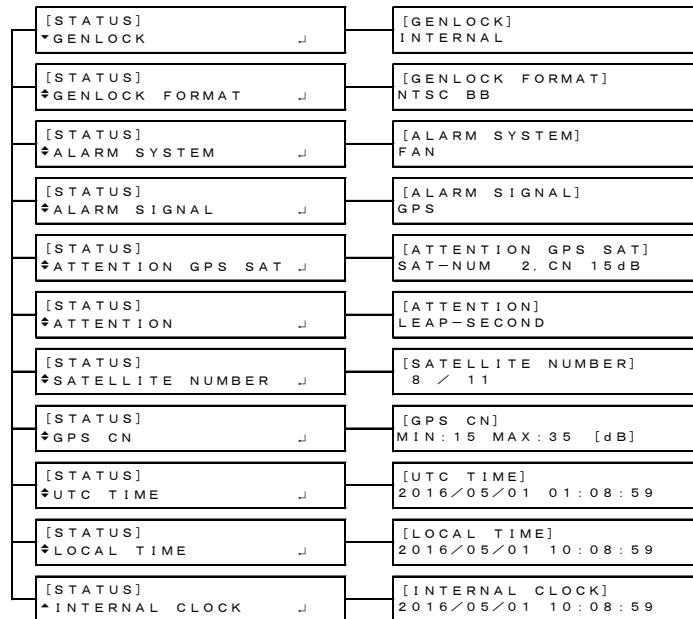
Setting	Value	Factory Default Value
LCD BACKLIGHT	ON / AUTO OFF / OFF	ON
KEY LOCK	ON / OFF	OFF
POWER ON RECALL	OFF / NUMBER 0 to NUMBER 9	OFF
IP ADDRESS	000.000.000.000 to 255.255.255.255	192.168.000.001
SUBNET MASK	000.000.000.000 to 255.255.255.255	255.255.255.000
DEFAULT GATEWAY	000.000.000.000 to 255.255.255.255	000.000.000.000
SNMP TRAP	ON / OFF	OFF
SNMP MANAGER IP	000.000.000.000 to 255.255.255.255	000.000.000.000
READ COMMUNITY	◀ 0 1 2 3 4 5 6 7 8 9	LDRUser ◀
WRITE COMMUNITY	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	LDRAdm ◀
TRAP COMMUNITY	a b c d e f g h i j k l m n o p q r s t u v w x y z	LDRUser ◀
DATE&TIME SOURCE	INTERNAL / GPS	INTERNAL
DATE&TIME ADJUST	2000/01/01 00:00:00 to 2099/12/31 23:59:59	Current time
TIMECODE SOURCE	GPS / INTERNAL / LTC0 / VITC	INTERNAL
DROP FRAME	ON / OFF	ON
JAM SYNC	ON / OFF	ON
JAM SYNC ADJUST	00:00:00 to 23:59:59	00:00:00
DAYLIGHT SAVING	ON / OFF	OFF
CHANGE DAY	01/01 00:00:00 to 12/31 23:59:00	01/01 00:00:00
TIMECODE OFFSET	±23:59:59	+00:00:00
RETURN DAY	01/01 00:00:00 to 12/31 23:59:00	01/01 00:00:00
SCHEDULED TIME	00:00:00 to 23:59:00	00:00:00
TIMEZONE OFFSET	UTC-12:00 to UTC+12:00	UTC+09:00
ANTENNA POWER	OFF / 3.3V / 5V	OFF
PLATFORM MODE	STATIONARY / AUTOMOTIVE	STATIONARY
EPOCH	SMPTE / TAI	SMPTE
ALARM POLARITY	POSITIVE / NEGATIVE	POSITIVE
POWER1	ENABLE / DISABLE	ENABLE
POWER2	ENABLE / DISABLE	ENABLE
FAN	ENABLE / DISABLE	ENABLE
GENLOCK NO SIGNAL	ENABLE / DISABLE	ENABLE
GENLOCK ST IN SYNC	ENABLE / DISABLE	ENABLE
GPS ANNTENA	ENABLE / DISABLE	ENABLE
GPS PLL	ENABLE / DISABLE	ENABLE
GPS SIGNAL	ENABLE / DISABLE	ENABLE
CW SIGNAL	ENABLE / DISABLE	ENABLE
LTC0 SIGNAL	ENABLE / DISABLE	ENABLE
VITC SIGNAL	ENABLE / DISABLE	ENABLE
ATTENTION	ENABLE / DISABLE	ENABLE
WEB BROWSER	ON / OFF	OFF
FORMAT SETTING	NTSC / PAL	NTSC

17.2 Menu Tree

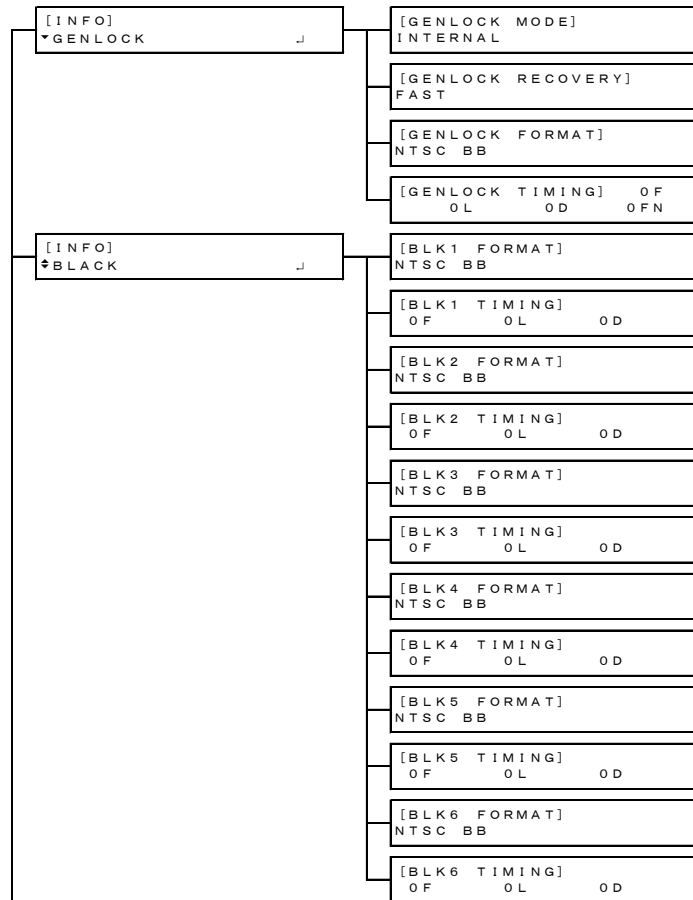
This section shows the menu trees of the LT 4610 with the SER01 and the SER02 installed.

Menus may not be displayed depending on other settings. For details, see the LT 4610 instruction manual.

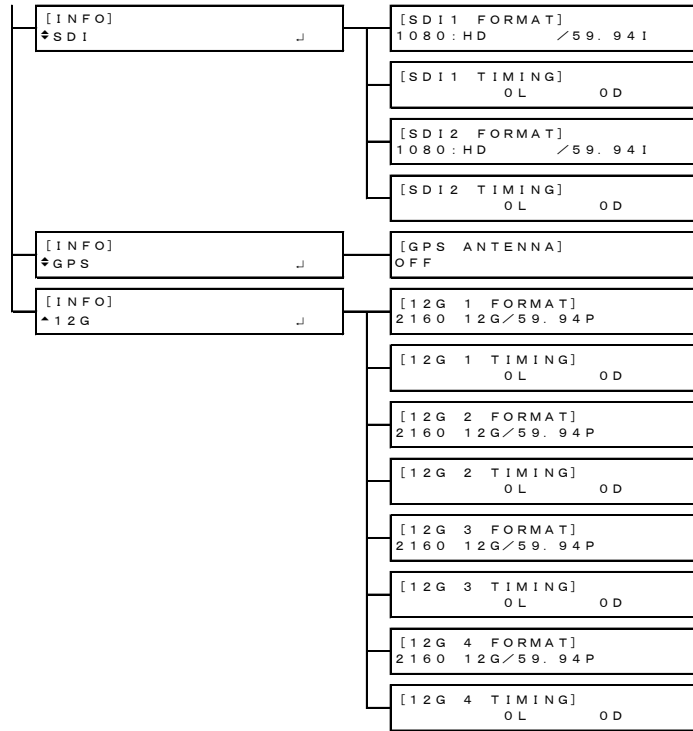
17.2.1 STATUS Menu



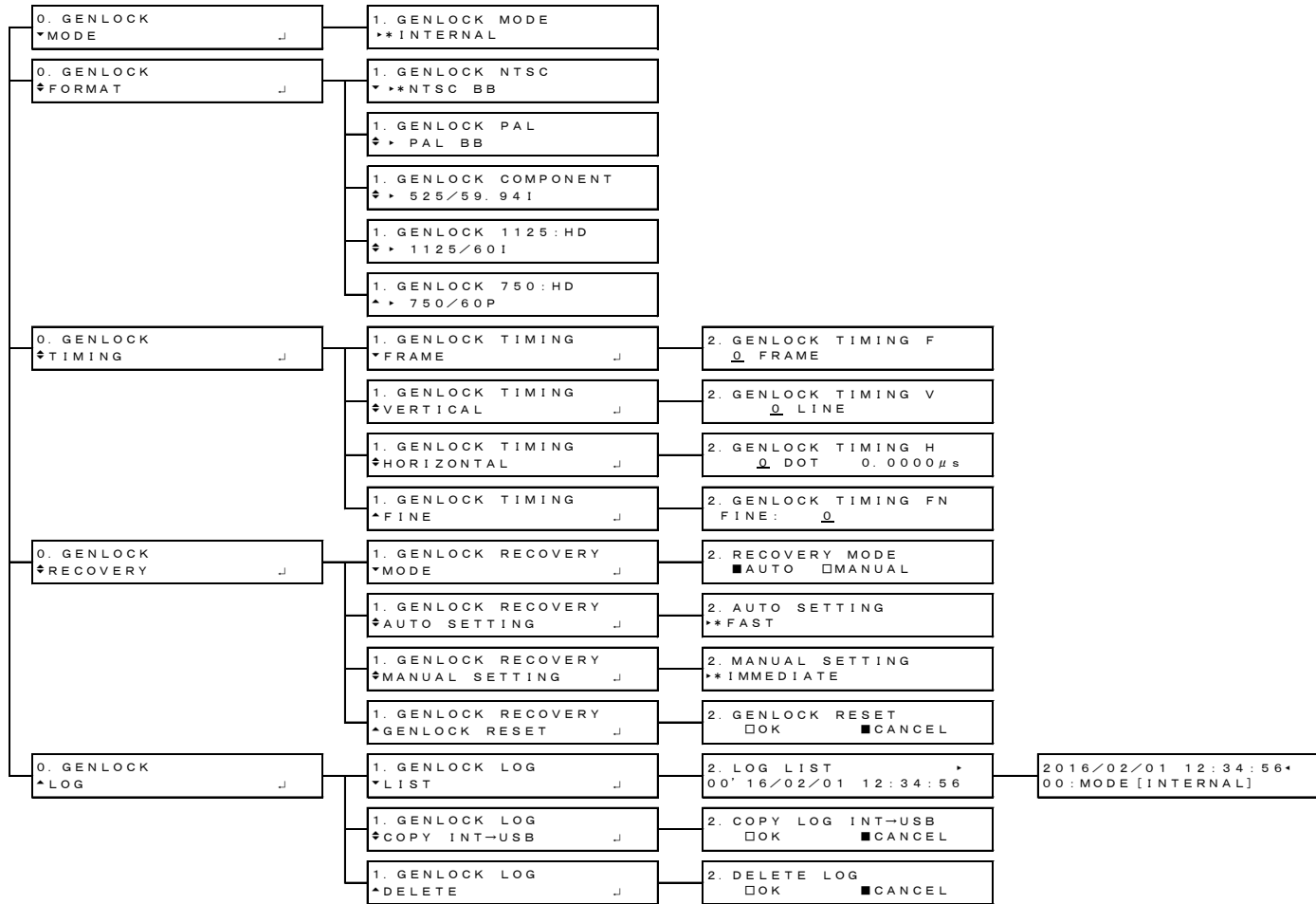
17.2.2 INFO Menu



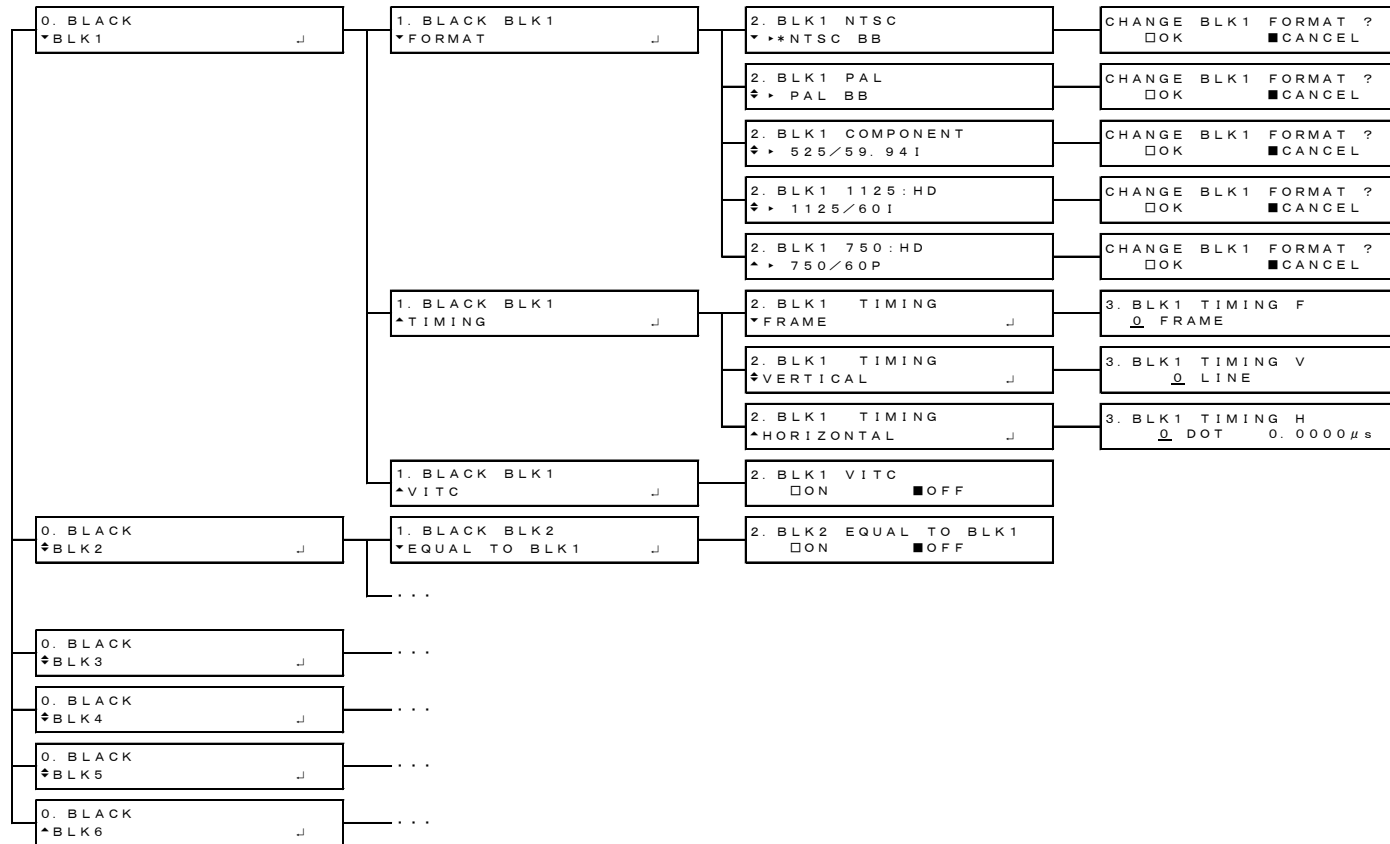
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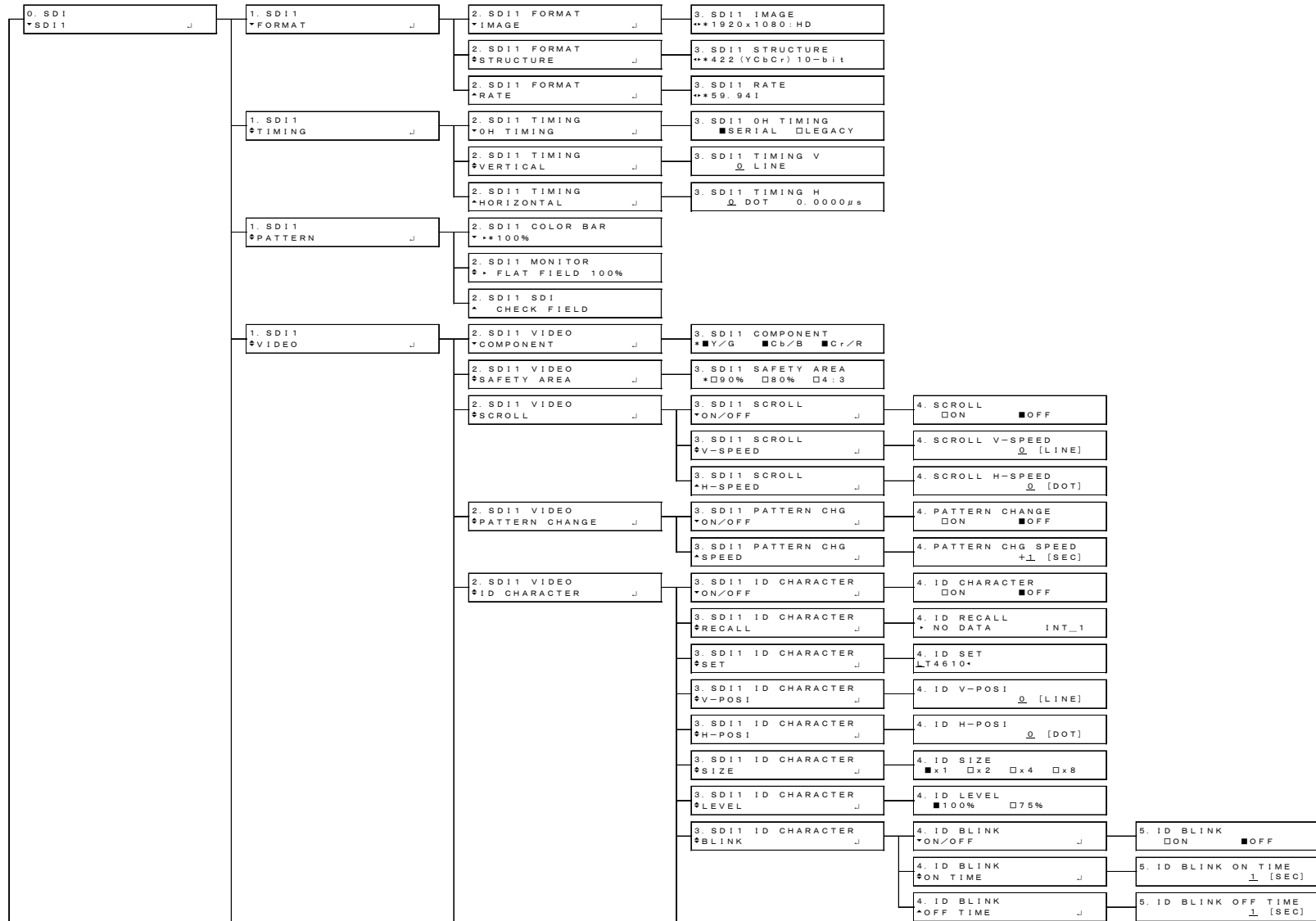
17.2.3 GENLOCK Menu



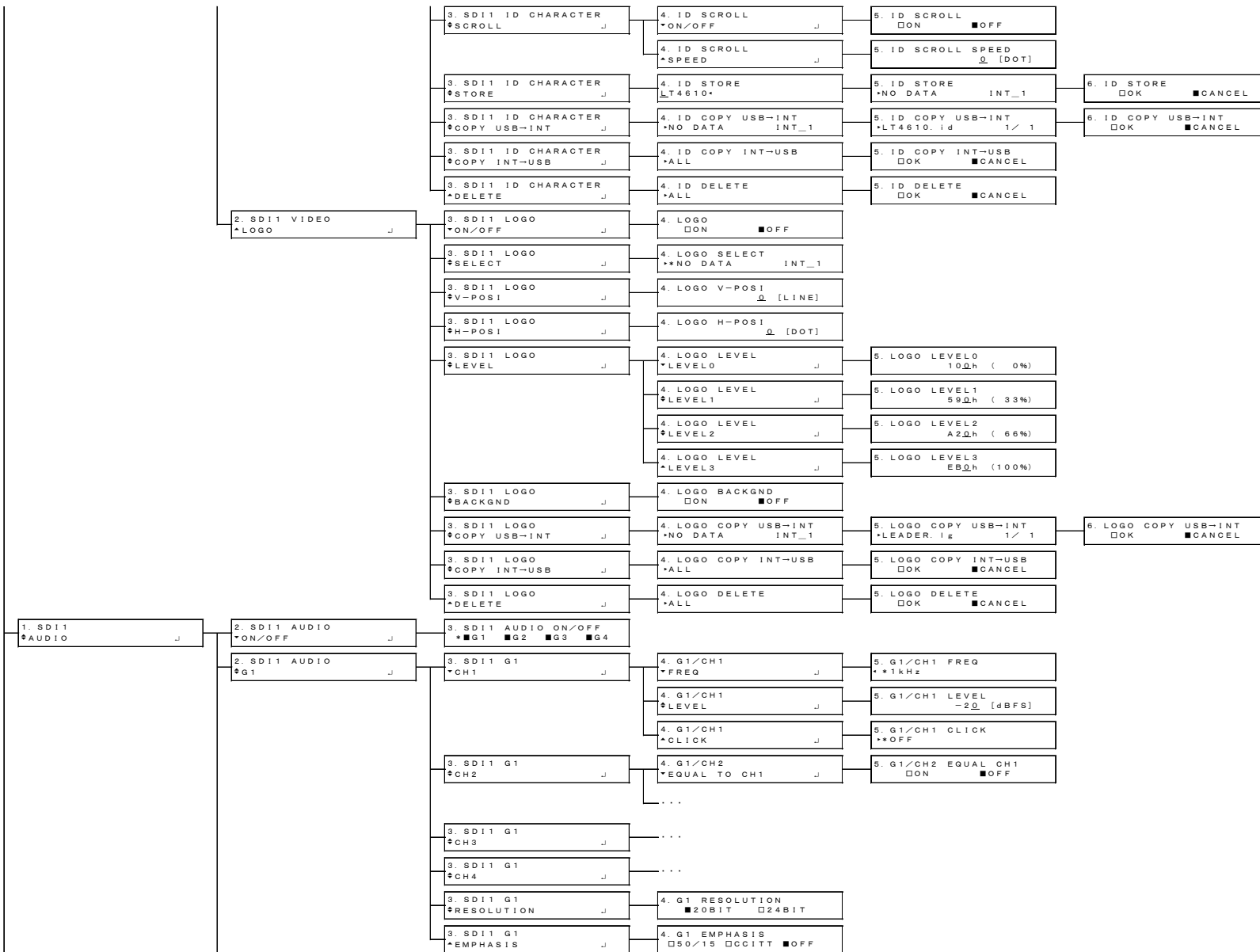
17.2.4 BLACK Menu



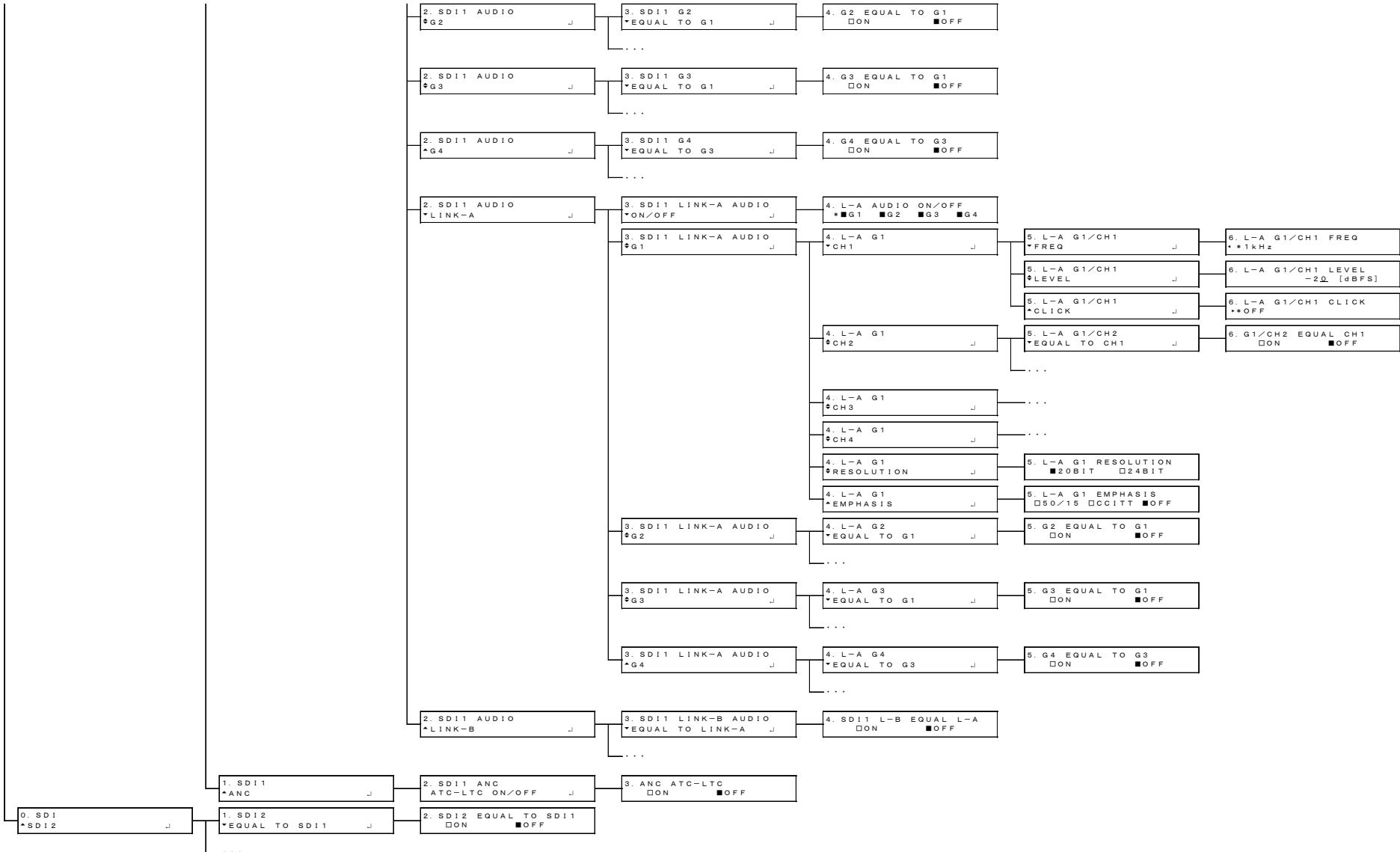
17.2.5 SDI Menu



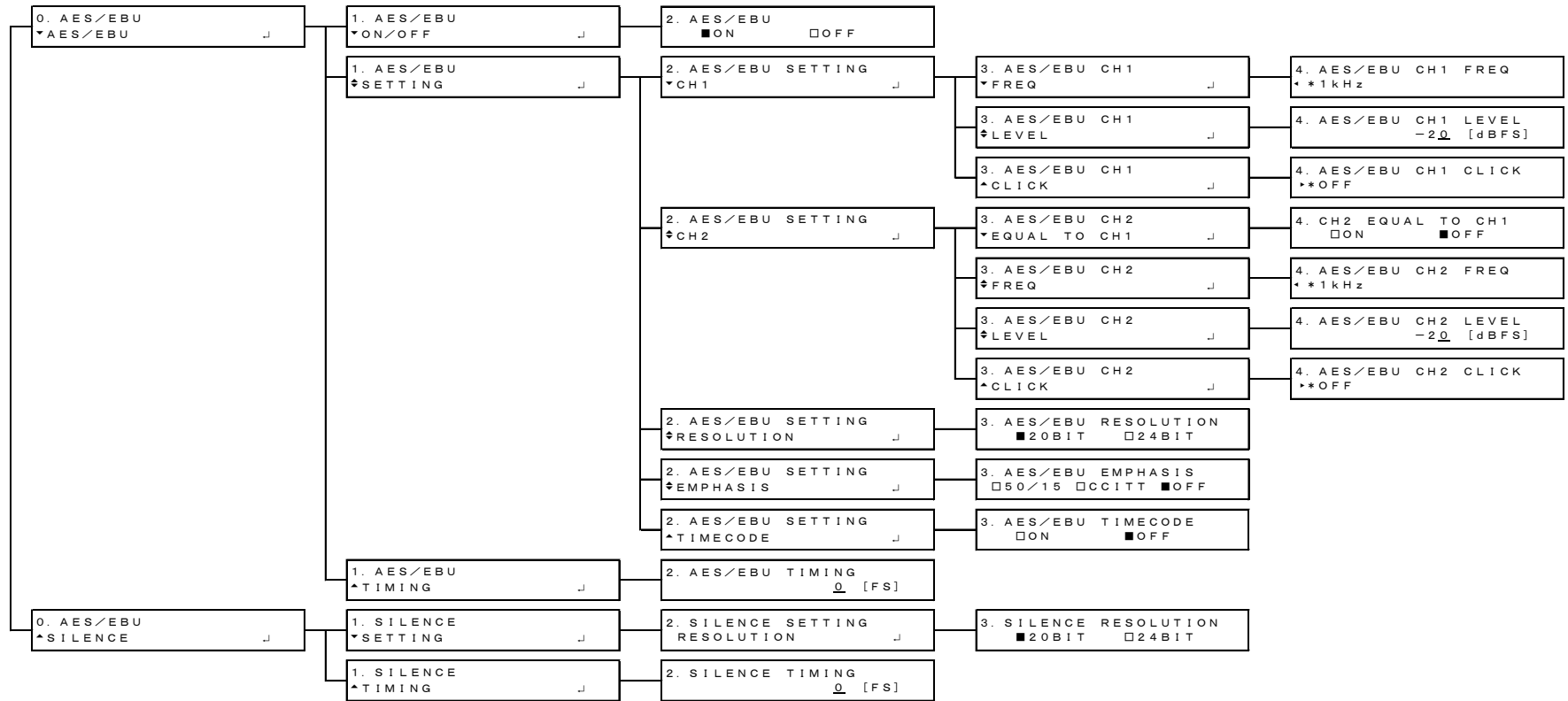
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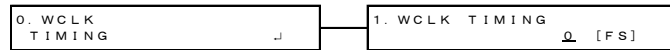
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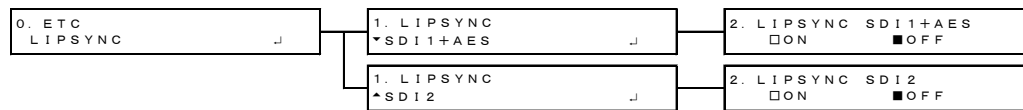
17.2.6 AES/EBU Menu



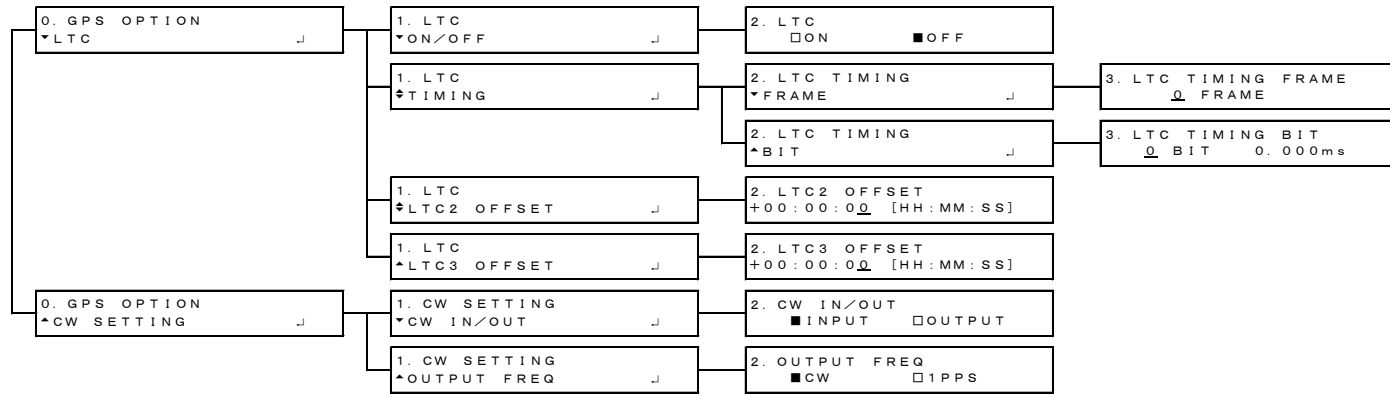
17.2.7 WCLK Menu



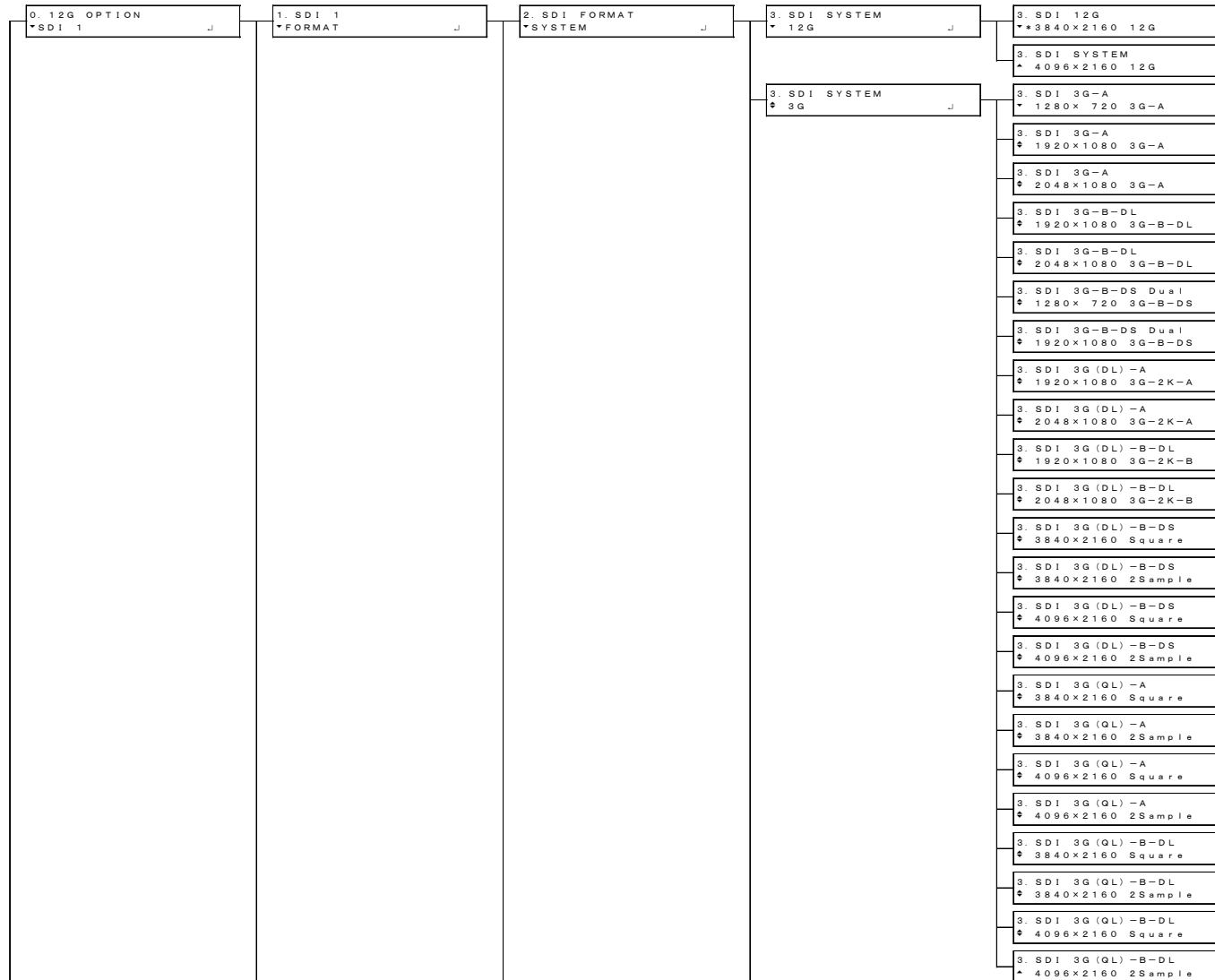
17.2.8 ETC Menu



17.2.9 GPS OPTION Menu



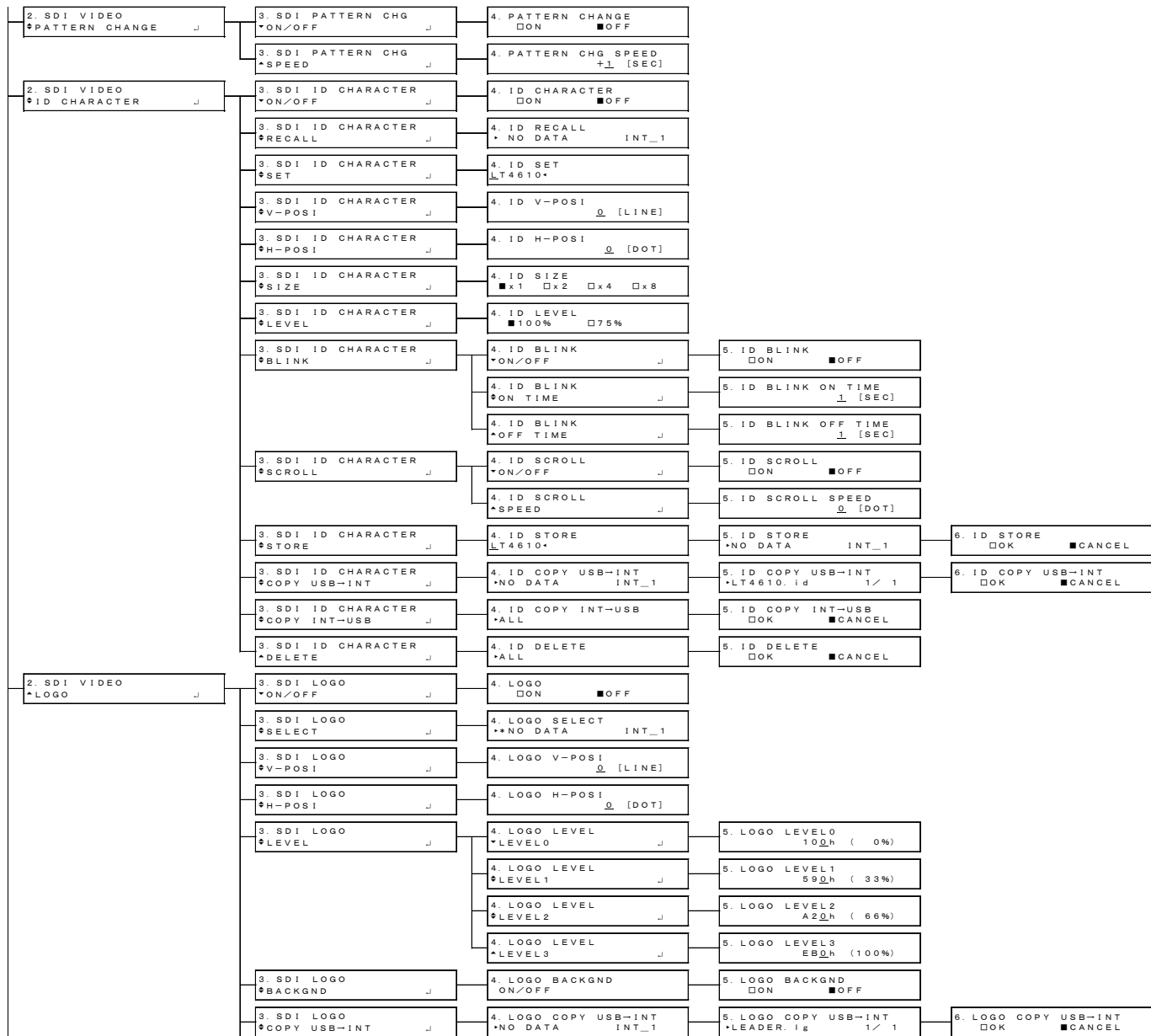
17.2.10 12G OPTION Menu



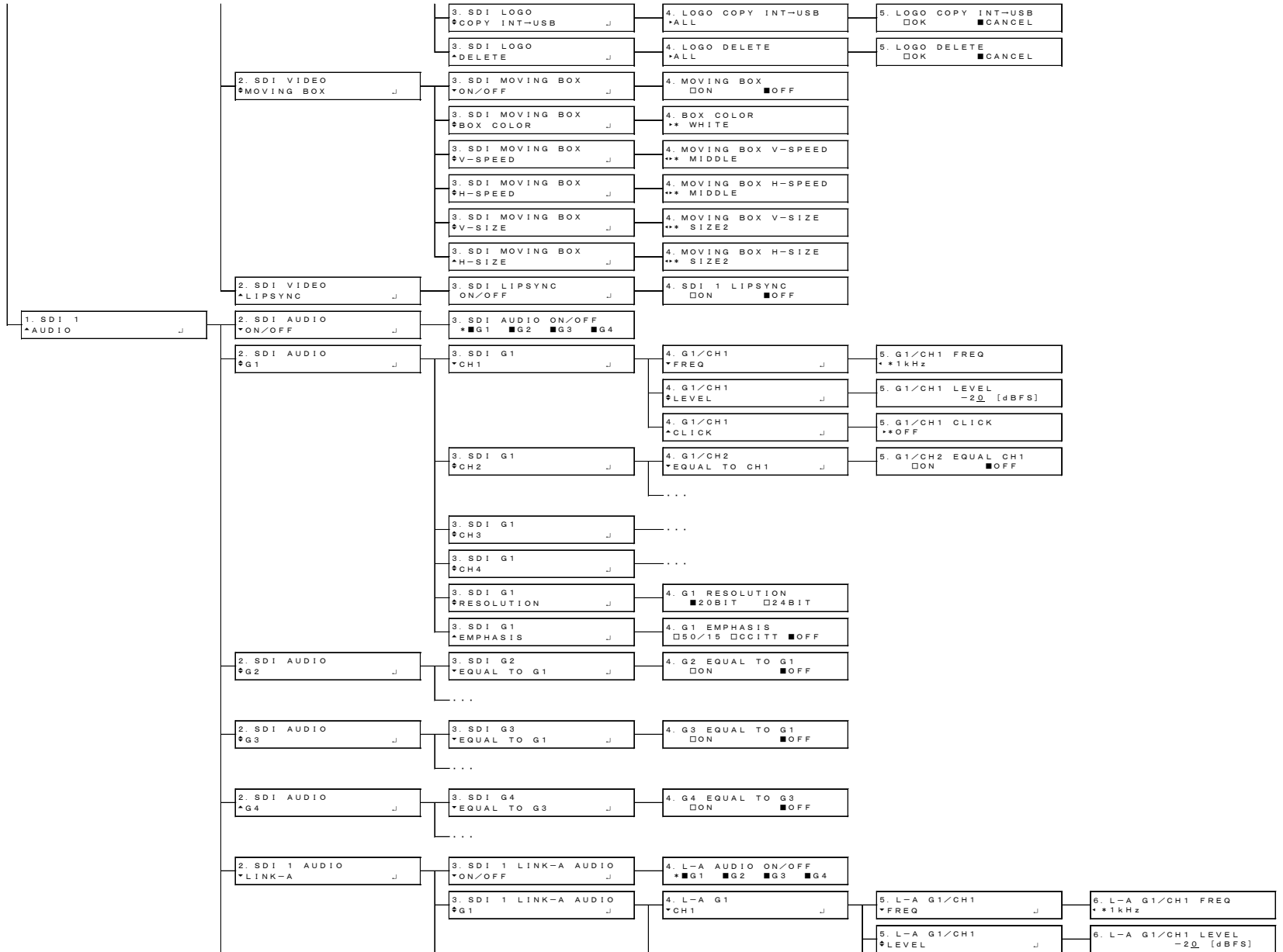
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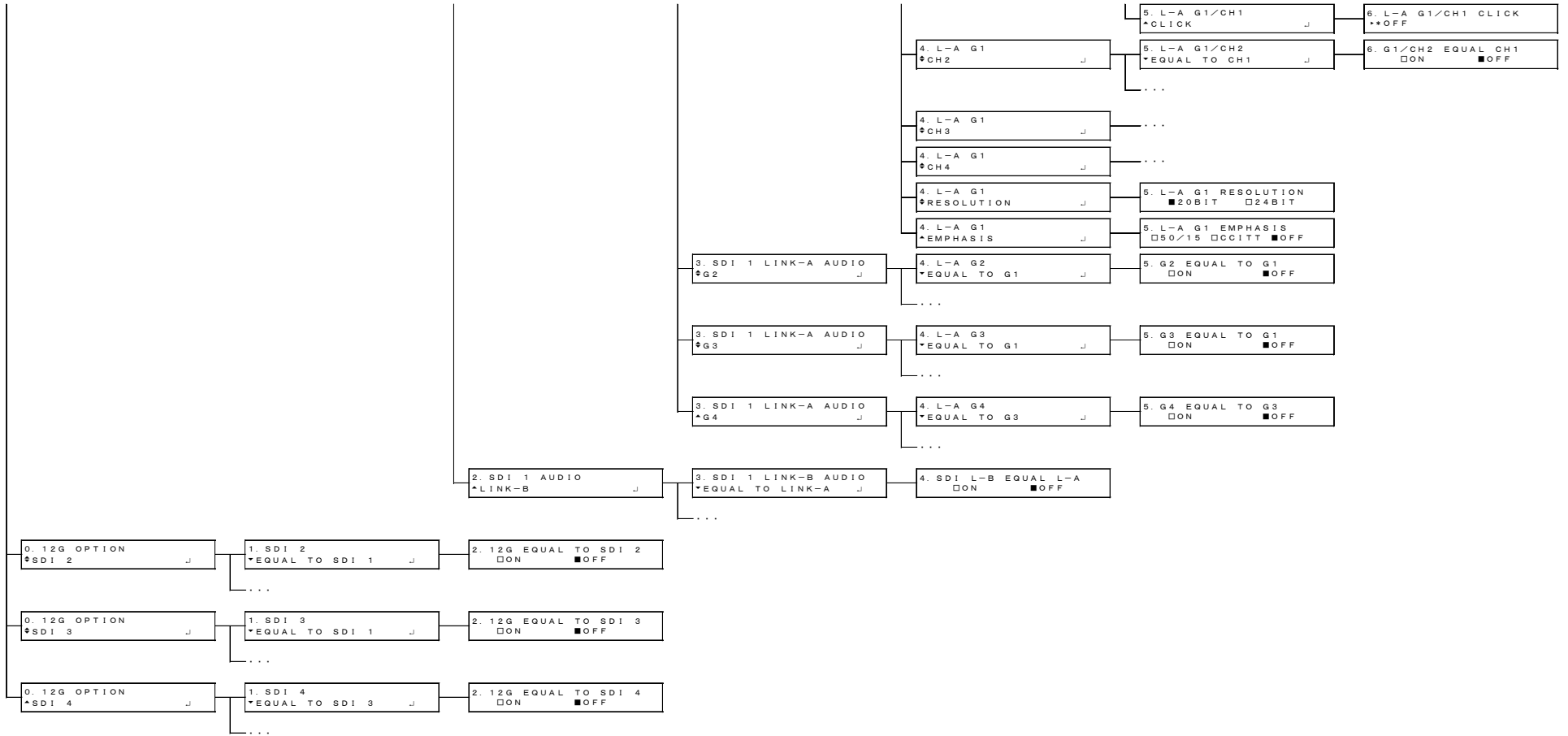
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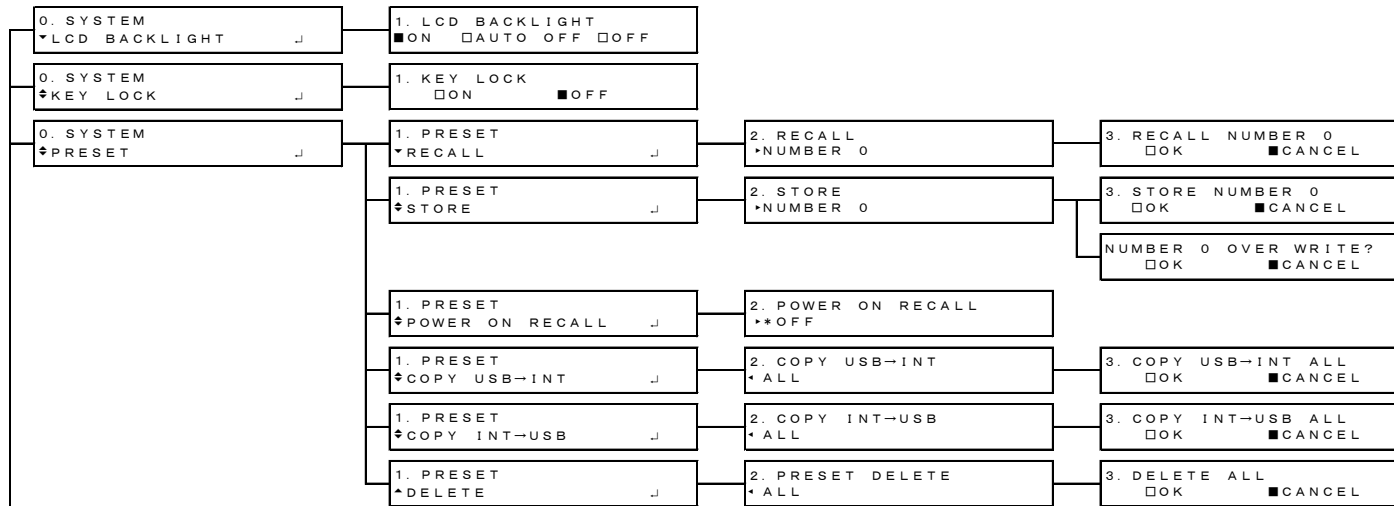
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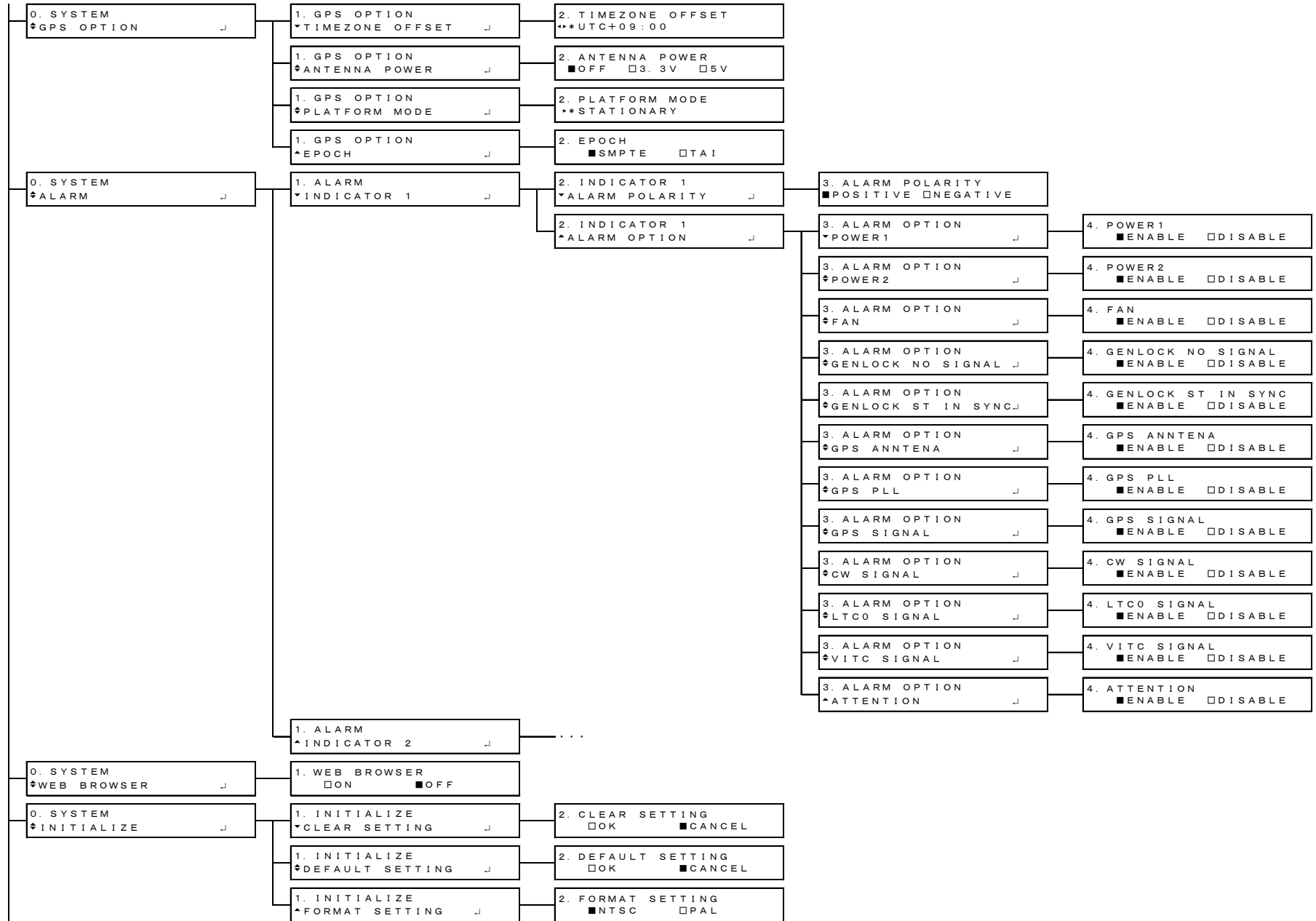
17.2.11 SYSTEM Menu

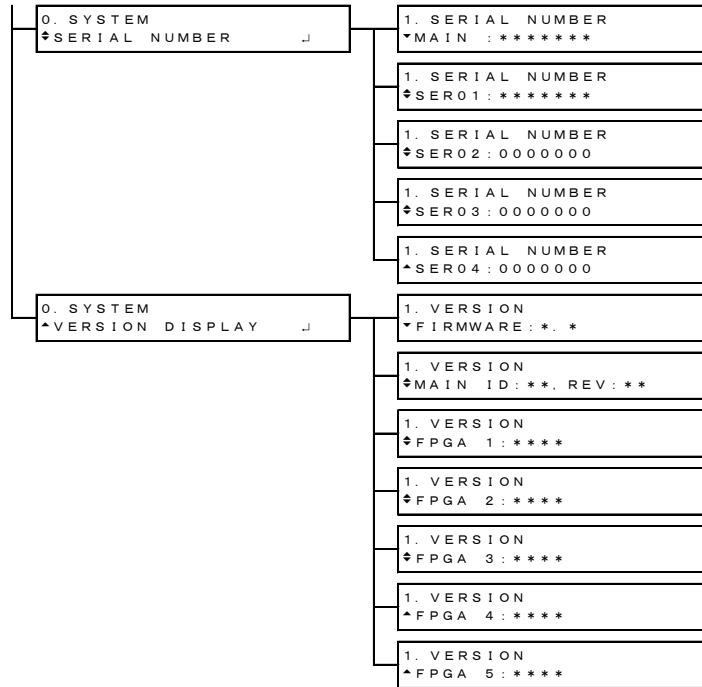


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17.3 Firmware Update History

This manual is written for firmware version 2.3.

To view the firmware version, select SYSTEM→VERSION DISPLAY→FIRMWARE.

●Ver. 2.3

- [LT 4610] A description of the Web browser function was added.
- [LT 4610] An SNMP community name setup function was added.
- [LT 4610] SNMP TRAP OID status was changed.
- [SER02] A description of the LT 4610SER02 (12G-SDI) was added.

●Ver. 1.3

- [LT 4610] A description of output timing switching on the SDI menu was added.
- [LT 4610] A description of the silence signal resolution and output timing settings on the AES/EBU menu was added.
- [LT 4610] The default audio output setting on the AES/EBU menu was changed to ON.
- [LT 4610] The description of the behavior of the instrument when POWER ON RECALL on the SYSTEM menu is set to OFF was changed so that Last Memory is applied.
- [LT 4610] A description of the serial number display and main version display on the SYSTEM menu was added.
- [SER01] A description of CW output and 1PPS output was added.
- [SER01] A description of the alarms output from LTC IN/OUT was added.
- [SER01] A description of VITC was added.

Following information is for Chinese RoHS only

所含有毒有害物质信息

部件号码: LT 4610



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	○	○	○	○	○	○
电池	○	○	○	○	○	○
选件						
4610SER01	×	○	○	○	○	○
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

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