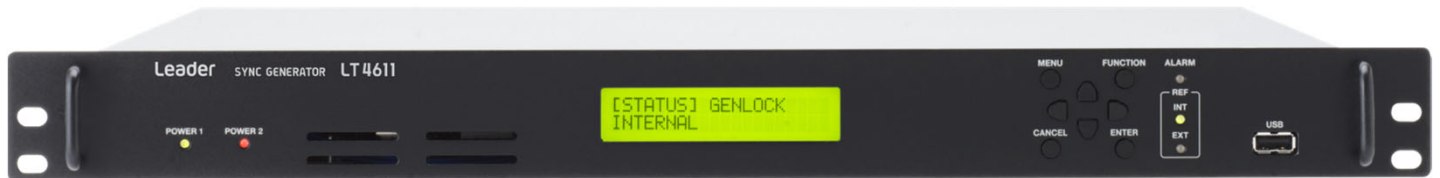


# Leader

## LT 4611

### SYNC GENERATOR



## Overview

LT4611 is a synchronized signal generator in 1U full rack size that outputs an analog video synchronized signal and audio word clock in the station. The GENLOCK function to the external synchronized signal enables operation synchronizing to the input signal. A broad lineup of options is available, enabling GPS synchronizing, PTP synchronizing, discrete pattern output, digital audio output and time code output by 12G-SDI, 3G-SDI, HD-SDI and SD-SDI. Two built-in power supply units enables duplex redundant operation of power source in case of power supply malfunction.

## Features

### Triple rate SDI compatible

Standard SDI signal output is compatible with 12G-SDI (4K), 3G-SDI (level A, level B), HD-SDI (including dual link), and SD-SDI. Independent dual-lines output is available for SDI signal output terminal, which is capable of individual setting of pattern and phase. (single-line only for 3G-SDI level B and HD dual link)

### 12G-SDI compatible

SDI signal output is compatible with 12G-SDI(4K), 3G-SDI (level A, level B), HD-SDI (including dual link), and SD-SDI, and four outputs of SDI signal output terminals are available. While the formats are common for four outputs, pattern and phase can be set individually. (dual-lines only for 3G-SDI level B and HD dual link)

### Superimposing ID characters

ID characters can be superimposed on any arbitrary position on the screen. Lateral scroll or flashing display are available for checking freeze state.

### Superimposing logo mark

Logo mark converted into four gradations of monochrome data from the bit map with size of maximum 320 (dot) x 240 (line) (GVGA size) can be superimposed on any arbitrary position on the screen.

### Safety area marker

Safety area marker of 90% and 80% can be superimposed on the screen, and an aspect marker of 4:3 can also be superimposed for 3G, HD.

### Pattern scroll

Function to scroll a pattern in eight directions is available. Speed is also changeable.

### Superimposing embedded audio

Embedded audio of 32 channels (link A, link B, each 4 ch x 4 groups) can be superimposed for 3G-B, and 16 channels (4 ch x 4 group) for 3G-A, HD and SD. Frequency and level, etc. can be set for each channel.

### Lip Sync pattern

Lip Sync pattern in which video image and sound are synchronized is output. Using our LV 5770 (A and others enables accurate measuring of the Lip Sync of the video image and sound on SDI signal.

### GENLOCK function

Synchronizing to NTSC/PAL black burst signal and HDTV triple-level synchronized signal is available. It is also compatible with NTSC/PAL black burst signal with field reference pulse, and NTSC black burst signal with 10 field ID. In addition, the stay-in synchronizing function is installed for the occurrence of abnormalities in the GENLOCK input.

### Analog black output

Timing is changeable with independent 6-lines of analog black synchronized signal output installed. It is also compatible with NTSC/PAL black burst signal with field reference pulse, and NTSC black burst signal with 10 field ID.

### Word clock output

Single-line output is available for the word clock of 48 kHz synchronized with video signal.

### AES/EBU serial digital audio output

Single-line output is available for the AES/EBU signal of 48 kHz of sampling frequency synchronized with video signal. In addition, single-line of AES/EBU signal in mute state is available.

### Real time clock

The clock can be kept counting even when the power supply is turned off thanks to battery back-up of the real time clock.

The clock can be also kept counting even without GPS reception when LT4611SER01 is installed.

### Ethernet

Standard support of SNMP enables easy integration into network environment.

### Preset function

A maximum of ten types of preset can be internally saved. Registered useful preset can be called anytime during the operation to start-up with the identical setting anytime.

### External memory compatible

Logo data and preset data can be loaded and saved by using USB memory from the front panel.

### Duplex power supply

Duplex power supply is available by integrating two power supply units. Alarm can be displayed on the main panel screen and alarm can be output by SNMP in case of an abnormal state of the power supply unit.

## LT 4610SER01 GPS

By installing this option, you can add GPS lock function to lock to frequency and time obtained from GPS, and with 10 MHz CW lock function and time code generator function. The time code generator is capable of free-run based on internal clock information as well as output of ATC (LTC) and LTC Embedded Time Code based on clock information of GPS, LTC and VITC. A hold-over function is available to retain phase and frequency of output signal when GPS signal and CW signal are lost. This unit can be also used as NTP server during GPS lock.

## LT 4610SER02 12G-SDI

SDI signal output is compatible with 4K 12G-SDI, 4K 3G-SDI quad, 4K HDSDI quad, 4K 3G dual, 3G-SDI (level A, level B), HDSDI (including dual link), and SD-SDI, and four outputs of SDI signal output terminals are available. While the formats are common for four outputs, pattern and phase can be set individually. (dual-lines only for 3G-SDI level B and HD dual link)

## LT 4610SER03 PTP

LT 4610SER 03 is an option corresponding to PTP (IEEE 1588).It can be used in combination with LT 4610SER01 (GPS option) or as a standalone grand master.



### •Compatible standards

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| Analog black signal                 |                                        |
| NTSC black burst signal             | SMPTE ST 170、SMPTE ST 318、SMPTE RP 154 |
| PAL black burst signal              | ITU-R BT1700、EBU N14                   |
| HD triple level synchronized signal | SMPTE ST 240、SMPTE ST 274、SMPTE ST 296 |

### •Input/output terminal

|                             |                                                                              |
|-----------------------------|------------------------------------------------------------------------------|
| GENLOCK input terminal      |                                                                              |
| Connector                   | BNC connector dual terminal                                                  |
| Input signal                | Analog composite synchronized signal<br>Analog component synchronized signal |
| Format                      | Loop thru                                                                    |
| Input impedance             | 75Ω                                                                          |
| Max. input voltage          | ± 5 V (DC + peak AC)                                                         |
| Operation input level range | ± 6 dB                                                                       |
| External lock range         | ± 5 ppm                                                                      |

|                              |                                                                              |
|------------------------------|------------------------------------------------------------------------------|
| Analog black output terminal |                                                                              |
| Connector                    | BNC connector Three terminal three lines                                     |
| Output signal                | Analog composite synchronized signal<br>Analog component synchronized signal |
| Output impedance             | 75Ω                                                                          |

|                     |          |
|---------------------|----------|
| Synchronizing level |          |
| NTSC                | 40±1 IRE |
| PAL                 | -300±6mV |
| HD                  | ±300±6mV |
| Blanking            | 0±15mV   |

|                            |                                         |
|----------------------------|-----------------------------------------|
| Word clock output terminal |                                         |
| Connector                  | BNC connector single terminal           |
| Output frequency           | 48 kHz                                  |
| Output amplitude           | 3.5 V or more (at 75 Ω end, high level) |

### •Control terminal

|                   |                                                                                                         |
|-------------------|---------------------------------------------------------------------------------------------------------|
| Ethernet terminal |                                                                                                         |
| Standards         | IEEE 802.3                                                                                              |
| Protocol          | SNMP v2c                                                                                                |
| Connector         | RJ-45                                                                                                   |
| Function          | Sending trap (at detecting abnormality)<br>Sending operation status (GENLOCK synchronizing state, etc.) |
| Type              | 10BASE-T/100BASE-TX (auto switching)                                                                    |
| USB terminal      |                                                                                                         |
| Standards         | USB 2.0                                                                                                 |
| Compatible media  | USB memory device                                                                                       |

## LT 4611SER21 SYNC 3 OUT ADD

Option to add three outputs of analog video synchronized signal output. It becomes six outputs and six lines added to standard three outputs. Signal format can be set per each output.

## LT 4611SER22 SDI OUTPUT

SDI signal output is compatible with 12G-SDI (4K), 3G-SDI (level A, level B), HD-SDI (including dual link), and SD-SDI. Independent dual-lines output is available for SDI signal output terminal, which is capable of individual setting of pattern and phase. (single-line only for 3G-SDI level B and HD dual link)

## LT 4611SER23 AUDIO OUTPUT

The LT 4611SER23 can output a 48 kHz AES/EBU signal synchronized with the video signals. It is also equipped with a muted AES/EBU signal output.

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function                               | Save and load of preset data<br>Load of logo data<br>Firmware update<br>Acquisition of MIB file<br>USB Type A                                                                                                                                                                                                                                                                                                      |
| Connector                              |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| •LED display                           |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Number of characters                   | 20 ch × 2 lines                                                                                                                                                                                                                                                                                                                                                                                                    |
| Backlight                              | ON/OFF                                                                                                                                                                                                                                                                                                                                                                                                             |
| •GENLOCK function                      |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Signal format                          | NTSC-BB、NTSC-BB+Ref、NTSC-BB+ID、<br>NTSC-BB+Ref+ID、NTSC-BB+S、NTSC-BB+S+Ref、<br>NTSC-BB+S+ID、NTSC-BB+S+Ref+ID、PAL-BB、<br>PAL-BB+Ref、525/59.94I、525/59.94P、<br>625/50I、625/50P、1125/60I、1125/59.94I、<br>1125/50I、1125/24I、1125/23.98I、1125/30P、<br>1125/29.97P、1125/25P、1125/24P、<br>1125/23.98P、750/60P、750/59.94P、750/50P、<br>750/30P、750/29.97P、750/25P、750/24P、750/23.98P                                         |
| Timing variable                        |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Changeable range                       |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| NTSC black burst signal                | ± 5 frame                                                                                                                                                                                                                                                                                                                                                                                                          |
| PAL black burst signal                 | ± 2 frame                                                                                                                                                                                                                                                                                                                                                                                                          |
| HD triple-level synchronized signal    | 1 frame (frame entire range)                                                                                                                                                                                                                                                                                                                                                                                       |
| FINE                                   | Cover 1 changeable unit                                                                                                                                                                                                                                                                                                                                                                                            |
| GENLOCK mode                           |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| INTERNAL                               | Operating with internal reference signal                                                                                                                                                                                                                                                                                                                                                                           |
| EXTERNAL                               | Operating with external reference signal                                                                                                                                                                                                                                                                                                                                                                           |
| EXT-REF / GPS(SER01) / 10MHz CW(SER01) |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Recovery mode                          |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| IMMEDIATE                              | At recovering external reference signal, reset action                                                                                                                                                                                                                                                                                                                                                              |
| FAST                                   | At recovering external reference signal, quick re-synchronizing action                                                                                                                                                                                                                                                                                                                                             |
| SLOW                                   | At recovering external reference signal, slow re-synchronizing action                                                                                                                                                                                                                                                                                                                                              |
| HOLD                                   | At recovering external reference signal, retain STAY IN SYNC state                                                                                                                                                                                                                                                                                                                                                 |
| •Analog black output                   |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Signal format                          | three lines can be set independently<br>NTSC-BB、NTSC-BB+Ref、NTSC-BB+ID、<br>NTSC-BB+Ref+ID、NTSC-BB+S、NTSC-BB+S+Ref、<br>NTSC-BB+S+ID、NTSC-BB+S+Ref+ID、PAL-BB、<br>PAL-BB+Ref、525/59.94I、525/59.94P、<br>625/50I、625/50P、1125/60I、1125/59.94I、<br>1125/50I、1125/24I、1125/23.98I、1125/30P、<br>1125/29.97P、1125/25P、1125/24P、<br>1125/23.98P、750/60P、750/59.94P、750/50P、<br>750/30P、750/29.97P、750/25P、750/24P、750/23.98P |

|                                     |                                      |
|-------------------------------------|--------------------------------------|
| Timing variable                     |                                      |
| Setting                             | Three lines can be set independently |
| Changeable range                    |                                      |
| NTSC black burst signal             | ± 5 frames                           |
| PAL black burst signal              | ± 2 frames                           |
| HD triple-level synchronized signal | 1 frame (frame entire range)         |
| Changeable unit                     |                                      |
| NTSC/PALblack burst signal          | 0.0185 μs unit                       |
| HD Triple level synchronized signal | 0.0135 μs unit                       |

#### •Word clock output

|                 |                   |
|-----------------|-------------------|
| Timing variable |                   |
| Variable range  | ± 1 AES/EBU frame |
| Variable unit   | 512 fs unit       |

#### •Preset function

|                   |                                                                        |
|-------------------|------------------------------------------------------------------------|
| Preset            | Saving panel setting (*1)                                              |
| Number of presets | 10                                                                     |
| Recall method     | Front panel                                                            |
| Copy method       | Copy from this unit to USB memory or copy from USB memory to this unit |

※Last memory is not supported.Setting to “POWER ON RECALL” enables start-up in the state saved in the preset when the power supply is turned ON each time.

※1 Logo data and information specific for the equipment (IP address, clock time, etc.) cannot be saved.

#### •Log function

|              |                                                                    |
|--------------|--------------------------------------------------------------------|
| Item to save | Panel operation, GENLOCK status change, power supply and fan, etc. |
| Copy method  | Copy from this unit to USB memory                                  |

#### •Internal reference transmitter

|                     |          |
|---------------------|----------|
| Reference frequency | 13.5 MHz |
|---------------------|----------|

#### •Internal clock backup battery

|                                        |                                                            |
|----------------------------------------|------------------------------------------------------------|
| Power source                           | Lithium primary battery                                    |
| Battery operation period approximately | 5 years (depending on environment of saving and operation) |

#### •General specification

|                                         |                                                                                             |
|-----------------------------------------|---------------------------------------------------------------------------------------------|
| Environmental condition                 |                                                                                             |
| Operating temperature range             | 0 to 40 °C                                                                                  |
| Operating humidity range                | 85 % RH ore less (no dew condensation)                                                      |
| Performance guarantee temperature range | 10 to 35 °C                                                                                 |
| Usage environment                       | Indoor                                                                                      |
| Operation elevation                     | Up to 2,000 m                                                                               |
| Over voltage category                   | I                                                                                           |
| Contamination level                     | 2                                                                                           |
| Power supply                            |                                                                                             |
| Voltage                                 | AC 90 to 250 V                                                                              |
| Power consumption                       | 80 W max.                                                                                   |
| Dimension                               | 482(w)x44(H)x400(D)mm (excluding projection)                                                |
| Weight                                  |                                                                                             |
| LT4611 only                             | 3.6 kg                                                                                      |
| Accessory                               | Power supply cord 2<br>Cover inlet stopper 2<br>CD-ROM (logo application, operation manual) |

## LT 4610SER01 GPS

#### •GPS lock

|                        |                                                                           |
|------------------------|---------------------------------------------------------------------------|
| Compatible standards   | SMPTE ST 2059                                                             |
| GPS Input terminal     |                                                                           |
| Connector              | BNC connector single terminal                                             |
| Input impedance        | 50 Ω                                                                      |
| Antenna, pre-amplifier | power supply                                                              |
| Voltage                | 5 V / 3.3 V / OFF                                                         |
| Current                | Max 50 mA (integrated over current protection circuit)                    |
| GPS receiver           |                                                                           |
| Receiving frequency    | 1575.42 MHz (L1)                                                          |
| Receiving code         | C/A code                                                                  |
| Receiving sensitivity  | -130 dBm or more (input level to antenna)                                 |
| Status                 | NO SIGNAL, TRACKING, LOCKED, STAY IN SYNC                                 |
| Hold over function     | Maintain frequency and phase immediately before termination of GPS signal |

#### •10MHz CW lock

|                         |                               |
|-------------------------|-------------------------------|
| CW input terminal       |                               |
| Connector               | BNC connector single terminal |
| Input impedance         | 50 Ω                          |
| Input signal level      | 0.5 to 2 Vp-p                 |
| Input signal frequency  | 10 MHz                        |
| Pull-in frequency range | ± 5 ppm                       |

|                         |                                                                      |
|-------------------------|----------------------------------------------------------------------|
| Output signal level     | 3.3 V CMOS                                                           |
| Output signal frequency | 10 MHz/1 PPS                                                         |
| Hold over function      | Maintain frequency immediately before termination of 10MHz CW signal |

#### •LTC input/output

|                      |                                           |
|----------------------|-------------------------------------------|
| Compatible standards | SMPTE 12M -1                              |
| Input/output         |                                           |
| Connector            | D-SUB 15 pins (both for input and output) |
| Input number         | 1                                         |
| Input impedance      | 10 kΩ balanced                            |
| Input signal level   | 0.5 to 4 Vp-p                             |
| Input number         | 3                                         |
| Output impedance     | 600 Ω balanced                            |
| Output signal level  | 2 Vp-p ± 10%                              |

#### •Time code

|                                     |                                            |
|-------------------------------------|--------------------------------------------|
| Reference time                      | Internal/GPS/LTC/VITC                      |
| Frame rate                          | Synchronizing to ANALOG BLACK 1            |
| Drop 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                                     |
| Threshold second                    |                                            |
| Application setting                 | Timer setting of application date and time |
| Summer time                         |                                            |
| Application setting                 | Timer setting of application date and time |

## LT 4610SER02 12G-SDI

#### •Compatible standards

|                    |              |
|--------------------|--------------|
| SDI embedded audio |              |
| 3G、HD、HD(DL)       | SMPTE ST 299 |
| SD                 | SMPTE ST 272 |
| SDI payload ID     | SMPTE ST 352 |

#### •Output terminal

|                     |                                                    |
|---------------------|----------------------------------------------------|
| SDI output terminal |                                                    |
| Connector           | BNC connector four terminals                       |
| 12G、3G-A、HD、SD      | four lines                                         |
| 3G-B、HD(DL)         | two lines                                          |
| Output impedance    | 75Ω                                                |
| Output amplitude    | 800mVp-p±10%                                       |
| Output return loss  |                                                    |
| 5MHz~1.485GHz       | 15dB or more                                       |
| 1.485~2.97GHz       | 10dB or more                                       |
| 2.97~6GHz           | 7dB or more                                        |
| 6~12GHz             | 4dB or more                                        |
| Overshoot           | less than 10%                                      |
| Rise and drop time  |                                                    |
| 3G                  | 135ps or less (between 20 and 80%)                 |
| HD、HD(DL)           | 270ps or less (between 20 and 80%)                 |
| SD                  | 0.4ns or more, 1.5 ns or less (between 20 and 80%) |
| DC offset           | 0±0.5V                                             |

#### •SDI video output

|                 |                                                                       |
|-----------------|-----------------------------------------------------------------------|
| SDI signal      |                                                                       |
| Bit rate        |                                                                       |
| 3G              | 2.970Gbps、2.970/1.001Gbps                                             |
| HD、HD(DL)       | 1.485Gbps、1.485/1.001Gbps                                             |
| SD              | 270Mbps                                                               |
| Timing variable |                                                                       |
| Variable range  | Frame entire range                                                    |
| Changeable unit |                                                                       |
| V               | line unit                                                             |
| H               | clock unit(148.5MHz, 148.5/1.001MHz, 74.25MHz, 74.25/1.001MHz, 27MHz) |

#### •Test pattern

|            |                                                                                                                                                                                                  |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12G、3G(QD) | UHDTV multi format color bar 4K pattern (ARIB STD-B66)                                                                                                                                           |
| 3G、HD      | 100% color bar, 75% color bar, multiformat color bar (ARIB STD-B28, pattern 2 section selectable from 100% white/75% white/+I), flat field white 100%, black 0%, red 100%, green 100%, blue 100% |

SD

|              |                                                                                                                  |
|--------------|------------------------------------------------------------------------------------------------------------------|
| 525i/59.94   | 100% color bar, 75% color bar, SMPTE color bar, flat field white 100%, black 0%, red 100%, green 100%, blue 100% |
| 625i/50 100% | 100% Color bar, EBU color bar, BBC color bar, flat field white 100%, black 0%, red 100%, green 100%, blue 100%   |

※At 4K (3G (QD) - A 2SI) setting, UHDTV multi format color bar 4K pattern (ARIB STD-B66) can be output. Also, simple pattern of UHDTV multi format color bar 4K pattern (ARIB STD-B66) can be output from fixed pattern.

|                      |                                                            |
|----------------------|------------------------------------------------------------|
| Auto switch function | Automatically switch in the sequence of selectable pattern |
| Switching time       | 1 to 255 sec                                               |

•Natural image display

|              |                               |
|--------------|-------------------------------|
| Date storage | Eight data of 4K can be saved |
|--------------|-------------------------------|

※Although natural image is saved, data deployment for the natural image may take time when the power is turned on again.  
※Moving box, ID character cannot be superimposed.

•Component ON/OFF

|          |                                                                         |
|----------|-------------------------------------------------------------------------|
| Function | ON/OFF is available per each component of Y/G, Cb/B, Cr/R independently |
| ON       | Output set Y/G, Cb/B, Cr/R signal                                       |
| OFF      |                                                                         |

|                                              |           |
|----------------------------------------------|-----------|
| Y/G                                          | 040h/040h |
| Cb/B                                         | 200h/040h |
| Cr/R                                         | 200h/040h |
| ※Enabled only when test pattern is selected. |           |

•Moving box

ON / OFF

•Embedded audio

|                      |                                                |
|----------------------|------------------------------------------------|
| Superimposed channel | ON / OFF enabled on a group basis              |
| 12G, 3G-A, HD, SD    | 16ch (4 ch × 4 groups)                         |
| 3G-B                 | 32ch (link A, link B each 4 ch × 4 groups)     |
| Sampling frequency   | 48 kHz sample (synchronized with video signal) |
| Resolution           | 20 bit/24 bit                                  |
| Pre-emphasis         | OFF / 50/15 / CCITT (CS bit only switchable)   |
| Frequency            | SILENCE / 400Hz / 800Hz / 1kHz                 |
| Level                | -60 to 0dBFs (1 dBFs step)                     |
| Audio click          | OFF/1 to 4 sec                                 |

•ID characters

|                                |                                             |
|--------------------------------|---------------------------------------------|
| Number of characters           | Maximum 20                                  |
| Size [dot]                     | 32 × 32 / 64 × 64 / 128 × 128 / 256 × 256   |
| Brightness                     | 100% / 75% (black only for background)      |
| Display position               | Any position on screen                      |
| Display position variable unit | V 1 line unit<br>H 1 dot unit               |
| Flashing display (※1)          | OFF / 1 to 9 sec                            |
| Scroll function (※1)           |                                             |
| Function                       | Scroll including background of ID character |
| Direction                      | Two directions (left/right)                 |
| Speed range and unit           |                                             |
| Interlace                      | Field unit<br>0 to 256 dot, 2 dot unit      |
| Progressive                    | Frame unit<br>0 to 256 dot, 2 dot unit      |

※1 Flashing display and scroll function can be set simultaneously

•Pattern scroll

|                      |                                                                          |
|----------------------|--------------------------------------------------------------------------|
| Direction            | eight directions (up/down/left/right and combination)                    |
| Speed range and unit |                                                                          |
| Interlace            | Field unit<br>V 0 to 256 line, 1 line unit<br>H 0 to 256 dot, 2 dot unit |
| Progressive          | Frame unit<br>V 0 to 256 line, 1 line unit<br>H 0 to 256 dot, 2 dot unit |

•SDI formant and standards (4k)

3G (DL)-4k video signal format and standards

| Divided transmission system | Color system                         | Quantization accuracy | Image       | Frame frequency/scanning | Compatible standards   |
|-----------------------------|--------------------------------------|-----------------------|-------------|--------------------------|------------------------|
| Square                      | YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-3, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-3, 2048-1 |
| Two samples interleaved     | YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-3, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-3, 2048-1 |

HD(QL) video signal format and standards

| Divided transmission system | Color system                         | Quantization accuracy | Image       | Frame frequency/scanning | Compatible standards |
|-----------------------------|--------------------------------------|-----------------------|-------------|--------------------------|----------------------|
| Square                      | YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | -                    |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/PsF | -                    |
|                             |                                      |                       |             | 30/29.97/25/24/23.98/P   | -                    |
|                             |                                      |                       |             | 30/29.97/25/24/23.98/PsF | -                    |

3G(QL) video signal format and standards

| Divided transmission system | Color system                         | Quantization accuracy | Image       | Frame frequency/scanning | Compatible standards   |
|-----------------------------|--------------------------------------|-----------------------|-------------|--------------------------|------------------------|
| Square                      | YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 3840 × 2160 | 60/59.94/50/P            | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 60/59.94/50/48/47.95/P   | SMPTE ST 425-5, 2048-1 |
|                             |                                      | 12bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2048-1 |
|                             |                                      | 10bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2048-1 |
|                             | YC <sub>B</sub> C <sub>R</sub> 4:4:4 | 12bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2048-1 |
|                             |                                      | 10bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      | 12bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2048-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2048-1 |
| Two samples interleaved     | YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 3840 × 2160 | 60/59.94/50/P            | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 60/59.94/50/48/47.95/P   | SMPTE ST 425-5, 2048-1 |
|                             |                                      | 12bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2048-1 |
|                             |                                      | 10bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             | YC <sub>B</sub> C <sub>R</sub> 4:4:4 | 12bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2048-1 |
|                             |                                      | 10bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      | 12bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   | SMPTE ST 425-5, 2048-1 |

12G video signal format and standards

| Divided transmission system | Color system                         | Quantization accuracy | Image       | Frame frequency/scanning | Compatible standards     |
|-----------------------------|--------------------------------------|-----------------------|-------------|--------------------------|--------------------------|
| Two samples interleaved     | YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 3840 × 2160 | 60/59.94/50/P            | SMPTE ST 2082-10, 2036-1 |
|                             |                                      |                       | 4096 × 2160 | 60/59.94/50/48/47.95/P   |                          |
|                             |                                      | 12bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   |                          |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   |                          |
|                             | YC <sub>B</sub> C <sub>R</sub> 4:4:4 | 10bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   |                          |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   |                          |
|                             |                                      | 12bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   |                          |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   |                          |
|                             | RGB 4:4:4                            | 10bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   |                          |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   |                          |
|                             |                                      | 12bit                 | 3840 × 2160 | 30/29.97/25/24/23.98/P   |                          |
|                             |                                      |                       | 4096 × 2160 | 30/29.97/25/24/23.98/P   |                          |

LT 4610SER03 PTP(IEEE 1588)

•Compatible standards

|                           |                                 |
|---------------------------|---------------------------------|
| Internet protocol version | IPv4                            |
| PTP standards             | IEEE 1588-2008                  |
| Compatible profile        | SMPTE ST 2059 / AES67 / General |

•RJ-45 terminal

|                      |                                    |
|----------------------|------------------------------------|
| Number of terminal   | 1                                  |
| Terminal shape       | RJ-45                              |
| Compatible standards | IEEE 802.3                         |
| Type                 | 10Base-T / 100Base-TX / 1000Base-T |

•SFP cage

|                                       |                           |
|---------------------------------------|---------------------------|
| Number of terminal                    | 1                         |
| Terminal shape                        | SFP cage                  |
| Compatible standards                  | MSA compliant             |
| Compatible module and type            |                           |
| SFP transceiver RJ-45                 | 1000BASE-T                |
| SFP + Transceiver optical             | 10GBASE-SR and 10GBASE-SW |
| ※SFP/SFP + module are sold separately |                           |

•Master function

|                               |                                                                                                        |
|-------------------------------|--------------------------------------------------------------------------------------------------------|
| Number of controllable master | 2                                                                                                      |
| Communication mode            | Multicast / Unicast / MIXED SMPTE / MIXED SMPTE without negotiation                                    |
| Domain number                 | 0 to 127 (SMPTE ST 2059)<br>0 to 255 (AES67 / General)                                                 |
| Announce message rate         | 0.125s 8Hz / 0.25s 4Hz /<br>0.5s 2Hz / 1s 1Hz / 2s 0.5Hz /<br>4s 0.25Hz / 8s 0.125Hz /<br>16s 0.0625Hz |

|                                                       |                                                                                                                           |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Sync message rate                                     | 0.0078s 128Hz / 0.015s 64Hz /<br>0.0315s 32Hz / 0.625s 16Hz /<br>0.125s 8Hz / 0.25s 4Hz /<br>0.5s 2Hz / 1s 1Hz / 2s 0.5Hz |
| Priority 1                                            | 0 ~ 255                                                                                                                   |
| Priority 2                                            | 0 ~ 255                                                                                                                   |
| Number of connectable slave                           | 500                                                                                                                       |
| ※This is when the sync message rate is 0.625 s 16 Hz. |                                                                                                                           |

#### •Slave function

|                    |                                                                                                                                                                         |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Communication mode | Multicast / Unicast / MIXED SMPTE /<br>MIXED SMPTE without negotiation                                                                                                  |
| Domain number      | 0 to 127 (SMPTE ST 2059)<br>0 to 255 (AES67 / General)                                                                                                                  |
| Delay message rate | 0.0078s 128Hz / 0.015s 64Hz /<br>0.0315s 32Hz / 0.625s 16Hz /<br>0.125s 8Hz / 0.25s 4Hz /<br>0.5s 2Hz / 1s 1Hz / 2s 0.5Hz /<br>4s 0.25Hz / 8s 0.125Hz /<br>16s 0.0625Hz |
| Announce time out  | 0.1 s to 1 s                                                                                                                                                            |

#### •Item sold separately

|                           |                                                              |
|---------------------------|--------------------------------------------------------------|
| SFP transceiver RJ-45     | Model number: LFP415<br>Function: 1000BASE-T                 |
| SFP + transceiver optical | Model number: AFBR-709SMZ<br>Function: 850nm, 10GBASE-SR/SW  |
| SFP + transceiver optical | Model number: AFCT-739SMZ<br>Function: 1310nm, 10GBASE-SR/SW |

## LT 4611SER21 SYNC 3 OUT ADD

#### •Compatible standards

|                                     |                                             |
|-------------------------------------|---------------------------------------------|
| Analog black signal                 |                                             |
| NTSC black burst signal             | SMPTE ST 170, SMPTE ST 318,<br>SMPTE RP 154 |
| PAL black burst signal              | ITU-R BT1700, EBU N14                       |
| HD triple level synchronized signal | SMPTE ST 240, SMPTE ST 274,<br>SMPTE ST 296 |

#### •Input/output terminal

|                              |                                                                              |
|------------------------------|------------------------------------------------------------------------------|
| Analog black output terminal |                                                                              |
| Connector                    | BNC connector Three terminal three lines                                     |
| Output signal                | Analog composite synchronized signal<br>Analog component synchronized signal |
| Output impedance             | 75Ω                                                                          |
| Synchronizing level          |                                                                              |
| NTSC                         | 40±1 IRE                                                                     |
| PAL                          | -300±6mV                                                                     |
| HD                           | ±300±6mV                                                                     |
| Blanking                     | 0±15mV                                                                       |

#### •Analog black output

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signal format                       | three lines settable independently<br>NTSC-BB、NTSC-BB+Ref、NTSC-BB+ID、<br>NTSC-BB+Ref+ID、NTSC-BB+S、NTSC-BB+S+Ref、<br>NTSC-BB+S+ID、NTSC-BB+S+Ref+ID、PAL-BB、<br>PAL-BB+Ref、525/59.94I、525/59.94P、<br>625/50I、625/50P、1125/60I、1125/59.94I、<br>1125/50I、1125/24I、1125/23.98I、1125/30P、<br>1125/29.97P、1125/25P、1125/24P、<br>1125/23.98P、750/60P、750/59.94P、750/50P、<br>750/30P、750/29.97P、750/25P、750/24P、<br>750/23.98P |
| Timing variable                     |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Setting                             | Three lines settable independently                                                                                                                                                                                                                                                                                                                                                                                   |
| Changeable range                    |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| NTSC black burst signal             | ± 5 frame                                                                                                                                                                                                                                                                                                                                                                                                            |
| PAL black burst signal              | ± 2 frame                                                                                                                                                                                                                                                                                                                                                                                                            |
| HD triple-level synchronized signal | 1 frame(frame entire range)                                                                                                                                                                                                                                                                                                                                                                                          |
| Changeable unit                     |                                                                                                                                                                                                                                                                                                                                                                                                                      |
| NTSC/PALblack burst signal          | 0.0185 μs unit                                                                                                                                                                                                                                                                                                                                                                                                       |
| HD Triple level synchronized signal | 0.0135 μs unit                                                                                                                                                                                                                                                                                                                                                                                                       |

## LT 4611SER22 SDI OUTPUT

#### •Compatible standards

|                    |              |
|--------------------|--------------|
| SDI embedded audio |              |
| 3G、HD、HD(DL)       | SMPTE ST 299 |
| SD                 | SMPTE ST 272 |
| SDI payload ID     | SMPTE ST 352 |

#### •Input/output terminal

|                              |                                                                              |
|------------------------------|------------------------------------------------------------------------------|
| SDI output terminal          |                                                                              |
| Connector                    | BNC connector dual terminal                                                  |
| 3G-A、HD、SD                   | Two lines                                                                    |
| 3G-B、HD(DL)                  | Single line                                                                  |
| Output impedance             | 75Ω                                                                          |
| Output amplitude             | 800mVp-p±10%                                                                 |
| Output return loss           |                                                                              |
| 5 MHz to 1.485 GHz           | 15 dB or more                                                                |
| 1.485 to 2.97GHz             | 10 dB or more                                                                |
| Overshoot                    | less than 10%                                                                |
| Rise and drop time           |                                                                              |
| 3G                           | 135 ps or less (between 20% and 80%)                                         |
| HD、HD(DL)                    | 270 ps or less (between 20% and 80%)                                         |
| SD                           | 0.4 ns or more, 1.5 ns or less (between 20 and 80%)                          |
| DC offset                    | 0±0.5V                                                                       |
| GENLOCK input terminal       |                                                                              |
| Connector                    | BNC connector dual terminal                                                  |
| Input signal                 | Analog composite synchronized signal<br>Analog component synchronized signal |
| Format                       | Loop thru                                                                    |
| Input impedance              | 75Ω                                                                          |
| Max. input voltage           | ± 5 V (DC + peak AC)                                                         |
| Operation input level range  | ±6dB                                                                         |
| External lock range          | ±5ppm                                                                        |
| Analog black output terminal |                                                                              |
| Connector                    | BNC connector Six terminal six lines                                         |
| Output signal                | Analog composite synchronized signal<br>Analog component synchronized signal |
| Output impedance             | 75Ω                                                                          |

#### •SDI video output

|                      |                                                                                                                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SDI signal           |                                                                                                                                                                                                                           |
| Bit rate             |                                                                                                                                                                                                                           |
| 3G                   | 2.970Gbps、2.970/1.001Gbps                                                                                                                                                                                                 |
| HD、HD(DL)            | 1.485Gbps、1.485/1.001Gbps                                                                                                                                                                                                 |
| SD                   | 270Mbps                                                                                                                                                                                                                   |
| Timing variable      |                                                                                                                                                                                                                           |
| Variable range       | Frame entire range                                                                                                                                                                                                        |
| Changeable unit      |                                                                                                                                                                                                                           |
| V                    | line unit                                                                                                                                                                                                                 |
| H                    | clock unit                                                                                                                                                                                                                |
| Dual link            | Link B is ± 10 μs variable                                                                                                                                                                                                |
| Test pattern         |                                                                                                                                                                                                                           |
| 3G、HD                | 100% color bar/75% color bar/multi<br>format color bar (ARIB STD-B28, pattern 2<br>section selectable from 100% white/75%<br>white/+I)/check field/flat field white 100%,<br>black 0%, red 100%, green 100%, blue<br>100% |
| SD                   |                                                                                                                                                                                                                           |
| 525i/59.94           | 100% color bar/75% color bar/SMPTE<br>color bar/check field/flat field white 100<br>%, red 100%, green 100%, blue 100%                                                                                                    |
| 625i/50              | 100% color bar/EBU color bar/BBC color<br>bar/check field/flat field white 100%,black<br>0%, red 100%, green 100%, blue 100%                                                                                              |
| Auto switch function | Automatically switch in the sequence of<br>selectable pattern<br>(excluding check field, flat field)                                                                                                                      |
| Switching time       | 1 to 255 sec                                                                                                                                                                                                              |

|                                                 |                                                       |
|-------------------------------------------------|-------------------------------------------------------|
| Pattern scroll                                  |                                                       |
| Direction                                       | Eight directions (up/down/left/right and combination) |
| Speed range and unit                            |                                                       |
| Interlace                                       | Field unit                                            |
| V                                               | 0 to 256 line, 1 line unit                            |
| H                                               | 0 to 256 dot, 2 dot unit                              |
| Progressive                                     | Frame unit                                            |
| V                                               | 0 to 256 line, 1 line unit                            |
| H                                               | 0 to 256 dot, 2 dot unit                              |
| ※Disabled when check field pattern is selected. |                                                       |

|                                                 |                                                                                                    |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Safety area marker                              |                                                                                                    |
| 3G、HD                                           | Action safety area (90%)<br>Title safety area (80%)<br>4:3 aspect (ON/OFF is available separately) |
| SD                                              | Action safety area (90%)<br>Title safety area (80%)<br>(ON/OFF is available separately)            |
| ※Disabled when check field pattern is selected. |                                                                                                    |

|                                |                                             |
|--------------------------------|---------------------------------------------|
| ID characters                  |                                             |
| Number of characters           | Maximum 20 characters                       |
| Size [dot]                     | 32 × 32 / 64 × 64 / 128 × 128 / 256 × 256   |
| Brightness                     | 100% / 75% (black only for background)      |
| Display position               | Any position on screen                      |
| Display position variable unit |                                             |
| V                              | 1 line unit                                 |
| H                              | 1 dot unit                                  |
| Flashing display (※1)          | OFF / 1 to 9 sec                            |
| Scroll function (※1)           |                                             |
| Function                       | Scroll including background of ID character |
| Direction                      | Two directions (left/right)                 |
| Speed range and unit           |                                             |
| Interlace                      | Field unit                                  |
|                                | 0 to 256 dot, 2 dot unit                    |
| Progressive                    | Frame unit                                  |
|                                | 0 to 256 dot, 2 dot unit                    |

|                                                                   |                                                |
|-------------------------------------------------------------------|------------------------------------------------|
| ※ Disabled when check field pattern is selected.                  |                                                |
| ※1 Flashing display and scroll function can be set simultaneously |                                                |
| Logo mark                                                         |                                                |
| Maximum size                                                      | 320(dot) × 240(line)(QVGA size)                |
| Number of logo mark storable in main body                         | Maximum four types                             |
| Display position                                                  | Any position on screen                         |
| Display position variable unit                                    |                                                |
| V                                                                 | 1 line unit                                    |
| H                                                                 | 1 dot unit                                     |
| Display level                                                     | Level 0 to 3, each level can be set discretely |
| File format                                                       |                                                |
| Conversion method                                                 | Converted by logo application                  |
| After conversion                                                  | Dedicated format (.lg)                         |
| Logo mark data transfer                                           | Saved in USB memory to transfer to main body   |

|                                                  |                                                                        |
|--------------------------------------------------|------------------------------------------------------------------------|
| ※ Disabled when check field pattern is selected. |                                                                        |
| Component ON/OFF                                 |                                                                        |
| Function                                         | ON/OFF is available per each component of Y/G, Cb/B,Cr/R independently |
| ON                                               | Output set Y/G, Cb/B, Cr/R signal                                      |
| OFF                                              |                                                                        |
| Y/G                                              | 040h/040h                                                              |
| Cb/B                                             | 200h/040h                                                              |
| Cr/R                                             | 200h/040h                                                              |
| ※ Disabled when check field pattern is selected. |                                                                        |

|                           |                                                                                                     |
|---------------------------|-----------------------------------------------------------------------------------------------------|
| Video image superimposing |                                                                                                     |
| Display priority order    | IDcharacter > Logo mark > Safety area marker > Test pattern<br>(Order of display cannot be changed) |
| Simultaneous display      | IDcharacter, Logo mark, Safety area marker and Test pattern is available.                           |

|                       |                                                |
|-----------------------|------------------------------------------------|
| Embedded audio        |                                                |
| Superimposing channel | ON/OFF is available per group                  |
| 3G-A、HD、SD            | 16ch (4 ch × 4 groups)                         |
| 3G-B                  | 32ch (link A, link B each 4 ch × 4 groups)     |
| Sampling frequency    | 48 kHz sample (synchronized with video signal) |
| Resolution            | 20 bit/24 bit                                  |
| Pre-emphasis          | OFF / 50/15 / CCITT (CS bit only switchable)   |
| Frequency             | SILENCE / 400Hz / 800Hz / 1kHz                 |
| Level                 | -60 to 0 dBFs (1 dBFs step)                    |

|                                                                                                                                                                                  |                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Audio click                                                                                                                                                                      | OFF / 1 to 4 sec               |
| ※ Superimposing sound (including packet) is disabled when check field pattern is selected.                                                                                       |                                |
| ※ Frequency and level and audio click can be set for each channel.                                                                                                               |                                |
| ※ The following restriction is applied for SD (525i/59.94).<br>• For 16ch output, resolution is 20 bit.<br>• For resolution of 24 bit, up to three groups (12 ch) can be output. |                                |
| Lip Sync pattern                                                                                                                                                                 |                                |
| Setting                                                                                                                                                                          | SDI1 synchronizes with AES/EBU |
| ※ Disabled when check field pattern is selected.                                                                                                                                 |                                |
| ※ Safety marker, ID character and logo mark cannot be superimposed.                                                                                                              |                                |
| ※ Audio click setting of embedded audio is disabled to output sound synchronizing with lip sync pattern.                                                                         |                                |

|                            |                                              |
|----------------------------|----------------------------------------------|
| •Lip Sync pattern          |                                              |
| Setting                    | SDI1+AES/EBU and SDI2 can be set discretely. |
| •SDI formant and standards |                                              |

| 3G-A format and standards            |                       |             |                                  |                              |
|--------------------------------------|-----------------------|-------------|----------------------------------|------------------------------|
| Color system                         | Quantization accuracy | Image       | Frame (field) frequency/scanning | Compatible standards         |
| YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 1920 × 1080 | 60/59.94/50/P                    | SMPTE ST 274<br>SMPTE ST 425 |
|                                      |                       |             | 60/59.94/50/I                    |                              |
|                                      | 12bit                 | 1920 × 1080 | 30/29.97/25/24/23.98/P           |                              |
|                                      |                       |             | 30/29.97/25/24/23.98/PsF         |                              |
| YC <sub>B</sub> C <sub>R</sub> 4:4:4 | 10bit                 | 1280 × 720  | 60/59.94/50/                     | SMPTE ST 296<br>SMPTE ST 425 |
|                                      |                       |             | 30/29.97/25/24/23.98/P           |                              |
|                                      |                       | 1920 × 1080 | 60/59.94/50/I                    |                              |
|                                      |                       |             | 30/29.97/25/24/23.98/P           |                              |
|                                      | 12bit                 |             | 30/29.97/25/24/23.98/PsF         | SMPTE ST 274<br>SMPTE ST 425 |
|                                      |                       | 1920 × 1080 | 60/59.94/50/I                    |                              |
| RGB 4:4:4                            | 10bit                 | 1280 × 720  | 60/59.94/50/                     | SMPTE ST 296<br>SMPTE ST 425 |
|                                      |                       |             | 30/29.97/25/24/23.98/P           |                              |
|                                      |                       | 1920 × 1080 | 60/59.94/50/I                    |                              |
|                                      |                       |             | 30/29.97/25/24/23.98/P           |                              |
|                                      | 12bit                 |             | 30/29.97/25/24/23.98/PsF         | SMPTE ST 274<br>SMPTE ST 425 |
|                                      |                       |             | 60/59.94/50/I                    |                              |
|                                      |                       | 1920 × 1080 | 30/29.97/25/24/23.98/P           |                              |
|                                      |                       |             | 60/59.94/50/I                    |                              |

| 3G-B format and standards            |                       |             |                                  |                                              |
|--------------------------------------|-----------------------|-------------|----------------------------------|----------------------------------------------|
| Color system                         | Quantization accuracy | Image       | Frame (field) frequency/scanning | Compatible standards                         |
| YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 1920 × 1080 | 60/59.94/50/P                    | SMPTE ST 274<br>SMPTE ST 372<br>SMPTE ST 425 |
|                                      |                       |             | 60/59.94/50/I                    |                                              |
|                                      | 12bit                 | 1920 × 1080 | 30/29.97/25/24/23.98/P           |                                              |
|                                      |                       |             | 30/29.97/25/24/23.98/PsF         |                                              |
| YC <sub>B</sub> C <sub>R</sub> 4:4:4 | 10bit                 | 1920 × 1080 | 60/59.94/50/I                    |                                              |
|                                      |                       |             | 30/29.97/25/24/23.98/P           |                                              |
|                                      |                       |             | 30/29.97/25/24/23.98/PsF         |                                              |
|                                      |                       | 1920 × 1080 | 60/59.94/50/I                    |                                              |
|                                      | 12bit                 |             | 30/29.97/25/24/23.98/P           |                                              |
|                                      |                       | 1920 × 1080 | 60/59.94/50/I                    |                                              |
| RGB 4:4:4                            | 10bit                 | 1920 × 1080 | 60/59.94/50/I                    |                                              |
|                                      |                       |             | 30/29.97/25/24/23.98/P           |                                              |
|                                      |                       |             | 30/29.97/25/24/23.98/PsF         |                                              |
|                                      |                       | 1920 × 1080 | 60/59.94/50/I                    |                                              |

| HD (DL) formant and standards        |                       |             |                                  |                              |
|--------------------------------------|-----------------------|-------------|----------------------------------|------------------------------|
| Color system                         | Quantization accuracy | Image       | Frame (field) frequency/scanning | Compatible standards         |
| YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 1920 × 1080 | 60/59.94/50/P                    | SMPTE ST 274<br>SMPTE ST 372 |
|                                      |                       |             | 60/59.94/50/I                    |                              |
|                                      | 12bit                 | 1920 × 1080 | 30/29.97/25/24/23.98/P           |                              |
|                                      |                       |             | 30/29.97/25/24/23.98/PsF         |                              |
| YC <sub>B</sub> C <sub>R</sub> 4:4:4 | 10bit                 | 1920 × 1080 | 60/59.94/50/I                    |                              |
|                                      | 12bit                 |             | 30/29.97/25/24/23.98/P           |                              |
|                                      |                       |             | 30/29.97/25/24/23.98/PsF         |                              |
|                                      |                       | 1920 × 1080 | 60/59.94/50/I                    |                              |
| RGB 4:4:4                            | 10bit                 | 1920 × 1080 | 60/59.94/50/I                    |                              |
|                                      | 12bit                 |             | 30/29.97/25/24/23.98/P           |                              |

| HD, SD formant and standards         |                       |             |                                  |                              |
|--------------------------------------|-----------------------|-------------|----------------------------------|------------------------------|
| Color system                         | Quantization accuracy | Image       | Frame (field) frequency/scanning | Compatible standards         |
| YC <sub>B</sub> C <sub>R</sub> 4:2:2 | 10bit                 | 1280 × 720  | 60/59.94/50/                     | SMPTE ST 292<br>SMPTE ST 296 |
|                                      |                       |             | 30/29.97/25/24/23.98/P           |                              |
|                                      |                       | 1920 × 1080 | 60/59.94/50/I                    | SMPTE ST 292<br>SMPTE ST 274 |
|                                      |                       |             | 30/29.97/25/24/23.98/P           |                              |
|                                      |                       |             | 24/23.98/PsF                     | SMPTE ST 292<br>SMPTE RP 211 |
|                                      |                       |             | 59.94/I                          |                              |
|                                      |                       | 720 × 487   |                                  | SMPTE ST 259<br>SMPTE ST 125 |
|                                      |                       | 720 × 576   | 50/I                             |                              |

## LT 4611SER23 AUDIO OUT

### Compatible standards

AES/EBU signal ANSI S4.40, AES3-2009, AES11-2009, SMPTE ST276

### Input/output terminal

AES/EBU digital audio output terminal  
Connector BNC connector single terminal  
Output amplitude  $1V_p-p \pm 0.1V$   
Output impedance  $75\Omega$  unbalanced

AES/EBU Silence output terminal  
Connector BNC connector single terminal  
Output amplitude  $1V_p-p \pm 0.1V$   
Output impedance  $75\Omega$  unbalanced

### AES/EBU digital audio output

Timing variable  
Variable range  $\pm 1$  AES/EBU frame  
Changeable unit 512 fs unit  
Sampling frequency 48 kHz sample (synchronized with video signal)  
Resolution 20 bit/24 bit

Pre-emphasis OFF / 50/15 / CCITT (CS bit only switchable)  
Frequency SILENCE / 400Hz / 800Hz / 1kHz  
Level -60 to 0 dBfs (1 dBfs step)  
Lip Sync Synchronized with SDI1  
Audio click OFF / 1 to 4 sec  
Sampling clock accuracy Grade 2 ( $\pm 10$ ppm)  
※ Frequency and level and audio click can be set for each channel.  
※ Turning OFF every channel enables output as digital audio signal (DARS).

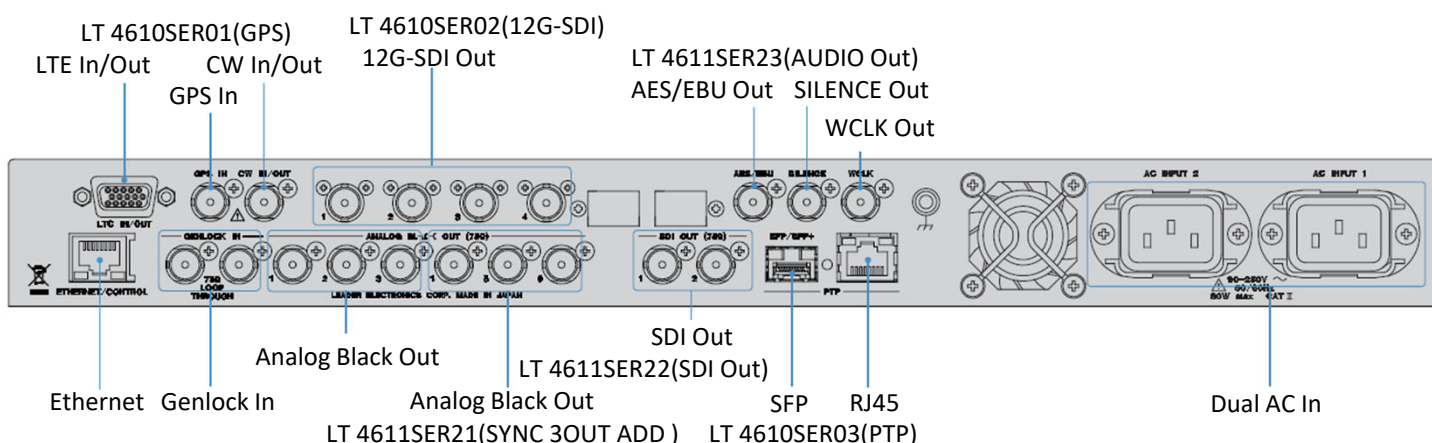
### AES/EBU Silence output

Timing variable  
Variable range  $\pm 1$  AES/EBU frame  
Changeable unit 512 fs unit  
Sampling frequency 48 kHz sample (synchronized with video signal)  
Resolution 20 bit  
Pre-emphasis OFF  
Frequency SILENCE  
Level MUTE  
Sampling clock accuracy Grade 2 ( $\pm 10$ ppm)

### Lip Sync pattern

Setting SDI1+AES/EBU and SDI2 can be set discretely.

## Rear panel



## Item sold separately

### SFP transceiver RJ-45

Maker: BLACK BOX  
Model number: LFP415  
Function: 1000BASE-T  
Maximum Distance (M) : 300



### SFP + transceiver optical

Maker: FOIT  
Model number: AFBR-709SMZ  
Function: 850nm, 10GBASE-SR/SW



### SFP + transceiver optical

Maker: FOIT  
Model number: AFCT-739SMZ  
Function: 1310nm, 10GBASE-SR/SW  
Maximum Distance (M) : 10,000



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Specified product specifications are subject to change without notice. Jun 22, 2020