LEADER

LT 4400SER01

LIPSYNC

INSTRUCTION MANUAL

LEADER
ELECTRONIC MEASURING INSTRUMENTS

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1. INTRODUCTION

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

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

1.1   Scope of Warranty

This LEADER instrument has been manufactured under the strictest quality control guidelines.

LEADER shall not be obligated to furnish the following free services during the warranty period.

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

2.   SPECIFICATIONS

2.1   General

By adding the LT 4400SER01 option to the LT 4400, you can accurately measure the lip sync of the video and audio in an SDI signal.
To measure the lip sync, use Leader's LV 5800. For the lip sync measurement specifications of the LV 5800, see the LV 58SER01A instruction manual (lip sync version).

2.2   Features

- **Automatic Lip Sync Measurement**

    By using the LT 4400 and the LV 5800, you can make automatic numeric measurements.

- **Visual Confirmation of Audio and Video Misalignment**

    Even during automatic measurement, you can visually confirm the synchronized audio and video pattern that is being generated by the LT 4400.
    The phase difference between the SDI audio and video is fixed to 0.

- **License Key**

    The software in the LT 4400 can be activated through the use of license keys.
    You only have to validate the software once, and then you can use it as much as you want.
    The license keys are different for each LT 4400.

    *   You cannot use the lip sync option simply by upgrading the firmware.
        You cannot use the same license key with multiple LT 4400s.

2.3   Specifications

2.3.1   Supported Formats

HDTV	1080i/59.94, 1080i/50, 720p/59.94
SDTV	525i/59.94, 625i/50

2.3.2   Embedded Audio

Embedded channels	16 (4 channels × 4 groups)
Resolution	20 bits (4 channels × 4 groups)
Pre-emphasis	Off (4 channels × 4 groups)
Frequency	1 kHz (on all channels)
Level	-20 dBFS (on all channels)
Audio click	Off (on all channels)

*   You need to specify the above settings on all audio channels.
    If the above settings have not been specified, lip sync cannot be measured accurately.

2.3.3   General Specifications

Environmental conditions	Same as the LT 4400
Accessories	License key......................................1
	Instruction manual 1

3. BEFORE YOU BEGIN MEASURING

3.1   Checking the Firmware Version

This option can only be installed on LT 4400s with the following firmware versions.

LT 4400: Versions 3.90 and later

You cannot install this option to an LT 4400 whose firmware version is earlier (whose firmware number is lower) than the versions listed above. In such a situation, contact your local LEADER agent.

```
1. UTILITY  MENU
▲  VERSION  DISPLAY
```

Use ▲ and ▼ to select VERSION DISPLAY.

↓ Press ENTER.

```
2. VERSION  DISPLAY
   LT4400      Ver  3.90
```

The firmware version is displayed.

3.2   License Key Authentication

Enter the attached license key into the LT 4400.
Turn off the power after you see the message "KEY CHECK PASSED." The option's features will be enabled the next time you turn on the LT 4400.

You only need to use the license key once. Even if you turn the LT 4400 off, the license key remains valid.
Each LT 4400 requires a unique license key. You cannot use the same key for multiple instruments.

```
1. UTILITY  MENU
⬍  LICENSE
```
Use ▲ and ▼ to select LICENSE.

↓ Press ENTER.

```
2. LICENSE
▼  LICENSE  OPT  SELECT
```
Use ▲ and ▼ to select LICENSE OPT SELECT.

↓ Press ENTER.

```
3. LICENSE  OPT  SELECT
   LT4400SER01
```
Select the name of the option that you want to install.

↓ Press ENTER to confirm your selection. To cancel the selection, press MENU.

```
4. KEY  SETTING
0000000000
```
Use ◄ and ► to move the cursor to the left and right,
and use ▲ and ▼ to enter the license key.

↓ Press ENTER to confirm your selection. To cancel the selection, press MENU.

```
KEY  CHECK  PASSED
—  PUSH  ANY  KEY  —
```
The license key has been accepted.[1]

*1   When the license key is invalid, the following screen appears.

```
KEY  CHECK  FAILED
—  PUSH  ANY  KEY  —
```

4. LIPSYNC

This section explains how to configure settings for lip sync measurement. To measure lip sync, you have to configure the settings in section 4.1, "Settings for Measuring Lip Sync," and section 4.2, "LIPSYNC ON/OFF."

4.1 Settings for Measuring Lip Sync

4.1.1 Recommended Settings

We recommend that you use the following settings when you measure lip sync.
For details about the settings, see the LT 4400 instruction manual.

- **Embedded Audio**

Embedded channels	16 (4 channels × 4 groups)
Resolution	20 bits (4 channels × 4 groups)
Pre-emphasis	Off (4 channels × 4 groups)
Frequency	1 kHz (on all channels)
Level	-20 dBFS (on all channels)
Audio click	Off (on all channels)

- **Safety Area Markers**   OFF

- **Logo**   OFF

- **ID character**   OFF

*   You can enable the safety area marker, logo, and ID character, but we recommend that you do not superpose them. (When you use the LV 5800 and the LT 4400 together for measurement, lip sync measurement is not guaranteed when parts of the black and white blinking pattern are covered.)

4.1.2   Limitations

When LIPSYNC is set to ON, the following limitations apply.

- **PATTERN CHANGE**

  You cannot select PATTERN CHANGE.
  Also, when PATTERN CHANGE is set to ON, if you set LIPSYNC to ON, PATTERN
  CHANGE is automatically set to OFF.

- **CHECK FIELD**

  You cannot select CHECK FIELD.
  Also, when CHECK FIELD is selected, if you set LIPSYNC to ON, COLOR BAR 100%
  is automatically selected.

- **PRESET/RECALL**

  The lip sync settings cannot be stored to or recalled from presets.
  If LIPSYNC is set to ON and you recall a preset, LIPSYNC is set to OFF.
  When you turn the power off and then on again, LIPSYNC is set to OFF.

The following message appears when you select, PATTERN CHANGE, CHECK FIELD,
or PRESET.

```
LIPSYNC  SETTING  ON
OPERATION  IS  INVALID
```

4.2   LIPSYNC ON/OFF

Set LIPSYNC to ON or OFF.

```
1. SDI  SETTING
▲  LIPSYNC
```
Use ▲ and ▼ to select LIPSYNC.

↓ Press ENTER.

```
2. LIPSYNC
   LIPSYNC  ON／OFF
```
Use ▲ and ▼ to select LIPSYNC ON/OFF.

↓ Press ENTER.

```
3. LIPSYNC  ON／OFF
   ■ON   □OFF
```
Use ◄ and ► to select ON. If you do not want to
measure lip sync, select OFF.

↓ Press ENTER to confirm your selection. To cancel the selection, press MENU.

```
2. LIPSYNC
   LIPSYNC  ON／OFF
```

6

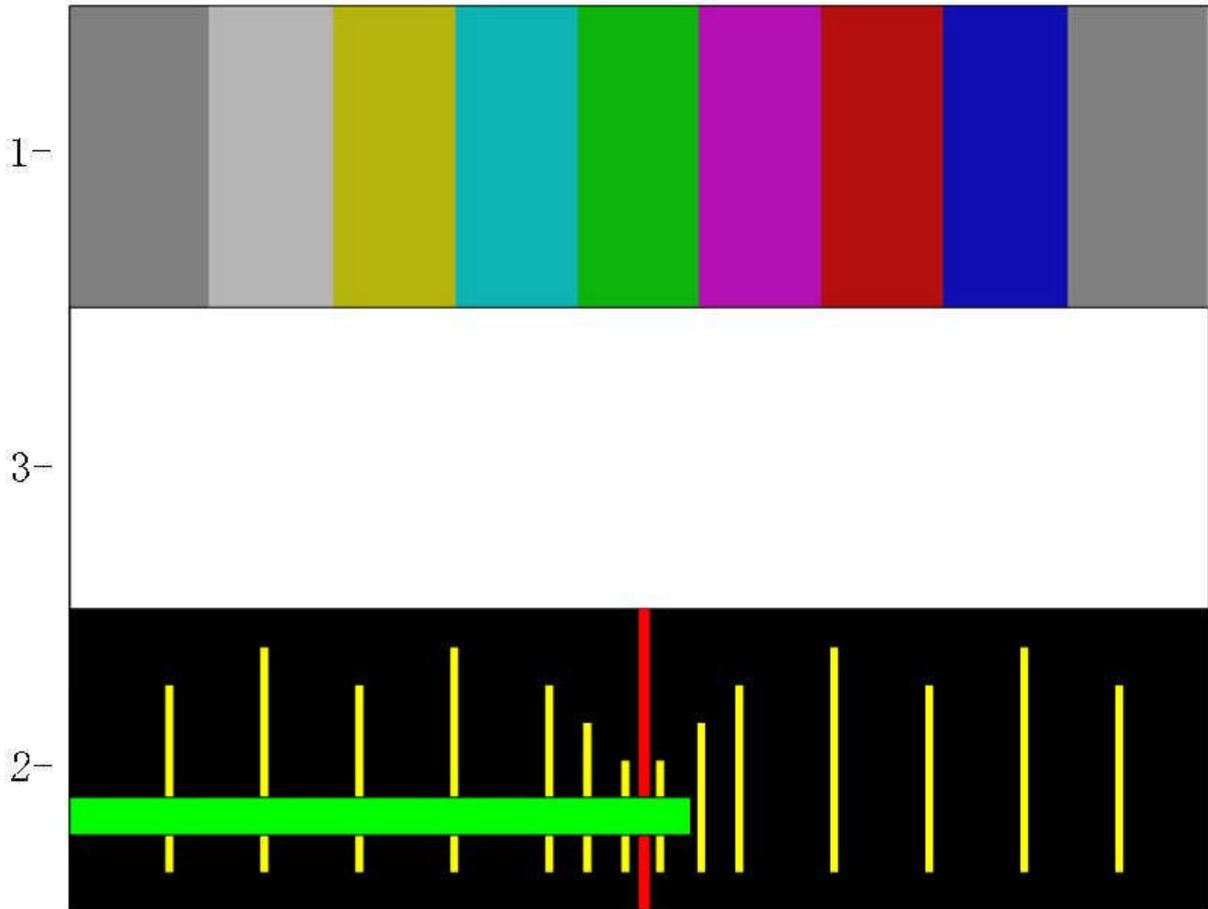## 4.3   Lip Sync Patterns

Figure 4-1   Sample Lip Sync Displays

1   Color Bar Pattern

All patterns other than the standard check field pattern can be output.
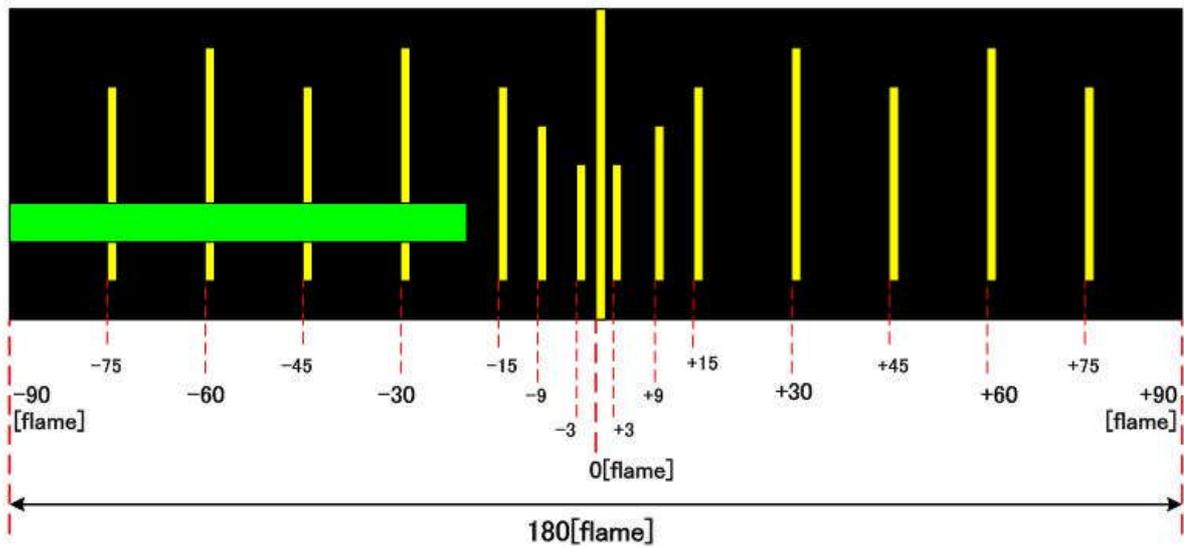
2   Flame Scale

Figure 4-2   Flame Scale

When the format is 1080i/59.94, the bar moves 180 frames (in approximately 6 seconds) from the left to the right.
The mark at 0 flame turns red when the moving bar is within 0 to +15 flame.
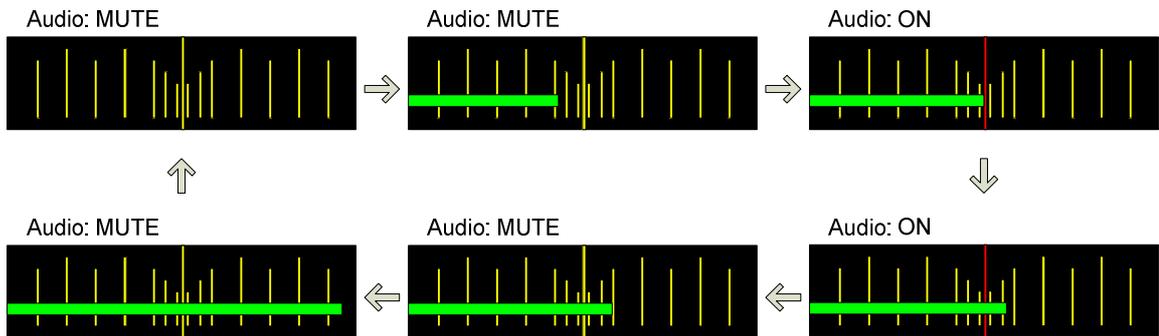

Figure 4-3   Scrolling

Table 4-1   Scale

Supported Formats	Flame Scale [flame]	Time Scale [s]
1080i/59.94	180	Approx. 6.0
1080i/50	180	Approx. 7.2
720p/59.94	180	Approx. 3.0
525i/59.94	180	Approx. 6.0
625i/50	180	Approx. 7.2

3   Black and White Blinking

The bar in the center switches between black and white.
When the mark at 0 flame turns red (when the moving bar is within 0 to +15 flame), a white bar is displayed. Otherwise, a black bar is displayed.
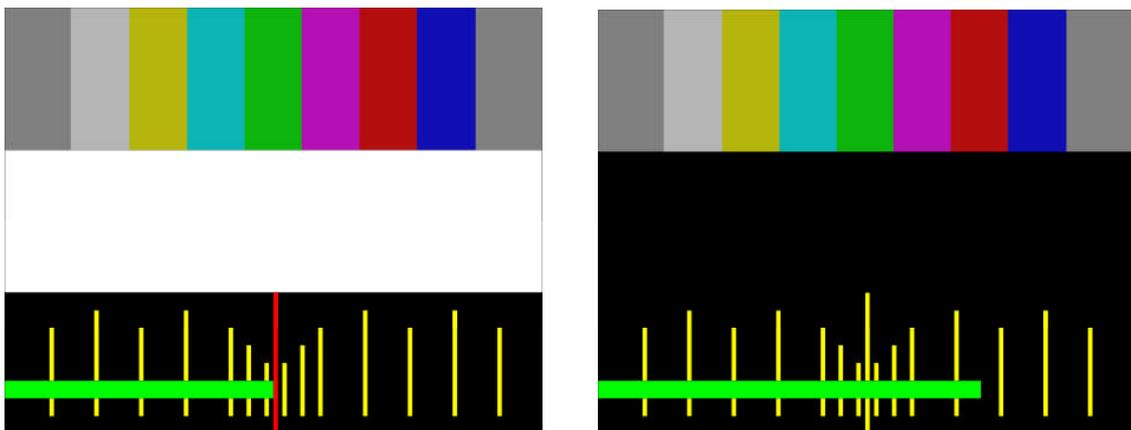

Figure 4-4   Black and White Blinking

4.3.1   Audio

The sound is turned on and muted in sync with the image.
When the mark at 0 flame turns red (when the moving bar is within 0 to +15 flame), the sound is turned on. Otherwise, the sound is muted.

The phase difference between the SDI audio and video is fixed to 0.

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