LEADER

LV 7800

MULTI RASTERIZER

INSTRUCTION MANUAL

LEADER
ELECTRONIC MEASURING INSTRUMENTS

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GENERAL SAFETY SUMMARY

■ To Avoid Personal Injury

It is recommended that only qualified personnel with technical knowledge use this instrument only after reading and fully understanding all functions of the instrument described in this instruction manual.

This instrument is not designed and manufactured for consumers.
If you do not have enough knowledge on electricity, to avoid personal injury and prevent damage to this product, please be sure to use this product only under the supervision of an engineer who has sufficient knowledge about electronics.

■ Note about Reading This Manual

Should you find the contents in this manual and any of its technical terms confusing, please feel free to contact your local LEADER agent.

■ Symbols and Terms

The following terms and symbols indicate necessary warnings and cautions used in this manual and on the product. These terms and symbols are used for the safe operation of the product.

＜Symbol＞ ⚠	The sections where this symbol is marked in this manual or on the instrument, if not correctly performed or practiced, could result in personal injury or cause serious danger to the instrument. Misuse could also produce unintentional operations that create an operational impediment on the instrument or other products that might be connected to it.
	Be sure to refer to the safety precautions in this manual to safely use the part of the instrument where the symbol is marked.
＜Term＞ ⚠ **WARNING**	Warning statements identify warning conditions that if disregarded or not correctly performed or adhered to, could result in serious personal injury or even loss of life.
＜Term＞ ⚠ **CAUTION**	Caution statements identify caution conditions that if disregarded or not correctly performed or adhered to, could result in personal injury or damage to the instrument.

GENERAL SAFETY SUMMARY

Review the following safety precautions to avoid injury and loss of life and prevent damage and deterioration to this instrument.
To avoid potential hazards, use this product as specified.

WARNING

■ Warnings about the Case and Panels
Do not remove the instrument's case or panels for any reason. Touching the internal components of the instrument could lead to fire or electric shock.
Also, do not allow foreign materials, such as liquids, combustible matter, and metal, to enter the instrument. Turning the instrument ON when such materials are inside it could lead to fire, electric shock, damage to the instrument, or some other accident.

■ Warnings about the Power Source
Make sure to connect only to the rated power line voltage. Excess voltage may cause fire.
Confirm the voltage of the commercial power line before connecting the AC power cord.
The voltage range is indicated on the rear panel.
The power frequency of the power line should be 50/60 Hz.

Use a power cord that is appropriate for the voltage of the power source. Also, use a power cord that meets the safety standards of the country that you are using it in. Using a power cord that does not meet the standards could lead to fire.

If the included cord is damaged, stop using it and contact your local LEADER agent. Should you use a damaged cord, it could cause a shock or create a fire hazard. When you pull out the cord be sure to hold it by its plug and pull from the socket, not by holding the cord.

GENERAL SAFETY SUMMARY

⚠ WARNING

■ Warnings about the Installation Environment

● Operating Temperature Range

Operate the instrument between the temperature range of 0 to 40 °C.

Operating the instrument at higher temperatures could cause a fire hazard.

Be sure not to obstruct air circulation.

Rapid changes of temperature from cold to warm can create internal condensation and could damage the instrument.

If there is a possibility of condensation, allow the instrument to sit for 30 minutes without the power on.

● Operating Humidity Range

The operating humidity range is ≤85 % RH without condensation

Do not operate the instrument with wet hands. This could cause a shock and fire hazard.

● Operation in the Presence of Gasses

Operating the instrument in or near the presence or storage locations of flammable, explosive gasses or fumes could create an explosion and fire hazard.

Do not operate the instrument anywhere near such environments.

● Avoid Insertions

Do not insert metals or flammable objects or drop liquid on or into the instrument.

To do so could cause fire, shock, malfunction and create a dangerous accident hazard.

■ If You Notice Something Wrong during Operation

While operating the instrument, if smoke, fire, or a bad smell occurs, turn OFF the instrument at once for it could cause a fire hazard. When such a case occurs, turn off the power switch and pull the plug of the cord from the plug socket. Contact your local LEADER agent after confirming there is no fire.

■ Warning about Grounding

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

GENERAL SAFETY SUMMARY

 CAUTION

■ Cautions about the Input and Output Connectors

To avoid damaging the instrument, only apply signals to the input connectors that conform to the specifications in this instruction manual.
Also, do not apply signals to the output connectors. Doing so could damage the instrument.

■ Caution When Not Using the Instrument for a Long Time

Make sure to disconnect the power cord from the socket when you do not use the instrument for a long time.

■ Routine Maintenance

Remove the power cord plug from the socket when cleaning the instrument. Avoid the use of thinner or benzene solvents for cleaning cases, panels and knobs since this might remove the paint or damage the plastic surfaces. Wipe cases, panels, and knobs lightly with a soft cloth damped with neutral detergent. Do not allow water, detergent, or other foreign objects to enter the instrument while cleaning. If liquid or a metal object enters into the instrument, fire or electric shock may result.

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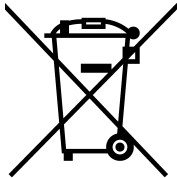
This instrument and its accessories are subject to the European WEEE Directive. Follow the applicable regulations of your country or region when discarding this instrument or its accessories. (WEEE stands for Waste Electrical and Electronic Equipment.)
Follow the EU Battery Directive when discarding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

Please conform to the above warnings and cautions for safe operation. There are cautions in each area of this instruction manual, so please conform to each caution.

If you have any questions about this manual, please feel free to contact your local LEADER agent.

1. INTRODUCTION

Thank you for purchasing LEADER's measuring instruments. Please read this instruction manual carefully to ensure correct and safe operation.

If you have any difficulties or questions on how to use the instrument after you have read this manual, please feel free to contact your local LEADER agent. After you have read the manual, keep the manual in a safe place for quick reference.

1.1 Scope of Warranty

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

LEADER shall not be obligated to furnish free service during the warranty period under the following conditions.

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

1.2 Operating Precautions

1.2.1 Maximum Allowable Input Voltage

⚠ CAUTION

The maximum allowable input voltage to the input connectors is shown in the table below. To prevent damage to the instrument, do not apply excessive voltage.

Table 1-1   Maximum allowable input voltage

Input Connector	Maximum Allowable Input Voltage
REMOTE control connector	0 to +5 V
EXT REF connector	±5 V

1.2.2 Shorting and Applying External Input to the Output Connectors

Do not short the output connectors. Doing so may damage the instrument.
Do not apply an external signal to the output connectors. Doing so may damage the instrument or devices that are connected to it.

1.2.3   Mechanical Shock

To prevent damage to the precise components used in this instrument, be careful not to expose the instrument to other forms of severe mechanical shock.

1.2.4   Electrostatic Damage

Electronic components can be damaged by static discharge. Static electricity can build up in the core wire of a coaxial cable. Before connecting a coaxial cable to the instrument, short the core wire of the cable with the external conductor.

1.2.5   Rack Mounting

If you are mounting this instrument on a rack, be sure to provide additional support for the instrument. If you only use the flanges on the front panel to mount the instrument, the instrument case may be deformed, or the instrument may fall.
The LV 7800 can be mounted on an EIA 19-inch rack.

1.2.6   Warming Up

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

1.2.7   Standby

Even if you press the power switch on the front panel to turn OFF the LV 7800, if the power plug is connected to an outlet, the LV 7800 enters the standby state.
In the standby state, part of the internal circuit is working and it may generate heat.
Therefore, make sure to disconnect the power plug from the outlet when you are not going to use the LV 7800.

1.2.8   Last Memory

The LV 7800 has a last-memory feature. When you turn ON the power, the LV 7800 starts up with the same panel settings that were set when it was last turned OFF.
If the backup battery runs out, the last-memory feature will no longer work, and the internal clock will be reset. If this happens, contact your local LEADER agent.

To continually use the last-memory and clock features, we recommend that you replace the backup battery with a new one every five years after you purchase the LV 7800. You cannot replace the backup battery yourself. To have the battery replaced, contact your local LEADER agent.

1.3   Notations Used in This Manual

Unless otherwise noted, any instances of the term LV 58SER01A (SDI INPUT) in this manual also refer to LV 58SER01 (SDI INPUT unit).
Unless otherwise noted, any instances of the term LV 58SER40A (DIGITAL AUDIO) in this manual also refer to LV 58SER40 (DIGITAL AUDIO unit).

2. SPECIFICATIONS

2.1 General

The LV 7800 is a new-concept multi rasterizer that enables you to freely combine all the LV 5800 series input and output units to meet the needs of a variety of situations. By combining the different units, you can flexibly handle complex digital broadcast systems.

2.2 Features

- **Slots for Four Units**

  The LV 7800 is equipped with two input slots and two input/output slots, enabling you to install a maximum of four units. Each input/output unit operates independently.

- **External Sync Signal Input**

  The LV 7800 can receive tri-level sync signals and NTSC or PAL black burst signals. You can display video signal waveforms in phase with an external sync signal.

- **DVI-I Connector**

  The various LV 7800 displays are transferred through a DVI-I connector to an XGA (1024 × 768) display. Vector waveforms, pictures, and audio waveforms also support 16:9 and 16:10 displays.

- **Preset Settings**

  The LV 7800 can store up to 60 frequently used setting configurations. You can also directly recall preset settings that have been assigned to the shortcut key.

- **Key Lock**

  The key lock feature is useful in preventing mistaken changes to the settings and accidental operations on the LV 7800.

- **USB Port**

  By connecting a USB memory device to the front panel USB port, you can take screen captures, record data, and save preset settings.

- **Ethernet Port**

  By running TELNET or FTP on a PC that is connected to the LV 7800 through the rear panel Ethernet port, you can control the LV 7800 remotely, monitor errors, and transfer files.

- **Parallel Remote Control Connector**

  Through the rear panel remote control connector, you can load preset settings, transmit errors that have been detected, switch the input signal, and apply analog audio signals[1].

  [1] You need an LV 58SER40A (DIGITAL AUDIO) unit to measure analog audio signals. (You can not use an LV 58SER40 unit.)

2.3   Specifications

2.3.1   Input/Output Slots

Input-only slots	2 (UNIT 1 and UNIT 2)
I/O slots	2 (UNIT 3 and UNIT 4)
Supported units	LV 58SER01A (SDI INPUT)
	LV 58SER02 (EYE PATTERN unit)[1]
	LV 58SER03A (TRI SYNC/COMPOSITE)
	LV 58SER04 (MPEG DECODER)
	LV 58SER06 (3G-SDI INPUT)
	LV 58SER07 (EYE PATTERN)[1,2]
	LV 58SER20 (DVI-I OUTPUT unit)[3]
	LV 58SER21 (ANALOG COMPONENT OUTPUT)[3]
	LV 58SER40A (DIGITAL AUDIO)[1]

*1   You cannot install more than one of this type of unit in an LV 7800.
*2   This unit can not be installed in the UNIT 2 or UNIT 4 slots.
*3   This unit can not be installed in the UNIT 1 or UNIT 2 slots.

2.3.2   DVI-I Output

Output Connector	1
Signal Format	Single Link T.M.D.S analog RGB
Display Format	XGA. The effective resolution is 1024 × 768. Wide displays (squeeze mode)[1]
DDC	Not supported
HOT PLUG	Not supported

*1   The display must have a resolution conversion feature.

2.3.3   Screen Capture

Function	Captures the screen
Display	Displays the captured image or superimposes the captured image over the input signal
Media	Internal memory (RAM) and USB memory Only one screen capture can be stored in the internal memory.*1
Data Output	Screen captures can be saved as bitmap files or in a file format that the LV 7800 can load. They can be saved to USB memory or transmitted over an Ethernet and saved on a PC.
Data Input	Data saved to USB memory can be loaded and displayed on the LV 7800.

*1   When a unit that is equipped with a video signal frame capture function, such as an LV 58SER01A (SDI INPUT), is installed. (You can switch between frame capture and screen capture.)

2.3.4   Presets

Number of Presets   60
Media   Internal memory (RAM) or a USB memory
Recall Method   Through the front panel, remote connector, and
                                 Ethernet network[1]
Copy   Copies all content of presets to the USB memory
                                 or from the USB memory to the LV 7800

[1]   You can switch between 4, 6, 8, 15, and 60 presets when you use the remote connector to recall
       presets.

2.3.5   External Sync Signal Input

Input Connector   BNC connector (1 system 2 connectors)
Input Signal   Tri-level sync signal or NTSC/PAL black burst
Input Impedance   15 kΩ (Passive Loop-through)
Input Return Loss   ≥30 dB
Maximum Input Voltage   ±5 V (DC + peak AC)

2.3.6   External Control Connector

USB Connector
   Specifications   2.0
   Device   Only USB memory devices are supported.
   Function   Take screen captures, record data, and save
                                 preset settings
Ethernet Connector
   Standard Supported   IEEE802.3 10BASE-T/100BASE-T
   Connector   RJ-45
   Function   Remote control and error monitoring, etc. from
                                 an external computer
Remote Connector
   Connector   25-pin D-sub (female)
   Signal   LV-TTL level (LOW active)
   Function   Load preset settings, transmit errors that have
                                 been detected, switch the input signal, and
                                 receive analog audio signals[1]

[1]   You need an LV 58SER40A (DIGITAL AUDIO) unit to measure analog audio signals. (You can not use
       an LV 58SER40 unit.)

2.3.7   Headphone Output

    Output Signal   The audio signal that is embedded in an SDI signal or an external audio signal

    Output Connector   One 6.3 mm stereo jack

    Volume Adjustment   Front panel volume knob

    Power Output   200 mWrms (when the volume is at maximum with 0 dBFS input)

    Load Resistance   8 Ω

*   You need an LV 58SER40A (DIGITAL AUDIO) unit to generate headphone output.

2.3.8   General Specifications

Environmental Conditions

Operating Temperature	0 to 40 °C
Operating Humidity	≤ 85 % RH (without condensation)
Spec-Guaranteed Temperature	10 ° to 30 °C
Spec-Guaranteed Humidity	≤ 85 % RH (without condensation)
Operating Environment	Indoor use
Operating Altitude	Up to 2,000 m
Overvoltage Category	II
Pollution Degree	2

Power Requirements	AC 90 V to 250 V, 50/60 Hz, 150 W max.
Dimensions	482 (W) x 88 (H) x 450 (D) mm
Weight	8.5 kg
Accessories	Power cord 1
	Cover/Inlet stopper 1
	D-sub, 25-pin connector 1
	D-sub, 25-pin connector cover 1
	Instruction manual (this manual) 1
	Instruction manual (Ethernet) 1

3. NAMES AND FUNCTIONS OF PARTS

3.1 Front Panel
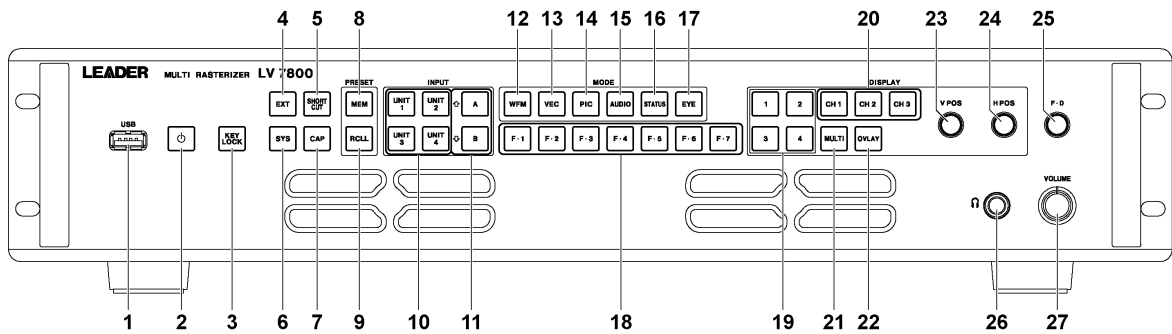
Figure 3-1   Front panel

Table 3-1   Front panel items and functions

No.	Name	Function
1	USB port	The USB port is used to save and load various kinds of data. Use a FAT16-formatted USB memory device.
2	Power switch	To turn ON the power, press this key. To turn OFF the power, hold down this key. See section 4.3, "Turning the Instrument ON and OFF"
3	KEY LOCK	You can enable and disable the key lock by holding this key down. The LED lights when the key lock is enabled. See section 4.5.3, "Enabling the Key Lock."
4	EXT	This key switches between the types of sync signal (internal and external). The LED lights when external is selected. You need a unit that has a video signal display feature, such as an LV 58SER01A.
5	SHORT CUT	Pressing this key causes the LV 7800 to load the registered panel settings. See section 4.5.4, "Setting the Short Cut"
6	SYS	Press this key to specify settings for the instrument and the installed units. See chapter 6, "SYSTEM SETTINGS"
7	CAP	Press this key to take a screen capture or a frame capture (a capture of the data from a single frame). See chapter 7, "CAPTURE FEATURE"
8	MEM	Press this key to register or delete a single preset setting, or copy all preset settings. See chapter 8, "PRESET SETTINGS"
9	RCLL	Press this key to recall a preset setting configuration. See chapter 8, "PRESET SETTINGS"
10	UNIT 1 to 4	Press one of these keys to select a unit. The LV 7800 will display the input signal of this unit in the selected area. See section 5.3, "Selecting the Input Signal"
11	A/B (↑/↓)	Press these keys to select the input channel of the selected unit. If the selected unit has two input channels, you can press these keys to switch to channels A and B directly. If the selected unit has three or more input channels, you can press these keys to select the higher and lower channels, that is, the keys work as ↑ and ↓. See section 5.3, "Selecting the Input Signal"

No.	Name	Function
12	WFM	Switches to the video signal waveform display. You need a unit that has a video signal display feature, such as an LV 58SER01A. See section 5.4.1, "Video Signal Waveform Display"
13	VEC	Switches to the vector waveform display. You need a unit that has a video signal display feature, such as an LV 58SER01A. See section 5.4.2, "Vector Waveform Display"
14	PIC	Switches to the picture display. You need a unit that has a video signal display feature, such as an LV 58SER01A. See section 5.4.3, "Picture Display"
15	AUDIO	Switches to the audio display. You need a unit that has an audio display feature, such as an LV 58SER40A. See section 5.4.4 "Audio Display"
16	STATUS	Switches to the status display. You need a unit that has a signal analysis feature, such as an LV 58SER01A. See section 5.4.5, "Status Display"
17	EYE	Switches to the eye pattern display. You need a unit that has an eye pattern display feature, such as an LV 58SER02. See section 5.4.6, "Eye Pattern Display"
18	F•1 to F•7	Carries out the corresponding function menu operation. See section 4.5.1, "Function Menu Operations"
19	1 to 4	Selects the area. If you are using the multi screen display, the selected area is displayed with a blue border. You can change the border color. See section 5.2, "Selecting the Display Area"
20	CH 1 to CH 3	If you are using the component display to display a video signal waveform, press these keys to select whether or not to display the signals that are assigned to each channel. The LED lights when the signal is being displayed.
21	MULTI	Press this key to switch between the 1 screen display and the multi screen display (two or four screens). The LED lights when the multi screen display is active. See section 5.1, "Selecting the Display Format"
22	OVLAY	If you are using the component display to display a video signal waveform, press this key to switch between the overlay display and the parade display. The LED lights when the overlay display is active.
23	V POS	Adjusts the vertical position of the video signal waveform or eye pattern waveform. Press this key to return the vertical position to the reference position.
24	H POS	Adjusts the horizontal position of the video signal waveform or eye pattern waveform. Press this key to return the horizontal position to the reference position.
25	F·D	This key is used to specify a numeric value or to move cursors. In most cases, pressing this knob will return the value you are adjusting to its default setting.
26	PHONES	Use to connect headphones.
27	VOLUME	Adjusts the headphone jack volume.

3.2   Rear Panel
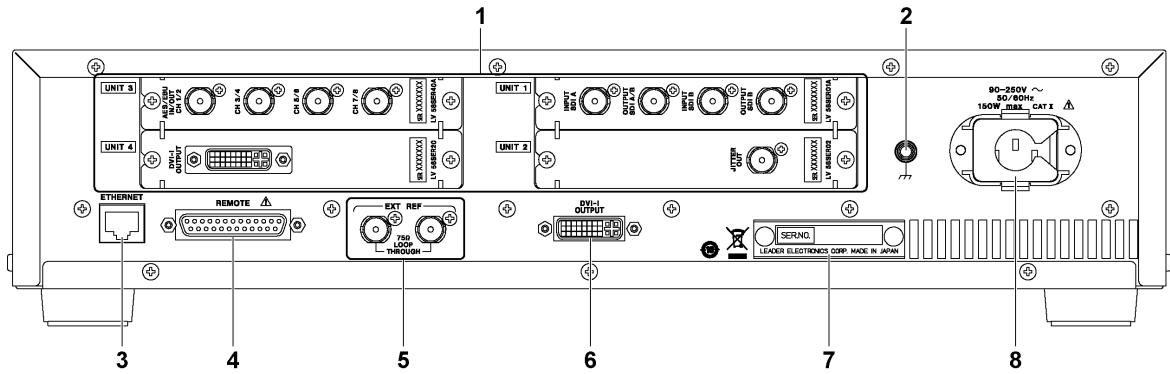
Figure 3-2   Rear panel

Table 3-2   Rear panel items and functions

No.	Name	Function
1	UNIT 1 to 4	Optional units are installed here. You can install input units into the UNIT 1 and UNIT 2 slots and all units into the UNIT 3 and UNIT 4 slots. See section 4.4, "About Units"
2	Ground terminal	Used to connect the instrument to an external ground. To prevent electric shock, make sure to ground the instrument.
3	ETHERNET	A 10BASE-T/100BASE-TX Ethernet port. See section 9.1, "Ethernet Control"
4	REMOTE	A D-sub, 25-pin remote control connector. Can be used to execute actions such as recalling preset settings. See section 9.2, "Remote Control"
5	EXT REF	Loop-through external reference input connectors
6	DVI-I OUTPUT	A DVI-I output connector. Use this terminal to connect the LV 7800 to a display. See section 4.2, "Connecting the LV 7800 to a Display"
7	Serial number name plate	The instrument's serial number is written on this name plate. If you contact your local LEADER agent, be sure to notify them of the number written here.
8	AC inlet	See section 4.1, "Attaching the Cover/Inlet Stopper"

3.3   Display Screen
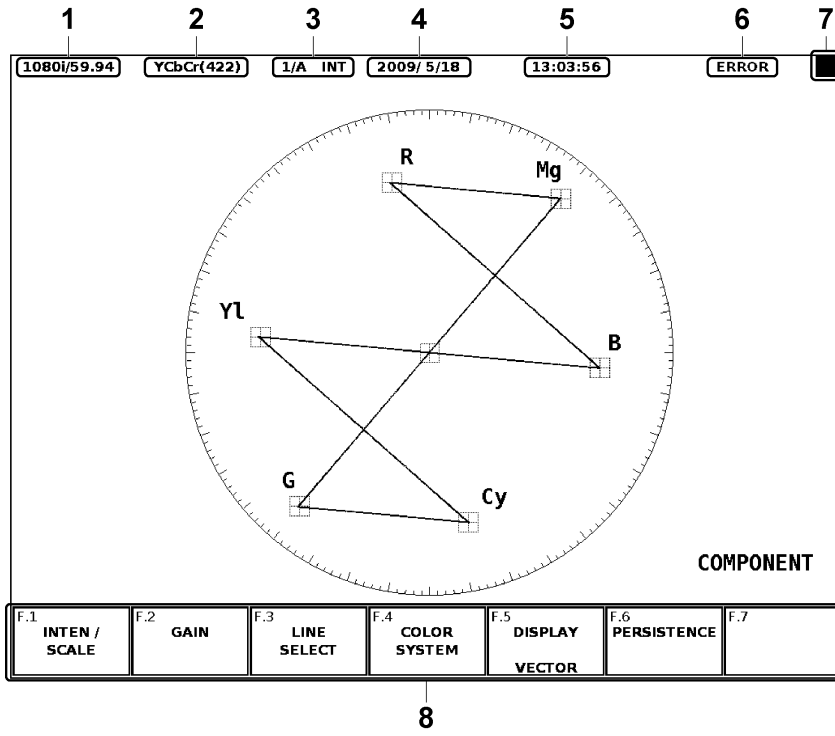
Figure 3-3   Display screen

Table 3-3   Display screen items and functions

No.	Name	Function
1	Format display	Displays the video signal format. See section 6.1.1, "General Settings"
2	Color system display	Displays the color system. See section 6.1.1, "General Settings"
3	Input signal display	Displays the input unit and the input channel. See section 6.1.1, "General Settings"
4	Date display	Displays the date in the selected format. The LV 7800 can also synchronize with a time server and display the date. See sections 6.1.1, "General Settings;" 6.1.2, "Ethernet Settings;" and 6.2, "Setting the Date and Time"
5	Time display	Displays the time. The LV 7800 can also display the time that is synchronized with a time server or (if an LV 58SER01A or LV 58SER06 is installed) the time code that is embedded in an SDI signal. See sections 6.1.1, "General Settings;" 6.1.2, "Ethernet Settings;" and 6.2, "Setting the Date and Time"
6	Error display	Displays a variety of messages that depend on the operating status. The following are examples of the messages that may appear: ERROR: This message appears if an error out of those that have been specified for each unit occurs. NO SIGNAL: This message appears if there is no signal. UNKNOWN: This message appears if the input signal cannot be detected. FAN ALARM:This message appears if there is a problem with the fan. Contact your nearest LEADER agent.
7	USB memory display	Appears when USB memory is connected to the USB port. This indicator is normally green, but it changes to red when the USB memory is being accessed. Do not turn the power OFF or remove the USB memory device when the indicator is red.
8	Function menu	Displays menus for specifying a variety of settings. Use the F•1 to F•7 and F•D keys to operate the menus. See section 4.5.1, "Function Menu Operations"

4. BEFORE YOU BEGIN MEASURING

4.1 Attaching the Cover/Inlet Stopper

A cover/inlet stopper is included with the LV 7800. Use this device to prevent the power cord from being pulled free of the AC inlet. To attach or remove the cover/inlet stopper, follow the procedure below.

• **Attaching the Cover/Inlet Stopper**

1. **Cover the power cord with the cover/inlet stopper.**
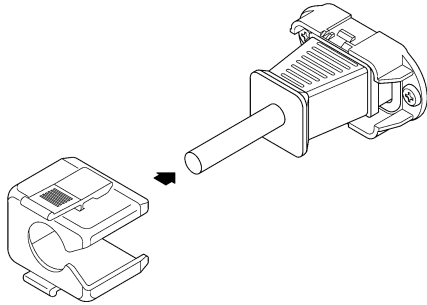
Figure 4-1   Attaching the cover/inlet stopper; step 1

2. **Push the cover/inlet stopper, until you hear a click, to attach it to the AC inlet.**
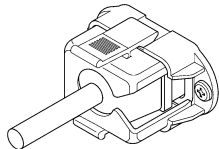
Figure 4-2   Attaching the cover/inlet stopper; step 2

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

• **Removing the Cover/Inlet Stopper**

1. **Release the lock by using two fingers to press the cover/inlet stopper levers.**
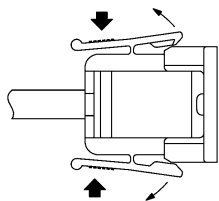
Figure 4-3   Removing the cover/inlet stopper; step 1

2. **Pull the cover/inlet stopper away from the AC inlet.**
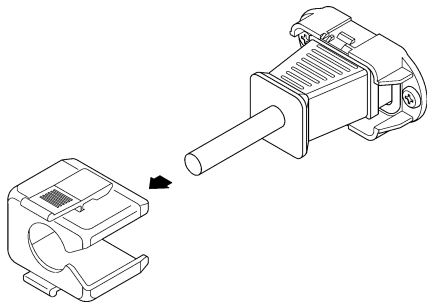
Figure 4-4   Removing the cover/inlet stopper; step 2

4.2　Connecting the LV 7800 to a Display

By connecting a display to the DVI-I output connector, you can view a variety of screens. Using a DVI-I cable, connect the LV 7800 to an XGA (1024 × 768) display. (The display and the cable are not included with the LV 7800.)

The DVI-I output connector supports both serial digital output (Single Link T.M.D.S) and RGB analog output. The default setting for the initial display format is XGA (1024 × 768), but you can change it in the system settings to 16:9 (1366 × 768) or 16:10 (1920 x 1200) that uses a squeeze method. Hot plug detection and DDC are not supported.
See section 6.4, "Setting the Aspect Ratio"

The DVI-I output connector and its pin assignments are shown below.
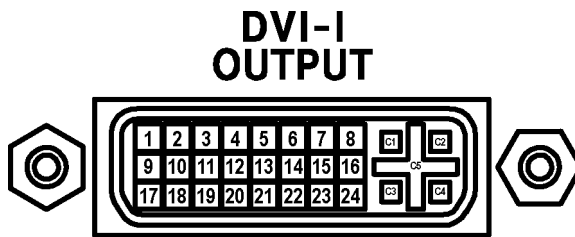
Figure 4-5　DVI-I output connector

Table 4-1　DVI-I output connector pin assignments

PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	TMDS Data2-	16	NC
2	TMDS Data2+	17	TMDS Data0-
3	TMDS Data2 Shield	18	TMDS Data0+
4	NC	19	TMDS Data0 Shield
5	NC	20	NC
6	DDC Clock	21	NC
7	DDC Data	22	TMDS Clock Shield
8	Analog Vertical Sync	23	TMDS Clock+
9	TMDS Data1-	24	TMDS Clock-
10	TMDS Data1+	C1	Analog Red
11	TMDS Data1 Shield	C2	Analog Green
12	NC	C3	Analog Blue
13	NC	C4	Analog Horizontal Sync
14	+5V DC POWER	C5	Analog Ground (RGB return)
15	Ground (return for +5, Hsync, Vsync)		

4.3   Turning the Instrument ON and OFF

To turn ON the power, press the power switch on the front panel. The power switch LED lights, and the instrument turns ON. When you turn ON the power, the LV 7800 starts up with the same panel settings that were set when it was last turned OFF. However, the error counter and event log in the status display and the error counter in the audio display are cleared.

To turn OFF the power, hold down the power switch on the front panel for one second or more. The power switch LED and the instrument turn OFF.

4.4   About Units

This instrument only functions as a measuring instrument after at least one optional unit (sold separately) is installed.

You can include units as factory options. For more information, contact your nearest LEADER agent.
You cannot install or uninstall units. Do not remove the instrument's case or panels for any reason.

Depending on the type of optional unit, the installation location and the number of this unit that can be installed differ as shown below.

Table 4-2   Unit types and installation locations

Unit		Installation Location				Maximum Number of Installable Units
		UNIT 1	UNIT 2	UNIT 3	UNIT 4	
LV 58SER01A	SDI INPUT	Yes	Yes	Yes	Yes	4
LV 58SER02	EYE PATTERN unit	Yes	Yes	Yes	Yes	1
LV 58SER03A	TRI SYNC/COMPOSITE	Yes	Yes	Yes	Yes	4
LV 58SER04	MPEG DECODER	Yes	Yes	Yes	Yes	4
LV 58SER06	3G-SDI INPUT	Yes	Yes	Yes	Yes	4
LV 58SER07	EYE PATTERN	Yes	No	Yes	No	1
LV 58SER20	DVI-I OUTPUT unit	No	No	Yes	Yes	2
LV 58SER21	ANALOG COMPONENT OUTPUT	No	No	Yes	Yes	2
LV 58SER40A	DIGITAL AUDIO	Yes	Yes	Yes	Yes	1

(Yes: Can be installed in this slot   No: Cannot be installed in this slot)

4.5 Panel Operation Basics

4.5.1 Function Menu Operations

Use the function menu at the bottom of the screen to change the settings.
This section explains how to operate the function menu, using the function menu in the vector display as an example.
The function menu items correspond to F•1 to F•7 on the front panel.
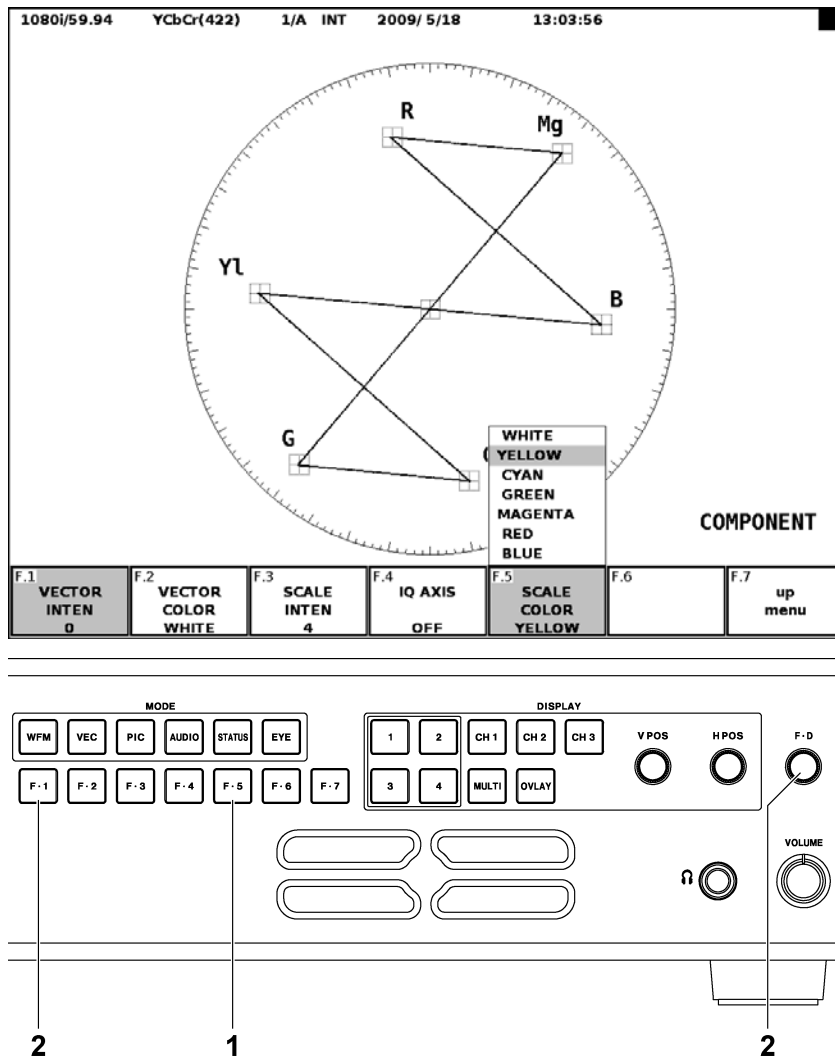
Figure 4-6   Menu operations

1   Selecting a Setting

To select a setting from a list like the one shown in the figure above for F•5 SCALE COLOR, press F•5 repeatedly to select the setting you want. The setting changes each time you press F•5. After you stop pressing F•5, the setting is confirmed, and the pop-up menu disappears.

2   Changing a Value

To set the value of a setting like the one shown in the figure above for F•1 VECTOR INTEN, press F•1, and then turn F•D. You can reset most settings to their default values by pressing F•D.

4.5.2   Tab Menu Operations

You can usually use the function menu to change the settings, but a tab menu such as that shown below appears for complicated settings.
This section explains how to operate the tab menu, using the PLATFORM SETUP tab menu as an example.

| GENERAL SETUP | ETHERNET | REMOTE |

LV7800 ETHERNET SETUP

Network Select   ☑ DHCP □ IP   Time Server Select   □ ON ☑ OFF

┌ TCP / IP ─────────   ┌ Time Server ───────
│ ┌ IP Address ──────   │ ┌ IP Address ──────
│ │ [ ] . [ ] . [ ] . [ ]   │ │ [ ] . [ ] . [ ] . [ ]
│ ┌ Subnet Mask ──────   │ ┌ TimeZone Adjust ────
│ │ [ ] . [ ] . [ ] . [ ]   │ │ [   ]
│ ┌ Default Gateway ───
│ │ [ ] . [ ] . [ ] . [ ]

MAC ADDRESS
    00:00:00:00:00:00

| F.1 COMPLETE | F.2 PREV | F.3 NEXT | F.4 | F.5 | F.6 | F.7 CANCEL |

Figure 4-7   Tab menu

- **To Move the Cursor**

  To move the cursor, turn F•D. Depending on what you are setting, there are some items in which you cannot move the cursor.

- **To Change the Tab**

  When there are multiple tabs such as in the figure above, press F•2 PREV and F•3 NEXT to change between tabs. Even if you switch to another tab, the settings are not confirmed until you press F•1 COMPLETE.

- **To Select a Checkbox**

  Move the cursor to the check box that you want to select, and press F•D.

- **Entering a Value**

  Move the cursor to the item that you want to enter the value for, and press F•D. The color of the cursor changes from blue to green, and you can now set the value. Turn F•D to set the value. To confirm the value, press F•D again.

- **To Confirm the Settings**

  Press F•1 COMPLETE to apply the settings from all the tabs and return to the screen that is one level up.

- **To Cancel the Settings**

  Press F•7 CANCEL to cancel the settings from all the tabs and return to the screen that is one level up.

4.5.3   Enabling the Key Lock

You can prevent accidental operations on the LV 7800 by enabling the key lock. The key lock disables all LV 7800 keys except for the power switch. (Remote control and Ethernet control are still valid even if the key lock is enabled.)

To enable or disable the key lock, hold down KEY LOCK on the front panel. The key lock LED lights when the key lock is enabled.

4.5.4   Setting the Short Cut

You can recall the panel settings that you previously registered as a short cut by pressing SHORT CUT. You can only register one set of panel settings to the SHORT CUT key.

To register panel settings to the SHORT CUT key, follow the procedure below. The registered panel settings are not deleted even if you initialize the settings.

1. **Set the LV 7800 to the settings that you want to register.**

2. **Press MEM.**

    The preset registration display appears.

3. **Press SHORT CUT.**

    The SHORT CUT LED flashes twice, and the panel settings are registered.

5. OPERATION OVERVIEW

This section explains the basic operating procedures of the LV 7800. We recommend that you follow these basic operations until you fully understand how the LV 7800 is designed to operate and its operational limitations.

Depending on the installed units and the system settings, you may not be able to operate the LV 7800 exactly as described in these basic procedures. For details, see the instruction manual for each unit.
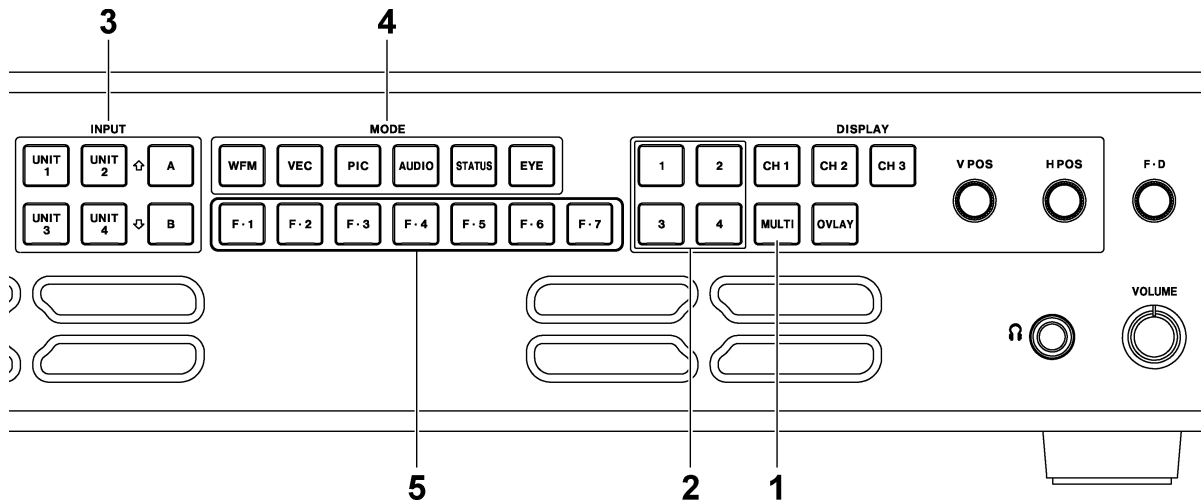
Figure 5-1   Operating procedures

1. **Select the display format.**

    Press MULTI to select the 1 screen display or the multi screen display.
    See section 5.1, "Selecting the Display Format"

2. **Select the area.**

    Press a key from 1 to 4 to select the display (or setting) area.
    See section 5.2, "Selecting the Display Area"

3. **Select the input signal.**

    Press a key from UNIT 1 to UNIT 4 to select the input unit, and then press A or B to select the input channel.
    See section 5.3, "Selecting the Input Signal"

4. **Select the display mode.**

    Press WFM, VEC, PIC, AUDIO, STATUS, or EYE to select the display mode.
    See section 5.4, "Selecting the Display Mode"

5. **Set the display mode.**

    Press F•1 to F•7 to specify the various settings.
    See section 4.5.1, "Function Menu Operations"

6. **If you selected the multi screen display in step 1, repeat steps 2 to 5 to specify the settings for all the areas.**

5.1 Selecting the Display Format

The LV 7800 supports both a 1 screen display and a multi screen display.
Press MULTI on the front panel to switch between the 1 screen display and the multi screen display. The LED lights when the multi screen display is active.
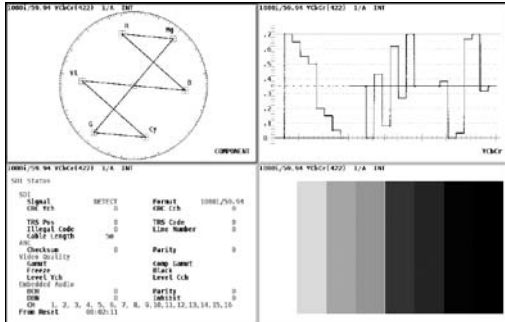
Multi screen display   1 screen display
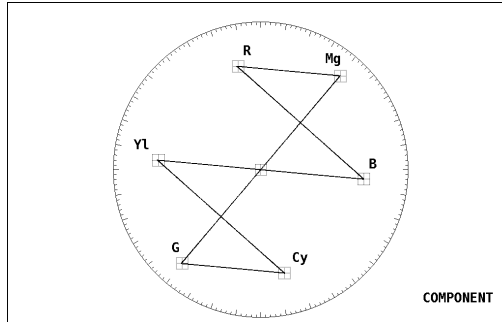
Figure 5-2   Selecting the display format

There are 2 screen and 4 screen multi screen displays. The default setting is the 4 screen multi display, but you can use the system settings to change to the 2 screen multi display.
See "Multi Screen Display Format" in section 6.1.1, "General Settings"
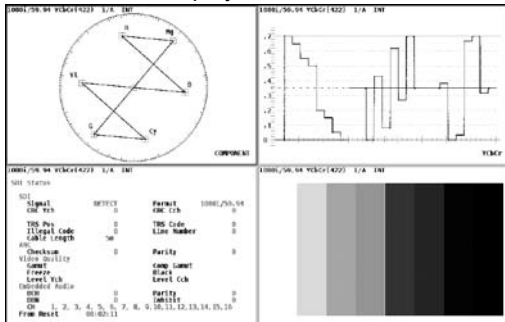
4 screen multi display   2 screen multi display
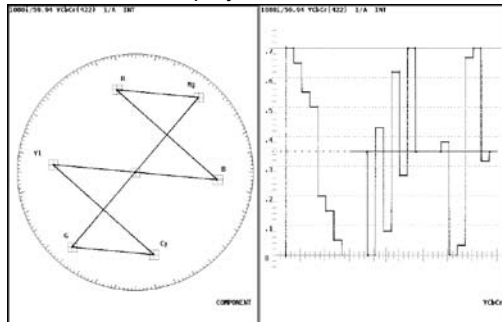
Figure 5-3   Multi screen displays

5.2   Selecting the Display Area

The LV 7800 is composed of four independent screens.
Press a key from 1 to 4 on the front panel to select the area that you want to control. If you are using the multi screen display, the selected area is displayed with a blue border. You can change the border color.
See "Selected Area Display Format" in section 6.1.1, "General Settings"

1 to 4 are assigned as follows:

Figure 5-4   4 screen multi display

Additionally, the display area that is selected when you press a key from 1 to 4 is as follows:

- **4 Screen Multi Display**

  All areas are displayed at all times.

- **2 Screen Multi Display**

  If you press 1 or 2, the first and second areas are displayed. If you press 3 or 4, the third and fourth areas are displayed.

Figure 5-5   2 screen multi display

- **1 Screen Display**

  Only the area that you selected by pressing a key from 1 to 4 is displayed.

5.3 Selecting the Input Signal

Select the input signal for the area that you selected by pressing a key from 1 to 4. Select the input signal by pressing a key from UNIT 1 to UNIT 4 on the front panel to select the unit that is receiving the signal.

If the selected unit has multiple input terminals, like the LV 58SER01A (SDI INPUT), press A or B to switch the input channel.

5.4 Selecting the Display Mode

The LV 7800 has six display modes: WFM (video signal waveform display), VEC (vector waveform display), PIC (picture display), AUDIO (audio display), STATUS (status display), and EYE (eye pattern display). Press MODE on the front panel to select the display mode.

Depending on the selected input unit, the display modes that you can select differ as shown in the following table. Even for the same display mode, the contents displayed differ depending on the input unit. For details on the display modes, see the instruction manual for each unit.

Table 5-1   Display modes for input units

Input Unit		Display Mode					
		WFM	VEC	PIC	AUDIO(*1)	STATUS	EYE(*2)
LV 58SER01A	SDI INPUT	Yes	Yes	Yes	Yes	Yes	Yes
LV 58SER03A	TRI SYNC/COMPOSITE	Yes	Yes(*3)	Yes(*3)	No	Yes	No
LV 58SER04	MPEG DECODER	Yes	Yes	Yes	Yes	Yes	Yes
LV 58SER06	3G-SDI INPUT	Yes	Yes	Yes	Yes	Yes	Yes
LV 58SER40A	DIGITAL AUDIO	No	No	No	Yes	No	No
LV 58SER02	EYE PATTERN unit	Cannot be selected as an input unit.					
LV 58SER07	EYE PATTERN						
LV 58SER20	DVI-I OUTPUT unit						
LV 58SER21	ANALOG COMPONENT OUTPUT						

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

*1   To display audio, an LV 58SER40A unit must be installed in the LV 7800.
      You cannot display audio in multiple areas at the same time.
*2   To display the eye patterns of the LV 58SER01A and LV 58SER04, the LV 58SER02 must be installed in the LV 7800. To display the eye patterns of the LV 58SER06 , the LV 58SER07 must be installed in the LV 7800.
      You cannot display eye patterns in multiple areas at the same time. (However, you can display eye patterns and jitter at the same time.)
*3   This is not supported when the input signal is an HD tri-level sync signal.

5.4.1   Video Signal Waveform Display

To display video signal waveforms, press WFM.
If you are using the component display, you can show the overlay display by pressing OVLAY on the front panel, or turn each channel (Y, Cb, Cr, etc.) ON or OFF by pressing CH1 to CH3 on the front panel.
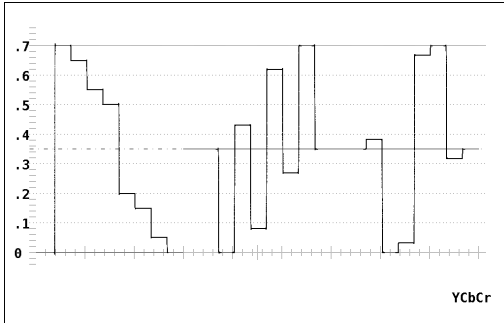
If the input unit is an LV 58SER01A   If the input unit is an LV 58SER03A
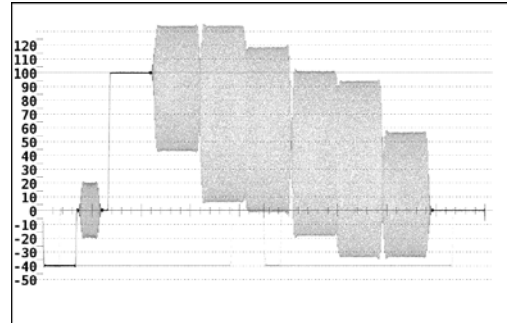
Figure 5-6   Video signal waveform display

5.4.2   Vector Waveform Display

To display vector waveforms, press VEC.
If the input unit is an LV 58SER03A, you can use F•D to rotate the waveform's phase.
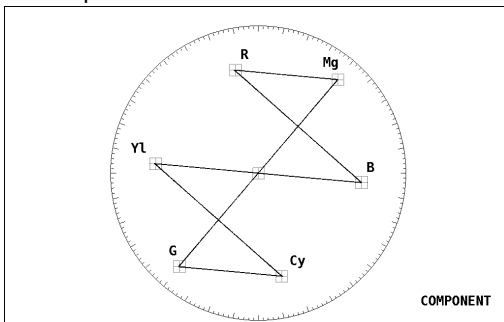
If the input unit is an LV 58SER01A   If the input unit is an LV 58SER03A
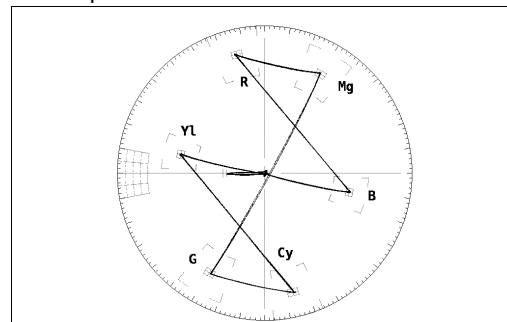
Figure 5-7   Vector waveform display

5.4.3   Picture Display

To display pictures, press PIC.

If the input unit is an LV 58SER01A
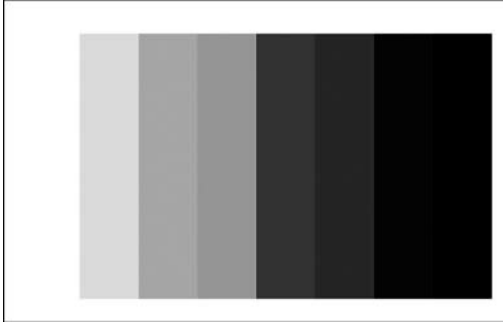
Figure 5-8   Picture display

5.4.4   Audio Display

The following two audio signals can be displayed.
You need an LV 58SER40A (DIGITAL AUDIO) unit to display either audio signal.
You cannot display audio in multiple areas at the same time.

• **Displaying an Audio Signal That Is Embedded in the Input Signal**

Select an installed LV 58SER01A or LV 58SER04 unit, and press AUDIO.

• **Displaying an Audio Signal That Is Received at the BNC Terminal of an LV 58SER40A Unit**

Select an installed LV 58SER40A unit. (The display mode automatically changes to the audio display.)
Before you apply the audio signal, set External BNC Select to INPUT in the LV 58SER40A system settings.

You can display an audio signal in one of the following formats:

Lissajous and meter displays   Sound image display   Status display
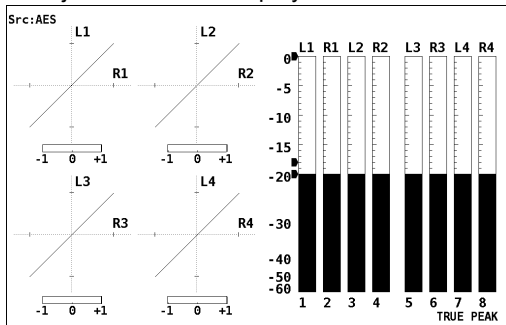
Figure 5-9   Audio display

5.4.5 Status Display

To display the status, press $\boxed{\text{STATUS}}$.

If the input unit is an LV 58SER01A

```
SDI Status

  SDI
    Signal          DETECT          Format      1080i/59.94
    CRC Ych           0             CRC Cch          0

    TRS Pos           0             TRS Code         0
    Illegal Code      0             Line Number      0
    Cable Length     5m
  ANC
    Checksum          0             Parity           0
  Video Quality
    Gamut                           Comp Gamut
    Freeze                          Black
    Level Ych                       Level Cch
  Embedded Audio
    BCH               0             Parity           0
    DBN               0             Inhibit          0
    CH     1, 2, 3, 4, 5, 6, 7, 8, 9,10,11,12,13,14,15,16
  From Reset       00:05:37
```

If the input unit is an LV 58SER03A

```
    CURRENT PHASE
  V PHASE   H PHASE
    0 Lines  -1.159 us
             -86 pixel
  TOTAL PHASE
     -1.159       us

COMP PHASE MEMORY
COMP  V PHASE  H PHASE
       Lines     us
  1     20     0.013
  2      0    -1.105
  3      0     3.788
  4     -2   -29.645
  5     ----    ----
  6     ----    ----
  7     ----    ----
  8     ----    ----
  REF EXT HD : DEFAULT
```

```
                  -Advance




-Advance                    +Delay




                  +Delay
```

If the input unit is an LV 58SER04

```
                              V:0041 A:0044
DVB-ASI STATUS

 PRIORITY1 TS_Sync_loss  NORMAL   Sync_byte_error NORMAL
           Continuity    NORMAL
           PAT_error     NORMAL
           PMT_error     NORMAL
           PID_error     NORMAL
 PRIORITY2 PCR_error     NORMAL   PCR_accuracy    NORMAL
           Transport     NORMAL
           CRC_error     NORMAL
           PTS_error     NORMAL
           CAT_error     NORMAL

 ETC       PCR JITTER      74 ns
```

Figure 5-10   Status display

5.4.6 Eye Pattern Display

To display eye patterns, select an installed LV 58SER01A, LV 58SER04, or LV 58SER06 unit, and press $\boxed{\text{EYE}}$. You can also use the function menu to switch to the jitter display.

To display the eye patterns of the LV 58SER01A and LV 58SER04, the LV 58SER02 must be installed in the LV 7800. To display the eye patterns of the LV 58SER06, the LV 58SER07 must be installed in the LV 7800. In this case, use the cable that came with the LV 58SER07 to connect the LV 58SER06 to the LV 58SER07.

You cannot display eye patterns in multiple areas. (However, you can display eye patterns and jitter at the same time.)

Eye pattern display

```
1.0




0.8
0.6



0.4



0.2



-0.2
                    FILTER: 100kHz
```

Jitter display

```
0.6


0.4


0.2



-0.2


-0.4


-0.6
                          C.J: 100kHz
T.J:   761ps(1.13UI)
C.J:   106ps(0.16UI)
```
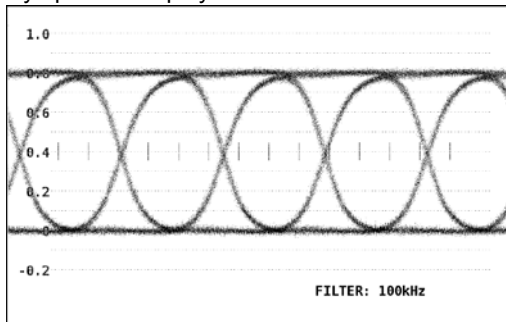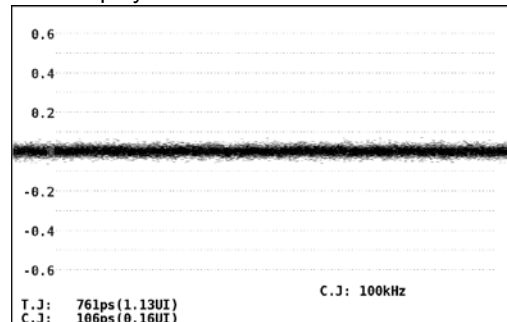
Figure 5-11   Eye pattern display

6.   SYSTEM SETTINGS

You can change system settings for the LV 7800 from the system menu. To display the system menu, press SYS.
System settings can be divided into two categories: those that are related to the LV 7800 and those that are related to the units. This chapter explains the system settings that are related to the LV 7800. For details on the settings that are related to the units, see the instruction manual for each unit.

SYS →
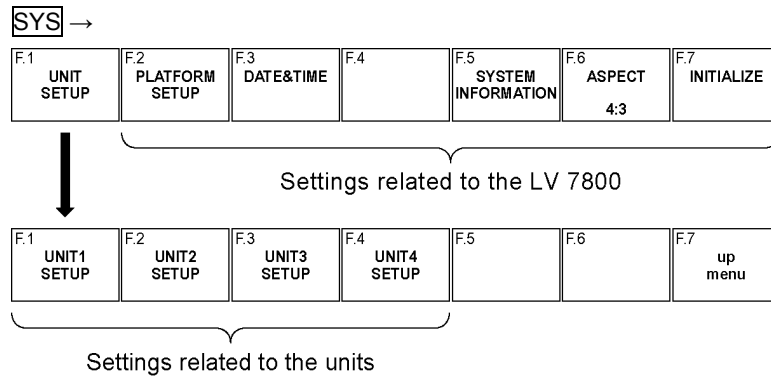
Figure 6-1   System menu

*   F•1 UNIT1 SETUP to F•4 UNIT4 SETUP appear when there are settings that can be specified for the installed units.

6.1 Configuring the LV 7800

To configure the LV 7800, use F•2 PLATFORM SETUP in the system menu. PLATFORM SETUP is a tab menu. For details on how to operate tab menus, see section 4.5.2, "Tab Menu Operations."
This chapter explains the settings on the GENERAL SETUP, ETHERNET, and REMOTE tabs.

6.1.1 General Settings

To perform general settings, use the GENERAL SETUP tab.

SYS → F•2 PLATFORM SETUP →

Figure 6-2   GENERAL SETUP display

- **Setting the Input Signal (Source Mode)**

  Select whether to use the same input signal or different input signals for areas 1 to 4. Additionally, when the line select function is active, the selected line can be synchronized across different display modes and display areas. The supported display modes are WFM, VEC, PIC, and STATUS (display dump).

  Settings

Single Input:	All areas display the same input signal. If you change the input unit or input channel for one area, the input signal changes accordingly for all areas. The selected line is synchronized across other display modes and display areas.
Multi Input:	You can specify an input signal for each area. The selected line is not synchronized across other display modes and display areas. This is the default setting.
Multi Input and Line Number:	You can specify an input signal for each area. The selected line is synchronized across other display modes in the same display area.

- **Multi Screen Display Format (Multi Display)**

  Select the display format to use when the LV 7800 is in the multi screen display. Press MULTI on the front panel to switch between the 1 screen display and the multi screen display.

  Settings

2Multi:	Use the 2 screen multi display.
4Multi:	Use the 4 screen multi display. This is the default setting.

- **Selected Area Display Format (Window Marker)**

  Select the display format for the border of the selected area (1 to 4) when the LV 7800 is in the multi screen display. When the LV 7800 is in the 1 screen display, this setting is set to OFF, regardless of the setting that you have specified.

  Settings

OFF:	Do not display a border around the selected area.
Blue:	Display a blue border around the selected area. This is the default setting.
White:	Display a white border around the selected area.

- **Selecting the Capture Mode (Capture Mode)**

  Select the capture mode for when you press CAP.

  Settings

Screen:	Set the LV 7800 to screen capture mode.
	The LV 7800 will save a still image of the displayed screen when you press CAP. This is the default setting.
Video Frame:	Set the LV 7800 to frame capture mode.
	The LV 7800 will save a single frame of data from the SDI signal when you press CAP. An LV 58SER01A or LV 58SER06 must be installed in the LV 7800.
	When Video Frame is selected, if you press WFM, VEC, PIC, AUDIO, or EYE, the screen flashes once.

- **Format Display (Format)**

  Select whether to display the video signal format at the top of the screen.
  Depending on the units that are installed in the LV 7800, even if you set this to ON, the video signal format may not be displayed.

  Settings

ON:	Display the video signal format. This is the default setting.
OFF:	Do not display the video signal format.

- **Date Display (Date)**

  Select the display format for the date that is shown at the top of the screen. The format that you specify here is also applied to the date shown in the event log.

  Settings

OFF:	The date is not displayed.
y/m/d:	The date is displayed in this order: year, month, day. This is the default setting.
m/d/y:	The date is displayed in this order: month, day, year.
d/m/y:	The date is displayed in this order: day, month, year.

- **Time Display (Time)**

  Select whether to display the time at the top of the screen.

  Settings

ON:	Display the time. This is the default setting.
OFF:	Do not display the time.

- **Color System Display (Color System)**

  Select whether to display the color system, such as YCbCr or RGB, at the top of the screen.
  Depending on the units that are installed in the LV 7800, even if you set this to ON, the color system may not be displayed.

  Settings

ON:	Display the color system. This is the default setting.
OFF:	Do not display the color system.

- **Input Signal Display (Input)**

  Select whether to display the input signal information at the top of the screen.
  The display format of the input signal is different depending on the units that are installed in the LV 7800.

  Settings

ON:	Display the input signal information. This is the default setting.
OFF:	Do not display the input signal information.

6.1.2　Ethernet Settings

To configure Ethernet settings, use the ETHERNET tab. The settings that you specify here will not be initialized even if you initialize the LV 7800.

SYS → F•2 PLATFORM SETUP → F•3 NEXT →

Figure 6-3　ETHERNET display

- **Selecting DHCP or IP (Network Select)**

  Select the method that you want to use to connect the LV 7800 to an Ethernet.
  If you select DHCP in an environment where a DHCP server is running, the TCP / IP settings will be assigned automatically. Check with your network administrator whether you can use DHCP or not.
  The setting configured here is valid after you restart the LV 7800.

  Settings

DHCP:	Use DHCP to automatically configure the TCP / IP settings. You cannot configure the TCP / IP settings manually. This is the default setting.
IP:	Configure the TCP / IP settings manually.

- **Setting the IP Address (IP Address)**

  If you set Network Select to IP, specify the IP address. The IP address must be a unique number on your network. Ask your network administrator to supply you with an IP address.
  The setting configured here is valid after you restart the LV 7800.

- **Setting the Subnet Mask (Subnet Mask)**

  If you set Network Select to IP, specify the subnet mask. Ask your network administrator to supply you with the subnet mask value.
  The setting configured here is valid after you restart the LV 7800.

- **Setting the Default Gateway (Default Gateway)**

  If you set Network Select to IP, specify the default gateway. Ask your network administrator to supply you with the default gateway value.
  The setting configured here is valid after you restart the LV 7800.

- **Mac Address Display (Mac Address)**

  Displays the MAC address of the LV 7800.

- **Setting the Time Server (Time Server)**

  Select the display format for the date and time.

  Settings

ON:	The date and time obtained from the time server are displayed. The protocol used is SNTP.
	If communication with the time server cannot be carried out properly, "NTP ERROR" is displayed in place of the date.
	F•3 DATE&TIME is not displayed on the system menu.
OFF:	The date and time set in the system settings are displayed. This is the default setting.

- **Setting the IP Address (IP Address)**

  If you set Time Server Select to ON, specify the IP address. Ask your network administrator to supply you with an IP address.

- **Setting the Time Adjustment Value (TimeZone Adjust)**

  If you set Time Server Select to ON, specify the time adjustment value.
  Because the time information exchanged with an NTP (SNTP) is UTC (Coordinated Universal Time), the time must be adjusted according to the country or region.

  Table 6-1   Time adjustment values

Time Zone Adjust	Country or region
-12:00	Eniwetok, Kwajalein
-11:00	Midway Island, Samoa
-10:00	Hawaii
-9:00	Alaska
-8:00	Pacific Time (US & Canada), Tijuana
-7:00	Mountain Time (US & Canada), Arizona
-6:00	Central Time (US & Canada), Central America, Saskatchewan, Mexico City
-5:00	Eastern Time (US & Canada), Indiana (East), Bogota, Lima, Quito
-4:00	Atlantic Time (Canada), La Paz, Santiago
-3:00	Greenland, Buenos Aires, Georgetown, Brasilia
-2:00	Mid-Atlantic
-1:00	Azores, Cape Verde Is.
+0:00	Greenwich Mean Time (Dublin, Edinburgh, Lisbon, London), Casablanca, Monrovia

Time Zone Adjust	Country or region
+1:00	Amsterdam, Berlin, Bern, Rome, Stockholm, Sarajevo, Skopje, Sofija, Vilnius, Warsaw, Zagreb, Brussels, Madrid, Copenhagen, Paris, Belgrade, Bratislava, Budapest, Ljubljana, Prague, West Central Africa
+2:00	Athens, Istanbul, Minsk, Jerusalem, Cairo, Harare, Pretoria, Bucharest, Helsinki, Riga, Tallinn
+3:00	Kuwait, Riyadh, Nairobi, Baghdad, Moscow, Volgograd, St. Petersburg
+4:00	Abu Dhabi, Muscat, Baku, Tbilisi, Yerevan
+5:00	Islamabad, Karachi, Tashkent, Ekaterinburg
+6:00	Astana, Dhaka, Almaty, Novosibirsk
+7:00	Krasnoyarsk, Bangkok, Hanoi, Jakarta
+8:00	Irkutsk, Ulaan Bataar, Kuala Lumpur, Singapore, Perth, Taipei, Beijing, Chongqing, Hong Kong SAR, Urumqi
+9:00	Seoul, Yakutsk, Osaka, Sapporo, Tokyo
+10:00	Vladivostok, Canberra, Melbourne, Sydney, Guam, Port Moresby, Brisbane, Hobart
+11:00	Magadan, Solomon Is., New Caledonia
+12:00	Auckland, Wellington, Fiji Islands, Kamchatka, Marshall Is.

6.1.3   Setting the Remote Control Connector

To configure the remote control connector, use the REMOTE tab. The settings that you specify here will not be initialized even if you initialize the LV 7800 (except for Error Beep).
See section 9.2, "Remote Control"

SYS → F•2 PLATFORM SETUP → F•2 PREV →

```
GENERAL SETUP  ETHERNET  REMOTE

         LV7800 REMOTE SETUP


    Remote Mode      ☑ BIT  ☐ BINARY
    Remote Select    ☑ Recall ☐ Unit Select  ☐ Recall and Loudness
    Alarm Polarity   ☑ Positive ☐ Negative
    Alarm1 Select    ☑ UNIT1 ☐ UNIT2 ☐ UNIT3 ☐ UNIT4 ☐ ALL UNIT
                     ☐ A ☐ B ☑ A/B
    Alarm2 Select    ☐ UNIT1 ☑ UNIT2 ☐ UNIT3 ☐ UNIT4 ☐ ALL UNIT
                     ☐ A ☐ B ☑ A/B
    Alarm3 Select    ☐ UNIT1 ☐ UNIT2 ☑ UNIT3 ☐ UNIT4 ☐ ALL UNIT
                     ☐ A ☐ B ☑ A/B
    Alarm4 Select    ☐ UNIT1 ☐ UNIT2 ☐ UNIT3 ☑ UNIT4 ☐ ALL UNIT
                     ☐ A ☐ B ☑ A/B

    Error Beep       ☐ ON ☑ OFF




F.1          F.2          F.3          F.4       F.5       F.6       F.7
  COMPLETE      PREV         NEXT                                      CANCEL
```

Figure 6-4   REMOTE display

- **Preset Loading Method Selection (Remote Mode)**

  Select the method for loading presets.

  Settings

BIT:	Use /P1 (17 p) to /P8 (24 p) to load presets 1 to 8 (when Remote Select is Recall).
	Use /P1 (17 p) to /P4 (20 p) to load presets 1 to 4 (when Remote Select is Unit Select).
	Use /P1 (17 p) to /P6 (22 p) to load presets 1 to 6 (when Remote Select is Recall and Loudness).
	This is the default setting.
BINARY:	Set /P1 (17 p) as the least significant bit and /P6 (22 p) as the most significant bit, and use binary code to load presets 1 to 60 (when Remote Select is Recall or Recall and Loudness).
	Set /P1 (17 p) as the least significant bit and /P4 (20 p) as the most significant bit, and use binary code to load presets 1 to 15 (when Remote Select is Unit Select).

- **Remote Function Selection (Remote Select)**

  Select the function to assign to /P1 (17 p) to /P8 (24 p) of the remote control connector.

  Settings

Recall:	Assign /P1 (17 p) to /P8 (24 p) to loading presets. You can load a maximum of 60 presets. This is the default setting.
Unit Select:	Assign /P1 (17 p) to /P4 (20 p) to loading presets and /P5 (21 p) to /P8 (24 p) to selecting the input unit. You can load a maximum of 15 presets.
Recall and Loudness:	
	Assigns /P1 (17 p) to /P6 (22 p) to be used for recalling presets, /P7 (23 p) to be used for clearing loudness measurements, and /P8 (24 p) to be used for starting and stopping loudness measurements. You can load a maximum of 60 presets.
	You need an LV 58SER40A (DIGITAL AUDIO) unit to measure loudness.

- **Alarm Signal Polarity**

  Select the polarity of the alarm signal that is generated when an error is detected. The alarm signal is transmitted from the ALARM pin when each unit detects an error.

  Settings

Positive:	A high-level signal is transmitted when an error is detected. This is the default setting.
Negative:	A low-level signal is transmitted when an error is detected.

- **Alarm Signal Selection**

  Specify the unit number and channel to select what input signal error will be transmitted from the four ALARM pins.
  If you select a unit that does not have two inputs, channel selection is disabled.
  Additionally, if you select an output unit, alarm signals will not be generated.
  The default settings are as follows: Alarm1 Select is UNIT1, Alarm2 Select is UNIT2, Alarm3 Select is UNIT3, Alarm4 Select is UNIT4, and all channels are A/B.

  Settings (Units)

UNIT1:	Generate an alarm when an error is detected on unit 1.
UNIT2:	Generate an alarm when an error is detected on unit 2.
UNIT3:	Generate an alarm when an error is detected on unit 3.
UNIT4:	Generate an alarm when an error is detected on unit 4.
ALL UNIT:	Generate an alarm when an error is detected on any unit from unit 1 to unit 4.

  Settings (Channels)

A:	Generate an alarm when an error is detected on channel A.
B:	Generate an alarm when an error is detected on channel B.
A/B:	Generate an alarm when an error is detected on channel A or B.

- **Beep Generation Selection (Error Beep)**

  Specify whether to sound a beep when an error is detected.

  Settings

ON:	Sound a beep when an error is detected.
OFF:	Do not sound a beep when an error is detected. This is the default setting.

6.2   Setting the Date and Time

To set the date and time, use F•3 DATE&TIME in the system menu. The date and time that you set here appear in places such as at the top of the screen, in the event log, and in the USB memory display. They are also not initialized if you initialize the settings.
This menu is not displayed if Time Server Select in the PLATFORM SETUP menu is set to ON.
See "Setting the Time Server" in section 6.1.2, "Ethernet Settings"

SYS → F•3 DATE&TIME →

F.1 YEAR	F.2 MONTH	F.3 DAY	F.4 HOUR	F.5 MINUTE	F.6 SECOND	F.7 CLOCK SET
2009	5	1	10	8	59	

Figure 6-5   DATE&TIME menu

To set the date and time, follow the procedure below. The date and time are set to the values that you have specified when you press F•7 CLOCK SET. To cancel the date and time settings, press SYS.

Procedure

1. SYS → F•3 DATE&TIME
2. F•1 YEAR   (Sets the year)
3. F•2 MONTH   (Sets the month)
4. F•3 DAY   (Sets the day)
5. F•4 HOUR   (Sets the hour)
6. F•5 MINUTE   (Sets the minute)
7. F•6 SECOND   (Sets the second)
8. F•7 CLOCK SET   (Confirms the settings you have made)

6.3   Displaying System Information

To view the names of the units that are installed in the LV 7800 and the version of the LV 7800 firmware, follow the procedure below.

Procedure

SYS → F•5 SYSTEM INFORMATION

```
LV7800:  MULTI RASTERIZER
          Board:0.0  Firmware:1.00
UNIT1 : LV58SER01A SDI Input Unit
          Board:1
UNIT2 : LV58SER02 EYE Pattern Unit
          Board:2
UNIT3 : LV58SER40A Digital Audio Unit
          Board:0
UNIT4 : LV58SER20 DVI-I Output Unit
          Board:0




F.1      F.2      F.3      F.4      F.5      F.6      F.7
                                                       up
                                                      menu
```
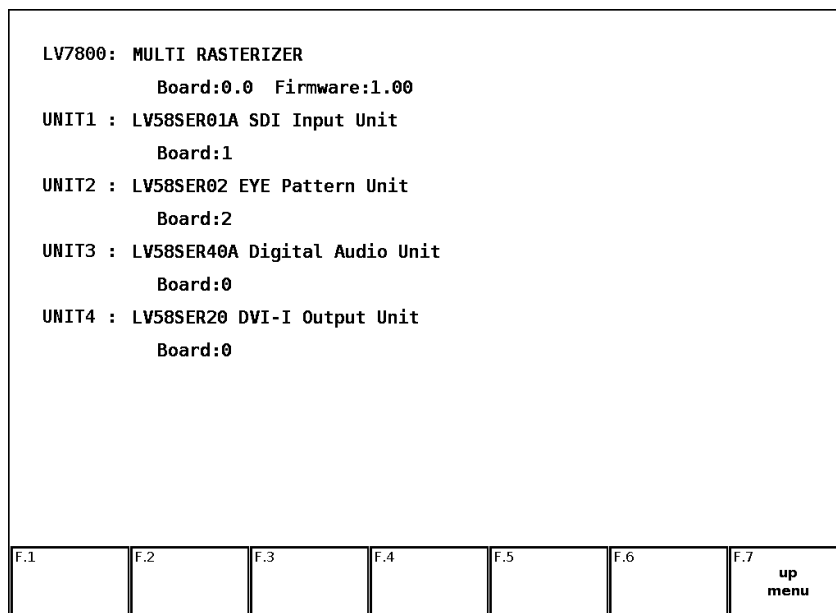
Figure 6-6   SYSTEM INFORMATION display

6.4 Setting the Aspect Ratio

To select the aspect ratio of the signal that will be produced, follow the procedure below.

Procedure

SYS → F•6 ASPECT

Settings

4:3:	The LV 7800 produces a signal for a 4:3 (1024 × 768) display. This is the default setting.
16:9:	For vector waveforms, pictures, and audio waveforms, the LV 7800 produces a signal for a 16:9 (1366 × 768) display.
16:10:	For vector waveforms, pictures, and audio waveforms, the LV 7800 produces a signal for a 16:10 (1920 × 1200) display.

6.5 Initializing Settings

To initialize the settings, use F•7 INITIALIZE in the system menu. If you initialize the settings, with some exceptions, all of the LV 7800 and unit settings will return to their default values. For details on the LV 7800 default settings, see sections 6.1, "Configuring the LV 7800" and 11.1, "Menu Tree." For details on the unit default settings, see the instruction manual for each unit.

The following items are not initialized even if you initialize the settings.
• Ethernet settings
• Remote control connector settings (except for Error Beep)
• Date and time
• Preset contents
• The panel settings that are registered to SHORT CUT
• BNC connector I/O settings (LV 58SER40A)

SYS → F•7 INITIALIZE →

F.1 INIT YES	F.2	F.3 INIT CANCEL	F.4	F.5	F.6	F.7

Figure 6-7   INITIALIZE menu

To initialize the settings, follow the procedure below. To cancel the initialization, press F·3 INIT CANCEL.

Procedure

SYS → F•7 INITIALIZE → F•1 INIT YES

7. CAPTURE FEATURE

The LV 7800 has two capture features: the screen capture feature that acquires the displayed screen as still-image data, and the frame capture feature that acquires a single frame of data from the SDI signal.

This chapter explains the screen capture feature. For details on the frame capture feature, see the instruction manual for the LV 58SER01A (SDI INPUT) or the LV 58SER06 (3G-SDI INPUT).

- **Screen Capture**

  You can use the screen capture feature to acquire still-image data of the current display. You can save the acquired data to USB memory or overlay it on the input signal and display it using the LV 7800.

- **Frame Capture**

  You can use the frame capture feature to acquire a single frame of data from the SDI signal. You can save the acquired data to USB memory or overlay it on the input signal and display it using the LV 7800.

  When you are displaying the frame capture data on the LV 7800, you can change the display mode. The supported display modes are the video signal waveform, vector waveform, picture, and data dump displays.

  To use the frame capture feature, you must have an LV 58SER01A (SDI INPUT) or an LV 58SER06 (3G-SDI INPUT) installed.

- **Switching between Screen Capture and Frame Capture**

  You can switch between taking screen captures and taking frame captures in the system settings. Change the Capture Mode setting on the GENERAL SETUP display.

  SYS → F•2 PLATFORM SETUP →

```
┌GENERAL SETUP┐┌ETHERNET┐┌REMOTE┐
│
│       LV7800 GENERAL SETUP
│                                         Multi Input and
│         Source Mode     □ Single Input ☑ Multi Input □  Line Number
│         Multi Display   □ 2Multi  ☑ 4Multi
│         Window Marker   □ OFF  ☑ Blue  □ White
│         Capture Mode    ☑ Screen  □ Video Frame (SDI Only)
│
│
│         Information Display
│             Format        ☑ ON □ OFF
│             Date          □ OFF ☑ y/m/d □ m/d/y □ d/m/y
│             Time          ☑ ON □ OFF
│             Color System  ☑ ON □ OFF
│             Input         ☑ ON □ OFF
│
│
│
│
┌─────────┬─────────┬─────────┬─────────┬─────────┬─────────┬─────────┐
│F.1      │F.2      │F.3      │F.4      │F.5      │F.6      │F.7      │
│COMPLETE │  PREV   │  NEXT   │         │         │         │ CANCEL  │
└─────────┴─────────┴─────────┴─────────┴─────────┴─────────┴─────────┘
```

Figure 7-1   GENERAL SETUP display

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7.1 Taking a Screen Capture of the Display

To take a screen capture of the display, follow the procedure below.
You cannot take screen captures of tab menus, the preset registration display, and the file list display.

1   Configure the LV 7800 so that the display that you want to capture appears on the screen.

2   Press CAP.

When you press CAP, the LV 7800 stores a screen capture of the display in its internal memory. You can also take screen captures by pressing F•3 REFRESH while the screen capture menu is displayed.

Note that if you perform one of the following operations after capturing a display, the captured data will be cleared.
• Change the display mode
• Press SYS, MEM, RCLL, SHORT CUT, a key from UNIT 1 to UNIT 4, or a key from 1 to 4
• Turn OFF the power

CAP →

F.1	F.2	F.3 REFRESH	F.4 DISPLAY REAL	F.5 FILE SELECT	F.6 USB MEM STORE	F.7 USB MEM RECALL
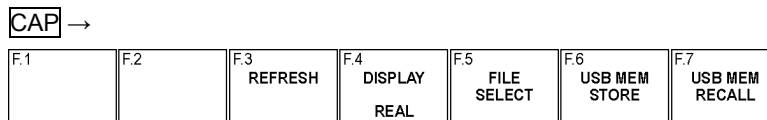
Figure 7-2   Capture menu

7.2 Displaying Screen Capture Data on the LV 7800

If you press CAP, you can display the acquired screen capture data on the LV 7800 or overlay it on the current input signal.

You can display captured video signal waveform, vector waveform, audio waveform, audio meter, eye pattern waveform, and picture display data on the LV 7800. Other kinds of data (such as status and scale data) cannot be displayed. However, these other kinds of data can be saved to USB memory as BMP files.

To select the display format, follow the procedure below.

Procedure

CAP → F•4 DISPLAY

Settings

REAL: The current input signal is displayed. This is the default setting.
HOLD: The screen capture data is displayed. The waveform is displayed in cyan.
BOTH: The current input signal and the screen capture data are displayed on top of each other with their intensities halved.

7.3   Saving Screen Capture Data to USB Memory

If you press CAP and perform an operation such as changing the display mode, the acquired screen capture data is deleted. However, you can save the screen capture data to USB memory by following the procedure below, and this enables you to display the screen capture data on the LV 7800 even after you restart the instrument (if you save the screen capture data in BSG format).

You can also view the screen capture data on a PC (if you save the screen capture data in BMP format).

1.   **Press F•5 FILE SELECT on the capture menu.**

The file format selection menu appears.
F•5 FILE SELECT appears when USB memory is connected.

CAP → F•5 FILE SELECT →

F.1 BMP FILE ON	F.2 BSG FILE ON	F.3	F.4	F.5	F.6	F.7 up menu
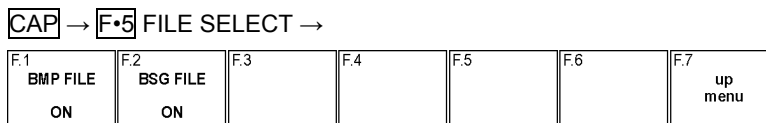
Figure 7-3   File format selection menu

2.   **Select the file format.**

If you set F•1 BMP FILE to ON, the screen capture data will be saved to USB memory as .bmp files. You can view the saved files on a PC.
If you set F•2 BSG FILE to ON, the screen capture data will be saved to USB memory as .bsg files. You can view the saved files on the LV 7800.
The default setting for both F•1 BMP FILE and F•2 BSG FILE is ON.

3.   **Press F·7 up menu.**

The capture menu appears.

F.1	F.2	F.3 REFRESH	F.4 DISPLAY REAL	F.5 FILE SELECT	F.6 USB MEM STORE	F.7 USB MEM RECALL
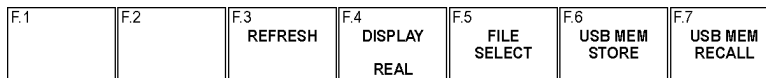
Figure 7-4   Capture menu

4.   **Press F•6 USB MEM STORE.**

The message "Saving file" is displayed on the screen, and the screen capture data is saved to USB memory.

F•6 USB MEM STORE only appears when USB memory is connected and at least one of the options for F•5 FILE SELECT is set to ON.

It takes approximately 5 seconds to save a file, and the file size is approximately 2.4 MB for both .bmp and .bsg files.

The file is automatically assigned a name that consists of the year, month, day, hour, minute, and second (in that order) that are set in the system settings. (Example: 20090501100859.bmp)

The file structure in the USB memory is shown below.

  USB memory
  └ BMP
     ├ yyyymmddhhmmss.bmp
     └ yyyymmddhhmmss.bsg

7.4   Viewing Screen Capture Data from USB Memory

To display or overlay on the current input signal the BSG-format screen capture data that has been saved to USB memory, follow the procedure below.
Screen capture data that has been saved in BMP format and screen capture data that has been saved in BSG format on a different model cannot be displayed on the LV 7800.

1.   **Press CAP.**

The capture menu appears.

F.1	F.2	F.3 REFRESH	F.4 DISPLAY REAL	F.5 FILE SELECT	F.6 USB MEM STORE	F.7 USB MEM RECALL

Figure 7-5   Capture menu

2.   **Press F•7 USB MEM RECALL.**

The file list display appears.
F•7 USB MEM RECALL only appears when USB memory is connected.

```
External USB DEVICE BITMAP FILE LIST
          No. FileName              Date        Time       Size(Byte)
           1  20090513165555.bmp    2009/ 5/13  16:55:55   2359350
           2  20090513165555.bsg    2009/ 5/13  16:55:55   2379390




          MAX SIZE:    251906 kB
          FREE SIZE:   76850 kB
```

F.1 RECALL	F.2	F.3 FILE DELETE	F.4	F.5	F.6	F.7 up menu

Figure 7-6   File list display

3.   **Turn F•D to select the file that you want to display.**

4.   **Press F•1 RECALL.**

The file list display closes, and the capture menu appears.
F•1 RECALL appears if a BSG-format file is selected.

5.   **Press F•4 DISPLAY to select the display format.**

After you press F•1 RECALL, the display format is BOTH. For details about the different display formats, see section 7.2, "Displaying Screen Capture Data on the LV 7800."

7.5   Deleting Screen Capture Data

To delete screen capture data that has been saved to USB memory, follow the procedure below.
(You can also use a PC to delete the data.)

1.   Press CAP.

The capture menu appears.

F.1	F.2	F.3 REFRESH	F.4 DISPLAY REAL	F.5 FILE SELECT	F.6 USB MEM STORE	F.7 USB MEM RECALL

Figure 7-7   Capture menu

2.   Press F•7 USB MEM RECALL.

The file list display appears.
F•7 USB MEM RECALL only appears when USB memory is connected.

```
External USB DEVICE BITMAP FILE LIST

        No. FileName              Date       Time      Size(Byte)
         1  20090513165555.bmp    2009/ 5/13  16:55:55  2359350
         2  20090513165555.bsg    2009/ 5/13  16:55:55  2379390








        MAX SIZE:    251906 kB
        FREE SIZE:   76850 kB
```

F.1 RECALL	F.2	F.3 FILE DELETE	F.4	F.5	F.6	F.7 up menu

Figure 7-8   File list display

3.   Turn F•D to select the file that you want to delete.

4.   Press F•3 FILE DELETE.

The deletion confirmation menu appears.

F.1 DELETE YES	F.2	F.3 DELETE NO	F.4	F.5	F.6	F.7

Figure 7-9   Deletion confirmation menu

5.   Press F•1 DELETE YES.

To cancel the operation, press F•3 DELETE NO.

8.   PRESET SETTINGS

You can register up to 60 sets of panel settings to presets. Also, you can use the same settings on multiple LV 7800s by copying presets to USB memory.

Preset settings are not deleted even if you initialize the settings.
You cannot register the following items to preset settings.
• Ethernet settings
• Remote control connector settings
• Date and time
• The frame capture mode setting (LV 58SER01A, LV 58SER06)
• BNC connector I/O settings (LV 58SER40A)

8.1   Registering Presets

To register a preset, follow the procedure below.

1.   **Set the LV 7800 to the settings that you want to register.**

2.   **Press MEM.**

The preset registration display appears.

Figure 8-1   Preset registration display

3. **Press F•1 COMMENT INPUT.**

    The comment input display appears.
    You can also copy a comment from a preset that already has a comment saved to it. To copy a comment, on the preset registration display, move the cursor to the preset that has the comment that you want to copy, and press F•D.
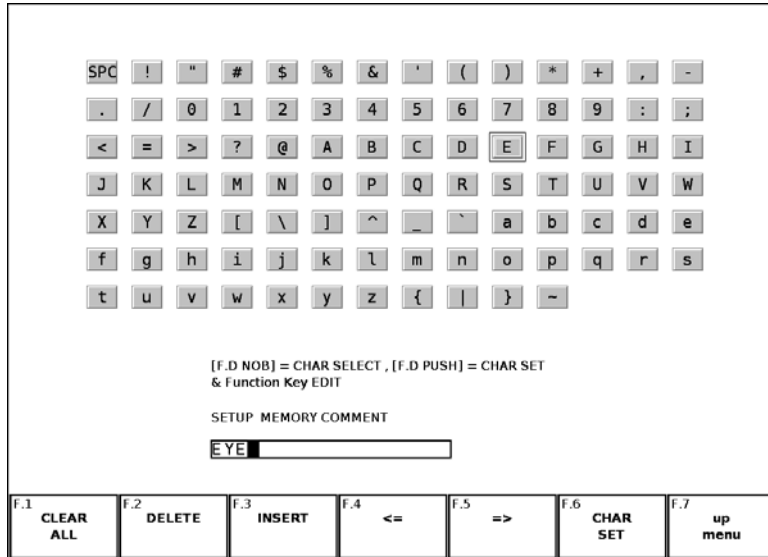
Figure 8-2   Comment input display

4. **Enter a comment of up to 20 characters.**

    You can use the following keys on the comment input display.
    F•1 CLEAR ALL: Deletes all the characters.
    F•2 DELETE: Deletes the character at the cursor position.
    F•3 INSERT: Inserts a space at the cursor position.
    F•4 <=:   Moves the cursor to the left.
    F•5 =>:   Moves the cursor to the right.
    F•6 CHAR SET: Enters the selected character.
    F•D: Turn to select a character, and press to enter the character.

5. **Press F•7 up menu.**

6. **Turn F•D to select the number of the preset you want to register.**

7. **Press F•2 STORE.**

    When the message "Saving file - Please wait." disappears, the preset has been successfully registered.

    If a preset has already been stored with the number that you selected, the overwrite confirmation menu appears. If you want to overwrite the existing preset, press F•1 OVER WR YES. Otherwise, press F•3 OVER WR NO.
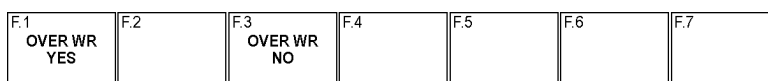
Figure 8-3   Overwrite confirmation menu

8.2   Loading Presets

To load a preset, follow the procedure below.
You can also load presets through the rear panel remote control connector or Ethernet port.

1.   Press RCLL.

The preset menu appears.

F.1	F.2	F.3	F.4	F.5	F.6	F.7
NO. 1 DEFAULT	NO. 2 2 MULTI WF M/VECT	NO. 3 4 MULTI	NO. 4 Audio	NO. 5 EYE	NO. 6	more

Figure 8-4   Preset menu

2.   Press a key from F•1 NO.1 to F•6 NO.6.

If the preset that you want to load is number 7 or greater, press F•7 more or turn F•D.

8.3   Deleting Presets

To delete a preset, follow the procedure below.

1.   Press MEM.

The preset registration display appears.

```
Internal Memory FILE LIST

     No. FileComment          Date        Time        Size(Byte)
      1  DEFAULT              2006/ 7/ 1   16:57:56    20040
      2  2 MULTI WFM/VECT     2006/ 7/ 1   17:03:36    20040
      3  4 MULTI              2006/ 7/ 1   17:01:21    20040
      4  Audio                2006/ 7/ 1   17:04:23    20040
      5  ------------------   ----/--/--   --:--:--
      6  ------------------   ----/--/--   --:--:--
      7  ------------------   ----/--/--   --:--:--
      8  ------------------   ----/--/--   --:--:--
      9  ------------------   ----/--/--   --:--:--
     10  ------------------   ----/--/--   --:--:--
     11  ------------------   ----/--/--   --:--:--
     12  ------------------   ----/--/--   --:--:--
     13  ------------------   ----/--/--
     14  ------------------   ----/--/--
     15  ------------------   ----/--/--
     16  ------------------   ----/--/--
```

F.1	F.2	F.3	F.4	F.5	F.6	F.7
COMMENT INPUT	STORE	DELETE		ALL COPY USB->INT	ALL COPY INT->USB	

Figure 8-5   Preset registration display

2.   Turn F•D to select the file that you want to delete.

3.   Press F•3 DELETE.

The deletion confirmation menu appears.

F.1	F.2	F.3	F.4	F.5	F.6	F.7
DELETE YES		DELETE NO				

Figure 8-6   Deletion confirmation menu

4.   Press F•1 DELETE YES.

To cancel the operation, press F•3 DELETE NO.

8.4 Copying All Presets

You can copy all the presets from internal memory to USB memory and vice-versa.
If you want to copy all the presets to another instrument, the other instrument must have the same unit configuration as the instrument that you are copying all the presets from. If the unit configuration is different, the only presets that will be copied are those for the same units that are in the same unit slots.

8.4.1 Copying Presets from the LV 7800 to USB Memory

To copy all the presets from the LV 7800 to USB memory, follow the procedure below.

1. Press MEM.

The preset registration display appears.

```
Internal Memory FILE LIST

        No. FileComment           Date        Time       Size(Byte)
         1  DEFAULT               2006/ 7/ 1  16:57:56    20040
         2  2 MULTI WFM/VECT      2006/ 7/ 1  17:03:36    20040
         3  4 MULTI               2006/ 7/ 1  17:01:21    20040
         4  Audio                 2006/ 7/ 1  17:04:23    20040
         5  ------------------    ----/--/--  --:--:--
         6  ------------------    ----/--/--  --:--:--
         7  ------------------    ----/--/--  --:--:--
         8  ------------------    ----/--/--  --:--:--
         9  ------------------    ----/--/--  --:--:--
        10  ------------------    ----/--/--  --:--:--
        11  ------------------    ----/--/--  --:--:--
        12  ------------------    ----/--/--  --:--:--
        13  ------------------    ----/--/--
        14  ------------------    ----/--/--
        15  ------------------    ----/--/--
        16  ------------------    ----/--/--
```

F.1 COMMENT INPUT	F.2 STORE	F.3 DELETE	F.4	F.5 ALL COPY USB->INT	F.6 ALL COPY INT->USB	F.7

Figure 8-7   Preset registration display

2. Press F•6 ALL COPY INT->USB.

The copy confirmation menu appears.
F•6 ALL COPY INT->USB only appears if USB memory is connected.

F.1 COPY YES	F.2	F.3 COPY NO	F.4	F.5	F.6	F.7

Figure 8-8   Copy confirmation menu

3. Press F•1 COPY YES.

To cancel the operation, press F•3 COPY NO. If presets already exist on the USB memory, they will be overwritten.

The file structure in the USB memory is shown below. Note that the file numbers in the USB memory are different from the LV 7800 preset numbers by one.
If you use a PC to change the names of the files stored in the USB memory, you will no longer be able to copy the altered presets from USB memory to an LV 7800.

⛁ USB memory
└ 🗁 PST
 └ 🗋 0.lvg (to 59.lvg) .... Presets No.1 to 60

8.4.2   Copying Presets from USB Memory to the LV 7800

To copy all the presets from USB memory to the LV 7800, follow the procedure below.

1.   Press MEM.

The preset registration display appears.

```
Internal Memory FILE LIST

        No. FileComment          Date        Time      Size(Byte)
         1  DEFAULT             2006/ 7/ 1   16:57:56   20040
         2  2 MULTI WFM/VECT    2006/ 7/ 1   17:03:36   20040
         3  4 MULTI             2006/ 7/ 1   17:01:21   20040
         4  Audio               2006/ 7/ 1   17:04:23   20040
         5  -------------------  ----/--/--   --:--:--
         6  -------------------  ----/--/--   --:--:--
         7  -------------------  ----/--/--   --:--:--
         8  -------------------  ----/--/--   --:--:--
         9  -------------------  ----/--/--   --:--:--
        10  -------------------  ----/--/--   --:--:--
        11  -------------------  ----/--/--   --:--:--
        12  -------------------  ----/--/--   --:--:--
        13  -------------------  ----/--/--
        14  -------------------  ----/--/--
        15  -------------------  ----/--/--
        16  -------------------  ----/--/--
```

F.1 COMMENT INPUT	F.2 STORE	F.3 DELETE	F.4	F.5 ALL COPY USB->INT	F.6 ALL COPY INT->USB	F.7

Figure 8-9   Preset registration display

2.   Press F•5 ALL COPY USB->INT.

The copy confirmation menu appears.
F•5 ALL COPY USB->INT only appears if USB memory is connected.

F.1 COPY YES	F.2	F.3 COPY NO	F.4	F.5	F.6	F.7

Figure 8-10   Copy confirmation menu

3.   Press F•1 COPY YES.

To cancel the operation, press F•3 COPY NO. If presets already exist within the LV 7800 internal memory, they will be overwritten.

9. EXTERNAL INTERFACE

9.1 Ethernet Control

You can use the Ethernet port on the rear panel to control the LV 7800 remotely, monitor errors, transfer files, and perform other operations.
For details, see the LV 7800 instruction manual (Ethernet).

9.2 Remote Control

You can use the remote control connector on the rear panel to load presets, transmit alarm signals, and perform other operations. Use the included D-sub, 25-pin connector.

The input pins are all pulled up to +3.3 V. When controlling the LV 7800 remotely, do not apply negative voltages or voltages above +5 V to the input pins.
Also, after you set the pins, wait at least one second before setting them again.

To set the remote control connector, use the system settings. See section 6.1.3, "Setting the Remote Control Connector"

SYS → F•2 PLATFORM SETUP → F•2 PREV →

```
┌─────────────┬──────────┬────────┐
│GENERAL SETUP│ ETHERNET │ REMOTE │
├─────────────┴──────────┴────────┴────────────────────┐
│        LV7800 REMOTE SETUP                            │
│                                                       │
│     Remote Mode      ☑ BIT  ☐ BINARY                  │
│     Remote Select    ☑ Recall  ☐ Unit Select  ☐ Recall and Loudness │
│     Alarm Polarity   ☑ Positive ☐ Negative            │
│     Alarm1 Select    ☑ UNIT1 ☐ UNIT2 ☐ UNIT3 ☐ UNIT4 ☐ ALL UNIT │
│                      ☐ A ☐ B ☑ A/B                    │
│     Alarm2 Select    ☐ UNIT1 ☑ UNIT2 ☐ UNIT3 ☐ UNIT4 ☐ ALL UNIT │
│                      ☐ A ☐ B ☑ A/B                    │
│     Alarm3 Select    ☐ UNIT1 ☐ UNIT2 ☑ UNIT3 ☐ UNIT4 ☐ ALL UNIT │
│                      ☐ A ☐ B ☑ A/B                    │
│     Alarm4 Select    ☐ UNIT1 ☐ UNIT2 ☐ UNIT3 ☑ UNIT4 ☐ ALL UNIT │
│                      ☐ A ☐ B ☑ A/B                    │
│                                                       │
│     Error Beep       ☐ ON ☑ OFF                       │
│                                                       │
│                                                       │
│                                                       │
├────────┬────────┬────────┬──────┬──────┬──────┬───────┤
│F.1     │F.2     │F.3     │F.4   │F.5   │F.6   │F.7    │
│COMPLETE│ PREV   │ NEXT   │      │      │      │CANCEL │
└────────┴────────┴────────┴──────┴──────┴──────┴───────┘
```

Figure 9-1   REMOTE display

The remote control connector and its pin assignments are shown below.
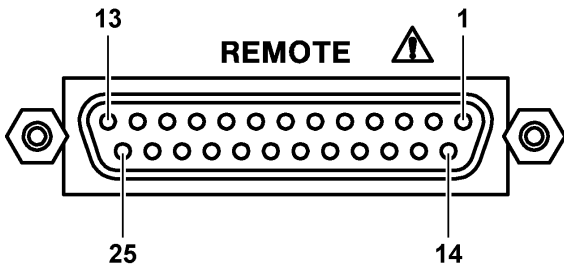
Figure 9-2   Remote control connector

Table 9-1   Remote control connector pin assignments

Pin No.	Name	I/O	Function
1	ALARM1	O	Alarm output 1
2	GND	-	Ground terminal
3	/CH_A	I	Selects channel A and retains it with a high-level signal
4	/CH_B	I	Selects channel B and retains it with a high-level signal
5	N.C.	-	Not connected
6	N.C.	-	Not connected
7	N.C.	-	Not connected
8	N.C.	-	Not connected
9	N.C.	-	Not connected
10	LCH+ (*1)	I	Analog audio signal input (left channel positive)
11	LCH- (*1)	I	Analog audio signal input (left channel negative)
12	RCH+ (*1)	I	Analog audio signal input (right channel positive)
13	RCH- (*1)	I	Analog audio signal input (right channel negative)
14	GND	-	Ground terminal
15	ALARM2	O	Alarm output 2
16	ALARM3	O	Alarm output 3
17	/P1	I	Preset recall bit 1
18	/P2	I	Preset recall bit 2
19	/P3	I	Preset recall bit 3
20	/P4	I	Preset recall bit 4
21	/P5	I	Preset recall bit 5 / selects UNIT 1
22	/P6	I	Preset recall bit 6 / selects UNIT 2
23	/P7 (*1)	I	Preset recall bit 7 / selects UNIT 3 / Clears the loudness measurement
24	/P8 (*1)	I	Preset recall bit 8 / selects UNIT 4 / Starts and stops the loudness measurement
25	ALARM4	O	Alarm output 4

*1   You need an LV 58SER40A (DIGITAL AUDIO) unit to measure analog audio signals and loudness. (You can not use an LV 58SER40 unit.)

Controlling the Input Connector

The input connectors respond to active-low signals. To configure a setting, apply a stable signal for at least 350 ms. After configuring a setting, wait at least 1 second before configuring the next setting.
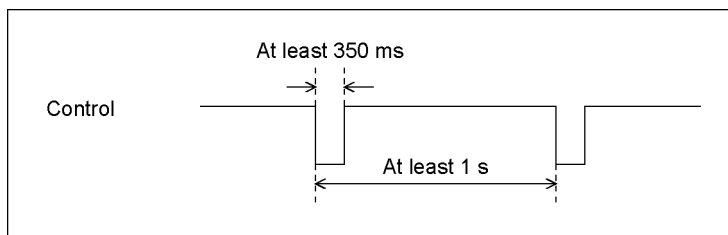
Figure 9-3   Control timing 1

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After a setting is made, it may take about 3 seconds for the operation to finish. If you configure subsequent settings before the initial operation finishes, only the last setting will take effect. All settings in between will be discarded. (In the following example, control 2 will be discarded.)
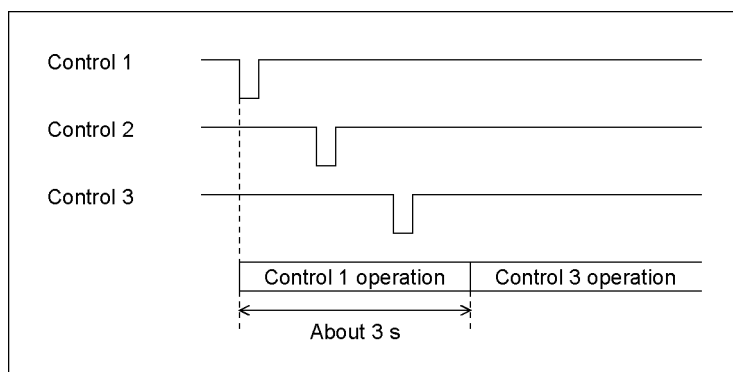
Figure 9-4   Control timing 2

Controlling /P1 to /P8

/P1 to /P8 are used as shown below. The functions that can be assigned vary according to the Remote Mode and Remote Select settings.

Table 9-2   Specifications of /P1 to /P8

Remote Mode		BIT			BINARY		
Remote Select		Recall	Unit Select	Recall and Loudness	Recall	Unit Select	Recall and Loudness
17	/P1	Pre No. 1	Pre No. 1	Pre No. 1	LSB	LSB	LSB
18	/P2	Pre No. 2	Pre No. 2	Pre No. 2		(Pre No. 1 to 15)	
19	/P3	Pre No. 3	Pre No. 3	Pre No. 3	(Pre No. 1 to 60)		(Pre No. 1 to 60)
20	/P4	Pre No. 4	Pre No. 4	Pre No. 4		MSB	
21	/P5	Pre No. 5	UNIT 1	Pre No. 5		UNIT 1	
22	/P6	Pre No. 6	UNIT 2	Pre No. 6	MSB	UNIT 2	MSB
23	/P7	Pre No. 7	UNIT 3	Clears the loudness measurement	-	UNIT 3	Clears the loudness measurement
24	/P8	Pre No. 8	UNIT 4	Starts and stops the loudness measurement	-	UNIT 4	Starts and stops the loudness measurement

(Pre : Preset)

The assignments of /P1 to /P8 to presets are shown below.

Table 9-3 Loading presets (BIT)

Preset No.	9p /P8	8p /P7	7p /P6	6p /P5	5p /P4	4p /P3	3p /P2	2p /P1
1	H	H	H	H	H	H	H	L
2	H	H	H	H	H	H	L	H
3	H	H	H	H	H	L	H	H
4	H	H	H	H	L	H	H	H
5	H	H	H	L	H	H	H	H
6	H	H	L	H	H	H	H	H
7	H	L	H	H	H	H	H	H
8	L	H	H	H	H	H	H	H

Table 9-4 Loading presets (BINARY)

Preset No.	7p /P6	6p /P5	5p /P4	4p /P3	3p /P2	2p /P1
1	H	H	H	H	H	L
2	H	H	H	H	L	H
3	H	H	H	H	L	L
4	H	H	H	L	H	H
5	H	H	H	L	H	L
6	H	H	H	L	L	H
7	H	H	H	L	L	L
8	H	H	L	H	H	H
9	H	H	L	H	H	L
10	H	H	L	H	L	H
11	H	H	L	H	L	L
12	H	H	L	L	H	H
13	H	H	L	L	H	L
14	H	H	L	L	L	H
15	H	H	L	L	L	L
16	H	L	H	H	H	H
17	H	L	H	H	H	L
18	H	L	H	H	L	H
19	H	L	H	H	L	L
20	H	L	H	L	H	H
21	H	L	H	L	H	L
22	H	L	H	L	L	H
23	H	L	H	L	L	L
24	H	L	L	H	H	H
25	H	L	L	H	H	L
26	H	L	L	H	L	H
27	H	L	L	H	L	L
28	H	L	L	L	H	H

| Preset | 7p | 6p | 5p | 4p | 3p | 2p |
No.	/P6	/P5	/P4	/P3	/P2	/P1
29	H	L	L	L	H	L
30	H	L	L	L	L	H
31	H	L	L	L	L	L
32	L	H	H	H	H	H
33	L	H	H	H	H	L
34	L	H	H	H	L	H
35	L	H	H	H	L	L
36	L	H	H	L	H	H
37	L	H	H	L	H	L
38	L	H	H	L	L	H
39	L	H	H	L	L	L
40	L	H	L	H	H	H
41	L	H	L	H	H	L
42	L	H	L	H	L	H
43	L	H	L	H	L	L
44	L	H	L	L	H	H
45	L	H	L	L	H	L
46	L	H	L	L	L	H
47	L	H	L	L	L	L
48	L	L	H	H	H	H
49	L	L	H	H	H	L
50	L	L	H	H	L	H
51	L	L	H	H	L	L
52	L	L	H	L	H	H
53	L	L	H	L	H	L
54	L	L	H	L	L	H
55	L	L	H	L	L	L
56	L	L	L	H	H	H
57	L	L	L	H	H	L
58	L	L	L	H	L	H
59	L	L	L	H	L	L
60	L	L	L	L	H	H

10. MAINTENANCE

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

11. APPENDIX

11.1   Menu Tree

This section shows the menu trees. The default settings are underlined.

11.1.1   System Menu

```
3
└─[F3] DATE&TIME ──┬─[F1] YEAR        ( 1970 - 2038 )
                   │
                   ├─[F2] MONTH       ( 1 - 12 )
                   │
                   ├─[F3] DAY         ( 1 - 31 )
                   │
                   ├─[F4] HOUR        ( 0 - 23 )
                   │
                   ├─[F5] MINUTE      ( 0 - 59 )
                   │
                   ├─[F6] SECOND      ( 0 - 59 )
                   │
                   └─[F7] CLOCK
                          SET

  [F5] SYSTEM        ──[F7] up
       INFORMATION          menu

  [F6] ASPECT     ( 4:3 / 16:9 / 16:10 )

  [F7] INITIALIZE ──┬─[F1] INIT
                    │      YES
                    │
                    └─[F3] INIT
                           CANCEL
```
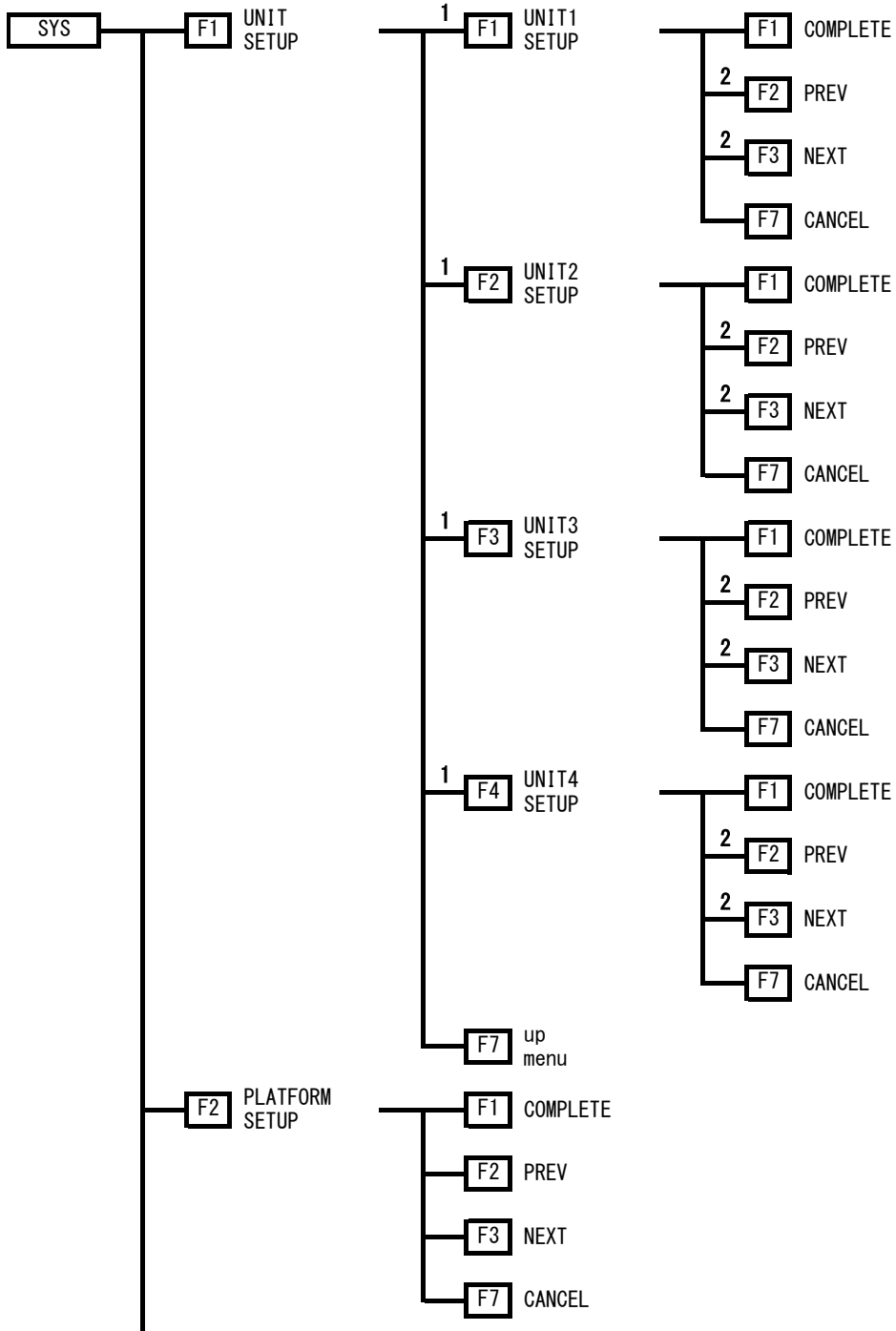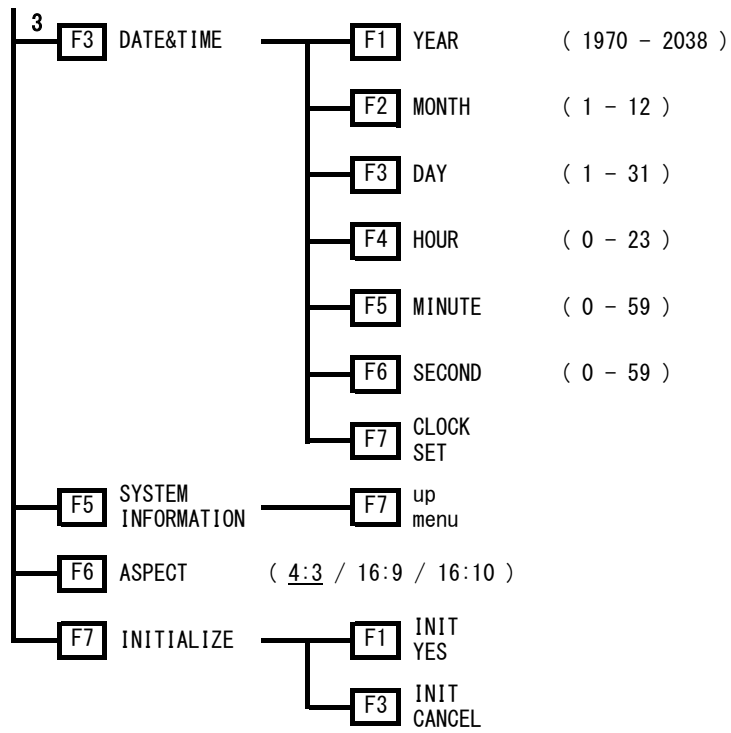
1   Appears when a unit is installed in the LV 7800 and the unit has settings that can be configured.
2   Appears when there are multiple tabs.
3   Appears when SYS > PLATFORM SETUP > ETHERNET tab > Time Server Select is set to OFF.

11.1.2　Capture Menu

```
┌─────┐        1 ┌──┐
│ CAP │──────────│F1│ TRIGGER    ( MANUAL / ERROR )
└─────┘          └──┘
                 ┌──┐
          ───────│F3│ REFRESH
                 └──┘
               2 ┌──┐
          ───────│F4│ DISPLAY    ( REAL / HOLD / BOTH )
                 └──┘
               3 ┌──┐
          ───────│F4│ DISPLAY    ( REAL )
                 └──┘
               4 ┌──┐ FILE           5 ┌──┐
          ───────│F5│ SELECT ─────────│F1│ BMP FILE  ( ON / OFF )
                 └──┘                 └──┘
                                    5 ┌──┐
                               ───────│F2│ BSG FILE  ( ON / OFF )
                                      └──┘
                                    1 ┌──┐
                               ───────│F3│ DPX FILE  ( ON / OFF )
                                      └──┘
                                    1 ┌──┐
                               ───────│F4│ TIF FILE  ( ON / OFF )
                                      └──┘
                                    1 ┌──┐
                               ───────│F5│ FRM FILE  ( ON / OFF )
                                      └──┘
                                      ┌──┐ up
                               ───────│F7│ menu
                                      └──┘
               6 ┌──┐ USB MEM
          ───────│F6│ STORE
                 └──┘
               4 ┌──┐ USB MEM        7 ┌──┐
          ───────│F7│ RECALL ─────────│F1│ RECALL
                 └──┘                 └──┘
                                      ┌──┐ FILE           ┌──┐ DELETE
                               ───────│F3│ DELETE ─────────│F1│ YES
                                      └──┘                 └──┘
                                                           ┌──┐ DELETE
                                                    ───────│F3│ NO
                                                           └──┘
                                      ┌──┐ up
                               ───────│F7│ menu
                                      └──┘
```
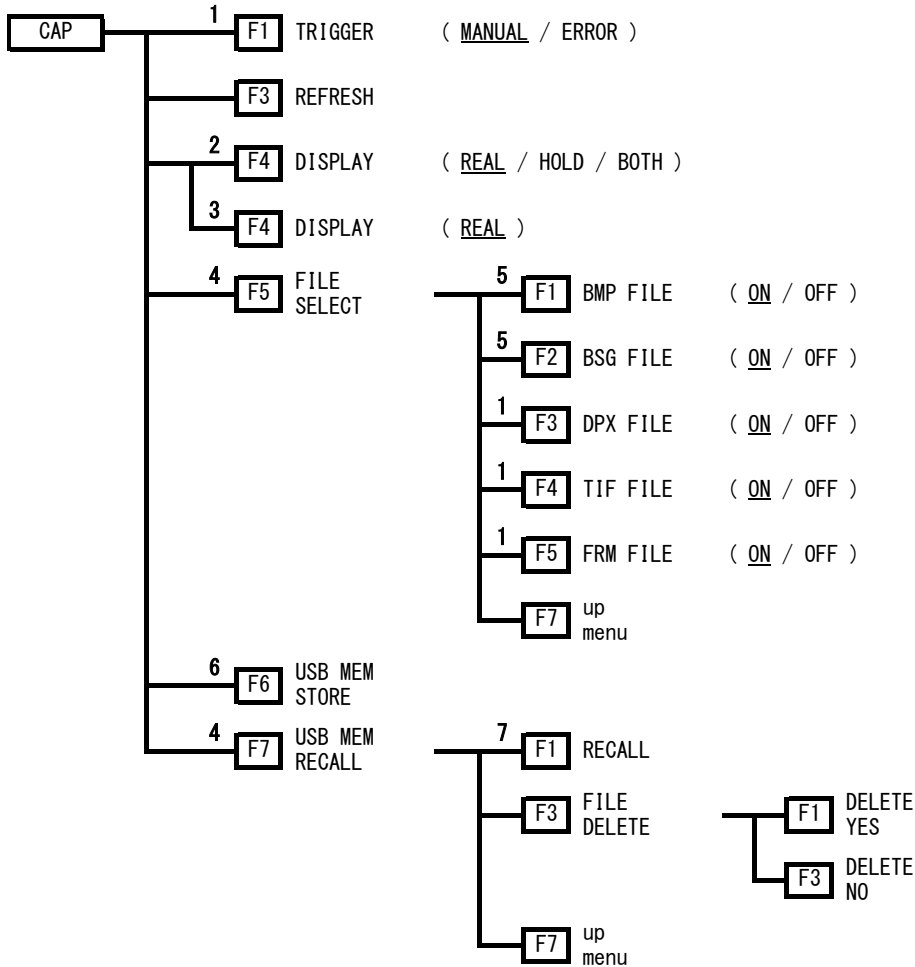
1　Appears when SYS > PLATFORM SETUP > GENERAL SETUP tab > Capture Mode is set to Video Frame.
2　Appears when there is screen capture data in the LV 7800 internal memory.
3　Appears when there is no screen capture data in the LV 7800 internal memory.
4　Appears when USB memory is connected to the USB port.
5　Appears when SYS > PLATFORM SETUP > GENERAL SETUP tab > Capture Mode is set to Screen.
6　Appears when there is screen capture data in the LV 7800 internal memory, USB memory is connected to the USB port, and at least one of the FILE SELECT options is set to ON.
7　Appears when a BSG or FRM file has been selected.

11.1.3　Preset Registration Menu

```
┌─────┐      ┌───┐ COMMENT              ┌───┐ CLEAR
│ MEM │──────│F1 │ INPUT ──────────────│F1 │ ALL
└─────┘      └───┘                     └───┘
                                       ┌───┐ DELETE
                                       │F2 │
                                       └───┘
                                       ┌───┐ INSERT
                                       │F3 │
                                       └───┘
                                       ┌───┐ <=
                                       │F4 │
                                       └───┘
                                       ┌───┐ =>
                                       │F5 │
                                       └───┘
                                       ┌───┐ CHAR
                                       │F6 │ SET
                                       └───┘
                                       ┌───┐ up
                                       │F7 │ menu
                                       └───┘
             ┌───┐                 1   ┌───┐ OVER WR
             │F2 │ STORE ──────────────│F1 │ YES
             └───┘                     └───┘
                                       ┌───┐ OVER WR
                                       │F3 │ NO
                                       └───┘
             ┌───┐                     ┌───┐ DELETE
             │F3 │ DELETE ─────────────│F1 │ YES
             └───┘                     └───┘
                                       ┌───┐ DELETE
                                       │F3 │ NO
                                       └───┘
          2  ┌───┐ ALL COPY            ┌───┐ COPY
             │F5 │ USB->INT ───────────│F1 │ YES
             └───┘                     └───┘
                                       ┌───┐ COPY
                                       │F3 │ NO
                                       └───┘
          2  ┌───┐ ALL COPY            ┌───┐ COPY
             │F6 │ INT->USB ───────────│F1 │ YES
             └───┘                     └───┘
                                       ┌───┐ COPY
                                       │F3 │ NO
                                       └───┘
```
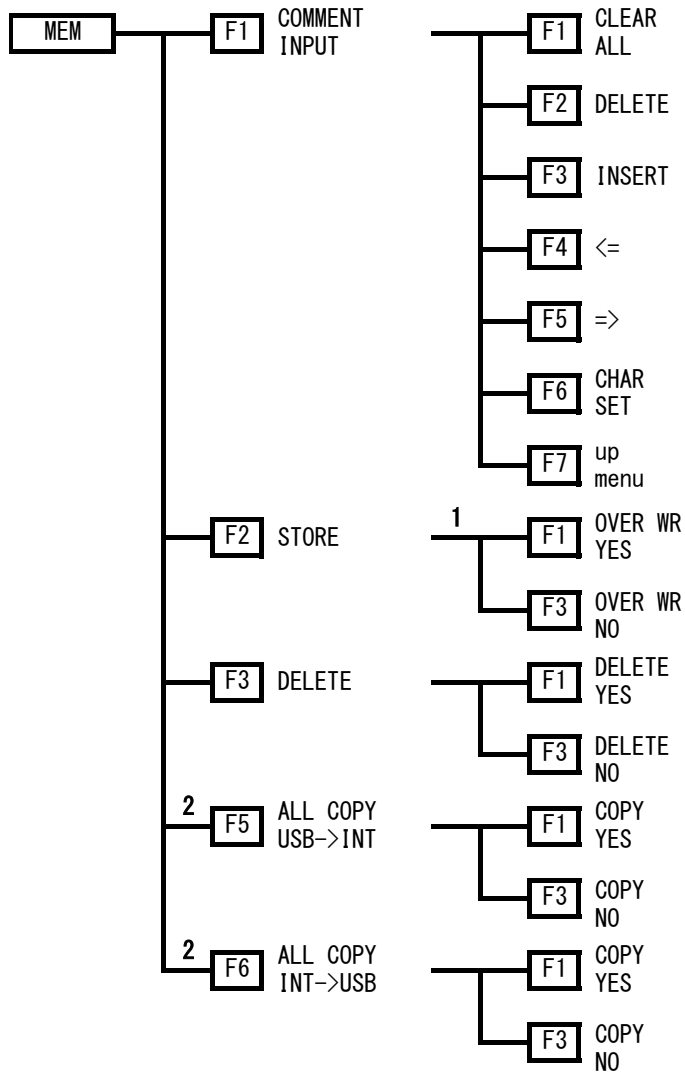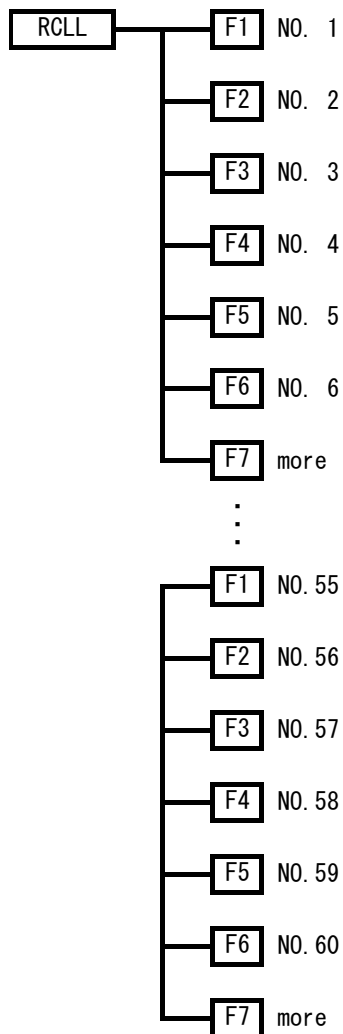
1　Appears when there is already preset data in the selected number.
2　Appears when USB memory is connected to the USB port.

11.1.4   Preset Menu

```
┌────────┐        ┌────┐
│  RCLL  │────────│ F1 │  NO.  1
└────────┘        └────┘
                  ┌────┐
             ─────│ F2 │  NO.  2
                  └────┘
                  ┌────┐
             ─────│ F3 │  NO.  3
                  └────┘
                  ┌────┐
             ─────│ F4 │  NO.  4
                  └────┘
                  ┌────┐
             ─────│ F5 │  NO.  5
                  └────┘
                  ┌────┐
             ─────│ F6 │  NO.  6
                  └────┘
                  ┌────┐
             ─────│ F7 │  more
                  └────┘
                    ⋮
                  ┌────┐
             ─────│ F1 │  NO. 55
                  └────┘
                  ┌────┐
             ─────│ F2 │  NO. 56
                  └────┘
                  ┌────┐
             ─────│ F3 │  NO. 57
                  └────┘
                  ┌────┐
             ─────│ F4 │  NO. 58
                  └────┘
                  ┌────┐
             ─────│ F5 │  NO. 59
                  └────┘
                  ┌────┐
             ─────│ F6 │  NO. 60
                  └────┘
                  ┌────┐
             ─────│ F7 │  more
                  └────┘
```

11.2   Firmware Revision History

This manual was written for firmware version 5.5.
To check the version number, press SYS → F•5 SYSTEM INFORMATION.

- **Ver.1.1**
  - ・ The 16:10 aspect ratio was added to the system settings.

Index

Following information is for Chinese RoHS only

所含有毒有害物质信息

部件号码：LV 7800

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

产品中有毒有害物质或元素的名称及含量

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

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

Ver.1