LEADER

LV 58SER06

3G-SDI INPUT

INSTRUCTION MANUAL

LEADER
ELECTRONIC MEASURING INSTRUMENTS

Contents

1. INTRODUCTION

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

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

1.1 Scope of Warranty

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

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

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

1.2 Operating Precautions

1.2.1 Maximum Allowable Input Voltage

⚠️ WARNING

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

Table 1-1   Maximum allowable input voltage

Input Connector	Maximum Input Voltage
INPUT 3G-SDI A, INPUT 3G-SDI B	±2V (DC + peak AC)

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 and devices that are connected to it.

1.3 Notations Used in This Manual

The key and other operations explained in this manual apply to the LV 5800, but you can also perform similar operations on the LV 7800.

2. SPECIFICATIONS

2.1 General

This 3G-SDI input unit can be installed into an input slot of an LV 5800 (multi monitor) or into an LV 7800 (multi rasterizer). The LV 58SER06 supports 3G-SDI levels A and B as well as HD-SDI, SD-SDI, and HD dual link. By operating the LV 5800 or LV 7800, you can use the LV 58SER06 to display information such as the video signal waveforms, vector waveforms, pictures, and error detection results of SDI signals.

In addition, the following features can be achieved when used in combination with other units.
・Lissajous and level displays of the embedded audio signal (in combination with the LV 58SER40A).
・Eye pattern display of SDI signals (in combination with the LV 58SER07).

2.2 Features

• **Two Serial Digital Inputs**

There are two 3G-SDI input connectors and two operation modes.
In Single Input mode, you can monitor one input by switching between the two inputs.
In Simultaneous Input mode, you can monitor the two inputs simultaneously.
3G-SDI and HD dual link signals are only supported by Single Input mode.

• **Two Serial Digital Outputs**

The LV 58SER06 can reclock the input signals that are received by the input connector that has been selected with the input key (3G-SDI A or 3G-SDI B) and transmit these reclocked signals from the 3G-SDI A/B output connector.
From the 3G-SDI B output connector, the LV 5800 can transmit a reclocked version of the SDI signal that is received by the 3G-SDI B input connector.

• **Test Pattern Signal Output**

The LV 58SER06 can operate as a 3G-SDI signal pattern generator and generate a 3G-SDI signal from the two output connectors.

• **Video Signal Display**

The LV 58SER06 can be used to display input signals' video signal waveforms, vector waveforms, and pictures on not only the 1-screen display, but 2- and 4-screen multi displays.

• **Error Detection**

The LV 58SER06 can detect CRC errors and other video signal errors as well as embedded audio signal and ancillary data errors.

• **Automatic Video Format Setting**

The LV 58SER06 can automatically set the video format of 3G-SDI and HD dual link signals according to the payload ID packet.

• **Ancillary Data Analysis**

The unit supports various types of ancillary data for analysis display.

- **Phase Display Function**

  The relative phase between SDI inputs can be measured.

- **5 Bar Display**

  You can use the 5 bar display to simultaneously monitor component and composite gamut.

- **CIE Chromaticity Diagram Display**

  The SDI video signal can be converted into CIE1931xy chromaticity coordinates and displayed on a CIE chromaticity diagram.

- **Embedded Audio Extraction**

  You can use the LV 58SER06 with the LV 58SER40A (DIGITAL AUDIO) to display Lissajous curves and level meters. You can also generate AES/EBU signals.

- **External Synchronization Signal**

  Allows tri-level sync signals or black burst signals of NTSC and PAL to be input.

- **Closed Caption Data Display**

  The closed caption data that is multiplexed in the SDI signal can be overlaid on the picture display in the following format.
  1) CEA/EIA-608-B closed caption data embedded in the CDP packet as defined in EIA-708-B
  2) CEA/EIA-608-B closed caption data
  3) VBI (CEA/EIA-608-B Line21) closed caption data

- **Detailed Display of the CDP Packet**

  Displays the details of the CDP packet as defined in EIA-708-B.
  1) Displays the header information of the CDP packet
  2) Displays whether the time code packet is available and the time code
  3) Displays whether closed caption packet is available and the closed caption data
  4) Displays whether closed caption service information packet is available
  5) Displays whether future packets are available.

- **Detailed Display of the XDS Packet**

  Displays the content advisory information and copy management information of the XDS packet as defined by EIA/CEA-608-B.

- **Program Description Packet Detection**

  Detects the program description packet as defined by ATSC A/65.

- **Simple Japanese Closed Caption Display**

  Displays simple HD, SD, analog, and mobile phone closed captions contained in supplementary closed caption data packets.

- **Japanese Closed Caption Clear Screen Monitoring**

  Detects closed caption clear codes, displays alarms on the screen, and logs these events. This feature also detects presence or absence of closed caption displays during the closed caption display prohibited time in TV commercial materials and logs these events.

2.3 Specifications

2.3.1 Input Signal

Video Signal Format and Corresponding Standards

3G-SDI

Color System	Quantization	Format		Corresponding Standards
		Scanning	Frame Frequency	
GBR 4:4:4	10bit	1080i	60/59.94/50	SMPTE 424M
		1080p	30/29.97/25/24/23.98	SMPTE 425
		1080PsF	30/29.97/25/24/23.98	
	12bit	1080i	60/59.94/50	
		1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
YC_BC_R 4:2:2	10 bit	1080p	60/59.94/50	
	12bit	1080i	60/59.94/50	
		1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
GBR 4:4:4 (2k)	12bit	1080p	24/23.98	2048 x 1080
		1080PsF	24/23.98	

*   Waveforms of 1080p/60, 1080p/59.94, and 1080p/50 signals are not displayed in external sync mode.

HD-SDI, SD-SDI

Color System	Quantization	Format		Corresponding Standards
		Scanning	Frame (Field) Frequency	
YC_BC_R 4:2:2	10 bit	1080i	60/59.94/50	SMPTE 274M
		1080p	30/29.97/25/24/23.98	SMPTE 292
		1080PsF	30/29.97/25/24/23.98	
		720p	60/59.94/50/30/29.97/25/24/23.98	SMPTE 292 SMPTE 296M
		525i	59.94	SMPTE 259M
		625i	50	

*   External sync mode does not work for 1080p/60, 1080p/59.94, and 1080p/50 signals.

HD Dual Link

Color System	Quantization	Format		Corresponding Standards
		Scanning	Frame (Field) Frequency	
GBR 4:4:4	10 bit	1080i	60/59.94/50	SMPTE 372M
		1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
	12 bit	1080i	60/59.94/50	
		1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
YC_BC_R 4:2:2	10 bit	1080p	60/59.94/50	
	12 bit	1080i	60/59.94/50	
		1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	

Color System	Quantization	Format		Corresponding
		Scanning	Frame (Field) Frequency	Standards
GBR 4:4:4 (2k)	12 bit	1080p	24/23.98	2048×1080
		1080PsF	24/23.98	

Ancillary Data   SMPTE 291M

Embedded Audio   SMPTE 299M

Format Setting   Automatic and manual

   Automatic

      3G-SDI, HD Dual Link   The LV58SER06 detects the format information within the payload ID (SMPTE 325M) and automatically sets the format.

      HD-SDI, SD-SDI   The LV 58SER06 determines the format from the input signal's synchronization information and automatically sets the format.

   Manual   The video signal format is set manually.

2.3.2   Output Signal

3G-SDI A/B Output Connector

   When Input Reclocking Is Selected

                       Transmits a reclocked version of the signal received by the LV 5800's input channel, or transmits a reclocked version of the signal received by input channel A

   When Test Pattern Generation Is Selected

                       Generates a test pattern signal

3G-SDI B Output Connector

   When Input Reclocking Is Selected

                       Transmits a reclocked version of the signal received by input channel B

   When Test Pattern Generation Is Selected

                       Generates a test pattern signal

Test Pattern Signals

   Format YC_BC_R 4:2:2
1080p/60, 59.94, or 50

   Corresponding Standards   SMPTE 424M and 425M

   Patterns   100 % color bars, 75% color bars, 100 % white, 50% white, black, check field, equalizer, and PLL

   Embedded Audio   Not supported

   Bitrate   2.97 Gbps or 2.97/1.001 Gbps

   Oscillation Clock   Driven by the internal oscillator
148.5 MHz ± 10 ppm or 148.5/1.001 MHz ± 10 ppm

2.3.3   I/O Connectors

     3G-SDI Input Connectors

Input Connectors	2 BNC connectors
Single Link	2 connections (channels A and B)
Dual Link	1 connection (links A and B)
Input Impedance	75 Ω
Input Return Loss	15 dB or greater (5 MHz to 1.485 GHz)
	10 dB or greater (1.485 to 2.97 GHz)
Maximum Input Voltage	±2V (DC + peak AC)

     3G-SDI Output Connectors

Output Connectors	2 BNC connectors
When Input Reclocking Is Selected	
	Ach/Bch switchable or Ach fixed 1 system
	Bch fixed 1 system
When Test Pattern Generation Is Selected	
	1 system
Output Impedance	75 Ω
Output Return Loss	15 dB or greater (5 MHz to 1.485 GHz)
	10 dB or greater (1.485 to 2.97 GHz)
Output Voltage	800 mVp-p ± 10 %

2.3.4   Waveform Display

     Waveform Operations

Display Modes	Overlay (overlays component signals)
	Parade (displays component signals side by side)
Blanking Interval	Show or hide
YC_BC_R to GBR Conversion	Converts the YC_BC_R signal to GBR and displays it
Pseudo-Composite Display	Displays component signals artificially as composite signals
Timing Display	Uses a bowtie signal; displays the computed $Y\text{-}C_B$ and $Y\text{-}C_R$ results
Channel Assignment	Displayed in GBR or RGB order (when GBR converted signals are displayed)
Line Select	Displays the selected line
Display Adjustment	Brightness adjustment and waveform color selection (white, green, or multi color)
	(Multi color is only available on the 1-screen display)

Vertical Axis
  Scales
    V Scale   0 to 0.7 V, or -0.3 to 0.7 V
    % Scale   0 to 100 % or -50 to 100 %
    Decimal Scale   64 to 940 (for YGBR) and 64 to 960 (for CbCr)
                            0 to 1023 (for YGBR) and 0 to 255 (for YGBR)
    Hexadecimal Scale 040 to 3AC (for YGBR) and 040 to 3C0 (for CbCr)
  Gain   ×1, ×5, or variable
  Variable Gain   ×0.2 to ×10
  Amplitude Accuracy   ±0.5 %
  Frequency Response
    3G-SDI, HD Dual Link (1080p/60, 1080p/59.94, and 1080p/50)
      Y Signal   ±0.5 % (1 to 60 MHz)
      C_BC_R Signal   ±0.5 % (0.5 to 30 MHz)
      Low-Pass Attenuation 20 dB or greater (at 40 MHz)
    HD-SDI, HD Dual Link (Excluding 1080p/60, 1080p/59.94, and 1080p/50)
      Y Signal   ±0.5% (1 to 3 0MHz)
      C_BC_R Signal   ±0.5% (0.5 to 15 MHz)
      Low-pass Attenuation 20 dB or greater (at 20 MHz)
    SD-SDI
      Y Signal   ±0.5% (1 to 5.75 MHz)
      C_BC_R Signal   ±0.5% (0.5 to 2.75 MHz)
      Low-pass Attenuation 20 dB or greater (at 3.8 MHz)

Horizontal Axis
  Line Display
    Display Formats   1H, 2H (Overlay)
                        1H, 2H, 3H (Parade)
                        Y-C_B, Y-C_R (Timing)
                        4H (4Y Parade)
    Magnification   ×1, ×10, ×20, ACTIVE, or BLANK
  Field Display
    Display Formats   1V, 2V (Overlay)
                        1V, 2V, 3V (Parade)
    Magnification   ×1, ×20, or ×40
    Time Accuracy   ±0.5 %

Cursor Measurement
  Composition
    Horizontal Cursors   2 (REF and DELTA)
    Vertical Cursors   2 (REF and DELTA)
  Amplitude Measurement Percentage, voltage, DEC, or HEX displays
  Time Measurement   Second display
  Frequency Measurement Computes and displays the frequency with the length of
                             one period set to the time between two cursors

2.3.5   Vectorscope Display

Scale	75 % or 100 % (color bar)
Gain	×1, ×5, IQ-MAG, or variable
Variable Gain	×0.2 to ×10
Amplitude Accuracy	±0.5 %
IQ Axis	Show or hide
Pseudo-Composite Display	Converts component signals into composite signals with artificially added burst and displays the results (The color matrix is converted to SDTV)
Display Adjustment	Brightness adjustment and waveform color selection (white or green)
Histogram Display	Displays the luminance distribution

2.3.6   5 Bar Display

Bar Display	Displays the YGBR component and composite gamut (When you are using line select, only the component gamut of the selected line is detected)
Error Level Setting	
Component Gamut	The same as the gamut error
Composite Gamut	The same as the composite gamut error
Frequency Response	The same as the gamut error

2.3.7   CIE Chromaticity Diagram Display

Scale	Color triangle, color scale, black-body radiation curve
Display Mode	Full color gamut, magnified display of the vicinity of the white point
Cursor Measurement	Display of xy chromaticity coordinates
Inverse Gamma Correction Value	
	2.2 or 2.6
Low Pass Filter	On or Off
Line Select	Displays the xy chromaticity coordinates of the selected line

2.3.8   Picture Display

Display Format	
3G-SDI, HD-SDI, HD Dual Link	
	Samples pixels and displays them (R, G, and B each use 8 bits)
SD-SDI	Displayed by interpolating pixels (R, G, and B each use 8 bits)
Marker Displays	Aspect marker, center marker, frame marker, safe action marker, and safe title marker
Gamut Error Display	Marks the areas of the picture where there are gamut errors
Line Select	Marks the selected line
Display Sizes	Compressed, full frame, and actual size display
Histogram Display	Displays the luminance distribution
AFD Display	Displays abbreviations for SMPTE 2016-1-2007 standard AFD codes
Image Quality Adjustment	GBR level, contrast, and brightness
Simple Japanese Closed Caption Display	
	Displays simple Japanese closed caption on the picture screen
Closed Caption Format	HD, SD, analog, or mobile phone closed captions
Language	1 or 2
Corresponding Standards	ARIB STD B-37 short form data
Video Formats	1080i/59.94, 525i/59.94
Display Location Control	Only HD and SD closed captions are supported.
Displayable Characters	Only *kanji*, roman numerals, *katakana*, *hiragana*, additional characters (ARIB STD-B24), additional *kanji* (ARIB STD-B24), and 1-byte DRCS are displayed
Character Sizes	Character sizes set to standard, medium, or small, or determined by a size specification code can be displayed
Log	
Recorded Events	Clear screen command, text closed caption display event, time code, TV commercial material check result
Data Format	Text
TV Commercial Material Checking	
Function	Checks whether closed caption displays are present during the closed caption prohibited time
Check Period	The material start time and end time can be specified using timecodes.
Log Display Color	
Closed Caption during Prohibited Time	
	Red
Closed Caption Not during Prohibited Time	
	Green
Check Result Display	Displays OK or NG when measurements are complete
Loudness Synchronization	Simultaneous measurement with loudness measurement

2.3.9   Status Display

SDI Signal Status Display
   Signal Detection   Detects the presence of a SDI signal
   Format   Displays the video signal format
   Embedded Audio Channel (*1)

                                      Indicates the embedded audio channels

SDI Signal Error Detection
   CRC Error   Detects 3G-SDI, HD-SDI, and HD dual link signal
                                        transmission errors
   EDH Error   Detects SD-SDI signal transmission errors
   Phase Difference Error in Dual Link

                                      Measures the phase difference between link A and link B
                                      to detect the error. It will be made the error if phase
                                      difference exceeds 100 clocks.
   TRS Error   Detects TRS location and protection bit errors
   Illegal Code Error   Detects data within the range of 000h to 003h and 3FCh to
                                          3FFh in locations other than the TRS and ADF headers
   Line Number Error   Detects 3G-SDI, HD-SDI, and HD dual link signal line
                                          number errors

Ancillary Data Error Detection
   Checksum Error   Detects ancillary data transmission errors
   Parity Error   Detects ancillary data header parity errors

Image Quality Error Detection
   Frequency Response   Removes transient gamut and composite gamut errors
                                          due to overshoot and other anomalies
     3G-SDI, HD-SDI, HD Dual Link
                                        Approx. 1 MHz LPF (IEEE STD 205), approx. 2.8 MHz
                                        LPF, or OFF
     SD-SDI   Approx. 1MHz LPF (EBU R103-2000) or OFF
   Gamut Error   Detects gamut errors
      Upper Limit   90.8 to 109.4%
      Lower Limit   -7.2 to 6.1 %
      Area Specification   0.0 to 5.0 %
      Time Specification   1 to 60 frames
   Composite Gamut Error   Detects level errors that occur when component signals
                                          are converted to composite signals
      Upper Limit   90.0 to 135.0 %
      Lower Limit   -40.0 to 20.0 %
      Area Specification   0.0 to 5.0 %
      Time Specification   1 to 60 frames

Freeze Error (*2)	Detects video freeze according to the specified time
Detection Method	Checksum of the video period
Time Specification	2 to 300 flames
Black Error (*2)	Detects blackouts in the video
Black Level Designation	0 to 100 %
Area Specification	1 to 100 %
Time Specification	1 to 300 flames
Level Error (*2)	Detects YC_BC_R level errors
Y Upper Limit	-51 to 766 mV
Y Lower Limit	-51 to 766 mV
C_BC_R Upper Limit	-400 to 399 mV
C_BC_R Lower Limit	-400 to 399 mV

Embedded Audio Error Detection (*1)

BCH Error	Detects transmission errors in the audio packets embedded in 3G-SDI, HD-SDI, and HD dual link signals
Parity Error	Detects parity errors in the audio packets embedded in 3G-SDI, HD-SDI, and HD dual link signals
DBN Error	Detects audio packet continuity errors
Embedded Position Error	Detects the presence of audio in lines where it should not be embedded

Event Log

Recorded Events	Errors, changes in the input channel, and time stamps

*1   If the input signal is 3G-SDI level B, only stream 1 is supported. If the input signal is HD dual link, only link A is supported.

*2   This is not supported when the input signal is 3G-SDI or HD dual link.

2.3.10   Analysis Features

Data Dump Display

Display Format	Displays data separated by serial data sequence or by channel
3G-SDI Level B	Stream 1, stream 2, both streams displayed at the same time
Dual Link	Link A, link B, both links displayed at the same time
Line Select	Displays the selected line
Sample Select	Displays from the selected sample
Jump Feature	Moves to EAV or SAV with the press of a single button
Data Output	Saved in text format to USB memory

EDH Display

Corresponding Standards	SMPTE RP-165
Displayed Contents	Analyzes and displays EDH packets and displays received CRC errors
Display Formats	Text, hexadecimal, and binary

Format ID Display
    Corresponding Standard   SMPTE 352M, ARIB STD-B39 (*1)
    Display Details   Displays payload information analysis

Audio Control Packet Display (*2)
    Display Details   Displays audio control packet analysis
    Display Formats   Text, hexadecimal, and binary
    Group Selection   Select one group from four available groups

Closed Caption Display (*1)
    Corresponding Standards   ARIB STD-B37
    Displayed Contents   Analyzes and displays closed caption signals
    Display Formats   Text, hexadecimal, and binary

Inter-Stationary Control Signal (NET-Q) (*1)
    Corresponding Standards   ARIB STD-B39
    Displayed Contents   Analyzes and displays inter-stationary control signals
    Display Formats   Text, hexadecimal, and binary
    Log Function   Logs Q signals

Data Broadcasting Trigger Signal Display (*1)
    Corresponding Standards   ARIB STD-B35
    Display Formats   Text, hexadecimal, and binary

V-ANC User Data Display (*1)
    Corresponding Standards   ARIB TR-B23
    Display Formats   Hexadecimal and binary

ADF Packet Display (*1)
    Corresponding Standards   SMPTE 2016-1-2007
    Display Formats   Text, hexadecimal, and binary

ANC Packet Display (*2)
    ANC Specification Method: DID/SDID
    Display Formats   Hexadecimal and binary

Time Code Display (*2)
    Supported Time Codes   LTC (SMPTE 12M-2), VITC (SMPTE 12M-2), and
                                      D-VITC (SMPTE 266M)
    Display Mode   The instrument's internal clock or the time code

*1   This is not supported when the input signal is 3G-SDI or HD dual link.

*2   If the input signal is 3G-SDI level B, only stream 1 is supported. If the input signal is HD dual link, only link A is supported.

2.3.11   Closed Caption Display Function

Corresponding Standards

EIA-708	SMPTE 334M (DID: 161h, SDID: 101h)
EIA/CEA-608-B (EIA-708-B)	SMPTE 334M (DID: 161h, SDID: 101h)
EIA/CEA-608-B (EIA/CEA-608-B)	
	SMPTE 334M (DID: 161h, SDID: 102h)
VBI (EIA/CEA-608-B Line21)	CIA/EIA-608-B

Display Contents

CDP Packet	Header information
	• Frame rate
	• Presence of the time code packet
	• Presence of the closed caption packet and validity
	• Presence of the caption service information packet and validity
	• Presence of the future data packet
	Time code (when the time code packet is available)
	Closed caption data (when the closed caption packet is available and is valid)
	Presence of CC1 to CC4, TEXT1 to TEXT4, and XDS packet
XDS Packet	Content advisory information
	Copy management information
Program Description Packet	Stuffing Descriptor
	AC3 Audio Descriptor
	Caption Service Descriptor
	Content Advisory Descriptor
	Extended Channel Name Descriptor
	Service Location Descriptor
	Time-Shifted Service Descriptor
	Component Name Descriptor
	DCC Departing Request Descriptor
	DCC Arriving Request Descriptor
	Redistribution Control Descriptor

2.3.12   Phase Difference Display

Display

Phase Difference Measurement	
	Displays the phase difference between the SDI signal and external sync signal numerically and graphically
	Holds and displays eight phase difference values being measured
Phase Difference Measurement in Dual Link	
	Displays the phase difference between link A and link B in terms of parallel clocks number

External Synchronization Signal HD tri-level sync signal or B. B signal

Display Range

   V Direction   Approximately ±1/2 frame

   H Direction (*1)   ±1 line

*1 The H axis phase difference display may fluctuate within the following ranges in cases such as when the signal is switched.
    ±3 clocks (for 3G-SDI level A, HD-SDI, SD-SDI, and HD dual link signals)
    ±6 clocks (for 3G-SDI level B signals)

2.3.13   Embedded Audio Processing

Clock Generation	Generated from the video clock
Synchronization	All audio channels must be synchronized to the video clock
Phases	All phases must be in-sync
Channel Separation	You may select a maximum of 4 groups of 16 channels each (for 3G-SDI level B signals, only stream 1 is supported; for HD dual link signals, only link A is supported)

*   You need an LV 58SER40A (DIGITAL AUDIO) unit to display and generate audio.

2.3.14   Frame Capture Feature

Function	Captures frame data
Capture Timing	Manual and automatic (error capture)
Display	Displays the captured frame data or superimposes the captured frame data over the input signal
Media	Internal memory (RAM) and USB memory You can only record one frame of data to the internal memory
Data Output	Frame captures can be saved to USB memory as .dpx files, .tif files, or in a file format that the instrument can load
Data Input	Data saved to USB memory can be loaded and displayed on the instrument (*1)
Error Capturing	Automatically captures frame data when an error occurs

*1 This cannot be displayed if the input signal is not the same format as the captured data.
*   For 3G-SDI input signals, only 1080p/60, 1080p/59.94, and 1080p/50 are supported.

2.3.15   General Specifications

Environmental Conditions	Conforms to those for the LV 5800
Power Consumption	Supplied from the LV 5800; 18 W max.
Weight	0.24 kg
Accessory	Instruction manual 1

3. NAMES AND FUNCTIONS OF PARTS

3.1 Rear Panel
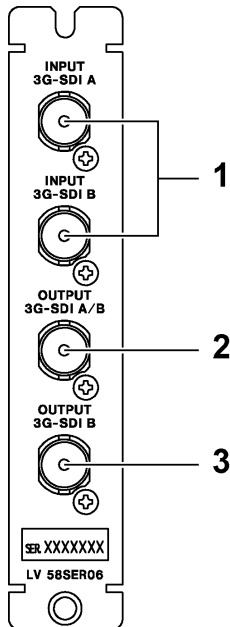
Figure 3-1   Rear panel

1   INPUT 3G-SDI A and INPUT 3G-SDI B

These are the SDI signal input connectors. To switch to a particular measurement channel, press A or B on the front panel.
When Input Mode is set to Single Input in the unit setup, all input formats are supported, but you cannot monitor channels A and B at the same time.
When Input Mode is set to Simultaneous Input, you can monitor channels A and B at the same time, but 3G-SDI and HD dual link signals are not supported.
Reference: Section 4.2, "SDI Signal Input," and section 5.2, "General Setup (GENERAL SETUP)"

2   OUTPUT 3G-SDI A/B

This is an output connector for a reclocked input signal or a test pattern signal.
When you have selected to transmit a reclocked input signal, you can press the A or B key on the front panel to choose to transmit the reclocked INPUT 3G-SDI A or INPUT 3G-SDI B signal. When Input Mode is set to Simultaneous Input in the unit setup, you can also transmit a fixed reclocked version of the signal that is applied to INPUT 3G-SDI A.
When you have selected to transmit a test pattern signal, a 3G-SDI test pattern signal is transmitted from this connector.
Reference: Section 4.3, "SDI Signal Output," section 5.2, "General Setup (GENERAL SETUP)," and
                    section 5.3, "Output Setup (SDI OUT SETUP)"

3 **OUTPUT 3G-SDI B**

This is an output connector for a reclocked input signal or a test pattern signal.
When you have selected to transmit a reclocked input signal, the reclocked INPUT
3G-SDI B signal is transmitted from this connector.
When you have selected to transmit a test pattern signal, a 3G-SDI test pattern signal is
transmitted from this connector.

Reference: Section 4.3, "SDI Signal Output," and section 5.3, "Output Setup (SDI OUT SETUP)"

3.2   Display Screen

This section explains the information about this unit that appears on the top of the screen.
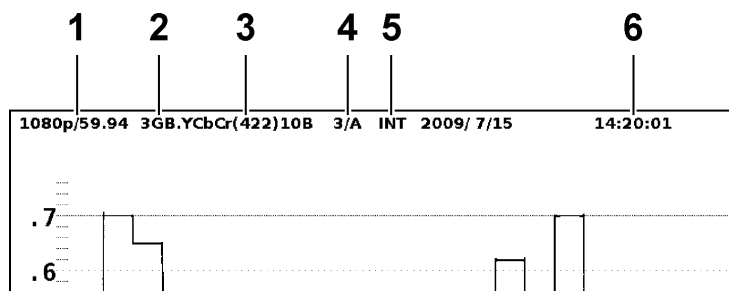
Figure 3-2   Display screen

1 **Format**

The input signal's scanning and frame (field) rate appear here.

2 **Link format**

The input signal format—3GA, 3GB, D, or a blank—appears here.

3 **Color system**

The color system and quantization (only when the signal is 3G-SDI or HD dual link)
appear here.

4 **Input signal**

The selected unit/channel appear here.

5 **Sync signal**

When the measurement mode is set to WFM, VECT, PIC, or STATUS, the sync signal
type—INT or EXT—appears here. However, when the input signal is 3G-SDI, the sync
signal type is fixed to INT, and nothing appears here (for all displays excluding the phase
difference display).
When the measurement mode is AUDIO and this unit is selected, EMB appears.

6 **Time**

The time that you have selected for Time Code in the unit setup appears here.

Reference: Section 5.2, "General Setup (GENERAL SETUP)"

4. BEFORE YOU BEGIN MEASURING

4.1 Unit Installation

- **Installing the Unit in the LV 5800**

  The LV 58SER06 is an input unit. Refer to the LV 5800 instruction manual, and install the LV 58SER06 in a slot from 1 to 4. You can install up to four LV 58SER06 units.

- **Installing the Unit in the LV 7800**

  For the LV 7800, the LV 58SER06 is a factory option. You cannot install or uninstall units. Contact your local LEADER agent. You can install up to four LV 58SER06 units.

4.2 SDI Signal Input

The signals that can be applied vary (as shown below) depending on the Input Mode setting in the unit setup. Apply a signal with an appropriate format to the LV 58SER06.

Reference: Input Mode → Section 5.2, "General Setup (GENERAL SETUP)"

Table 4-1   Input Signal

Input Mode	3G-SDI	HD Dual Link	HD-SDI	SD-SDI	Notes
Single Input	Y	Y	Y	Y	You cannot monitor channels A and B at the same time.
Simultaneous Input	N	N	Y	Y	You can monitor channels A and B at the same time.

(Y: supported; N: not supported)

The format is detected automatically by default. If the error message "UNKNOWN" appears, set Auto/Manual to Manual in the unit setup.

Reference: Auto/Manual → Section 5.2, "General Setup (GENERAL SETUP)"

The input connectors are terminated internally at 75 Ω, so there is no need to connect terminators to them.

Connect each of the external reference input connectors to a cable with a characteristic impedance of 75 Ω. If you use a cable longer than 70 m, errors may occur as a result of signal degradation.

It has been confirmed that errors do not occur when the LV 5800 receives an 800 mVp-p stress pattern through the following cables.

    3G-SDI: LS-5CFB cable, 70 m
    HD-SDI: LS-5CFB cable, 110 m
    SD-SDI: L-5C2V cable, 260 m

4.3 SDI Signal Output

The signals that can be transmitted vary (as shown below) depending on the settings in the unit setup. Regardless of the types of signals that are transmitted, connect the signals to SDI compatible picture monitors or other devices. You must terminate the receiving connectors at 75 Ω.

Reference: Input Mode, SDI Select Output → Section 5.2, "General Setup (GENERAL SETUP)"

SDI OUT → Section 5.3, "Output Setup (SDI OUT SETUP)"

Table 4-2　Output Signal

Unit Setup Settings				Output Signal	
Input Mode	SDI OUT		SDI Select	OUTPUT A/B	OUTPUT B
	A/Bch Output	Bch Output	Output		
Single Input	Input Through	Input Through	Cannot be set	INPUT A/B	INPUT B
	Input Through	3G Test Signal		INPUT A/B	3G Test Signal
	3G Test Signal	Input Through		3G Test Signal	INPUT B
	3G Test Signal	3G Test Signal		3G Test Signal	3G Test Signal
Simultaneous Input	Cannot be set		Ach/Bch	INPUT A/B	INPUT B
			Ach	INPUT A	INPUT B

4.3.1 Reclocked Input Signal Output

You can transmit reclocked input signals by setting SDI OUT to Input Through in the unit setup.

The OUTPUT 3G-SDI A/B connector transmits the reclocked version of the signal that has been received by the connector, either INPUT 3G-SDI A or INPUT 3G-SDI B, that you choose by pressing the A or B key on the front panel. When Input Mode is set to Simultaneous Input in the unit setup, you can also transmit a fixed reclocked version of the signal that is applied to INPUT 3G-SDI A.

The OUTPUT 3G-SDI B connector transmits the reclocked version of the signal that has been received by INPUT 3G-SDI B.

Reference: Input Mode → Section 5.2, "General Setup (GENERAL SETUP)"

4.3.2 Test Pattern Signal Output

You can transmit 3G-SDI test pattern signals by setting SDI OUT to Test Signal in the unit setup.

You can select from eight test patterns. You can also choose to switch between patterns automatically.

Applying a signal to an input connector will increase the timing jitter in the output signal. Do not apply a signal to an input connector when you want to keep the timing jitter to a value within the range specified by SMPTE 424M.

4.4   Switching Input Channels

To switch to a particular input channel, press A or B on the front panel. If you have set SDI Select Output to Ach/Bch or A/Bch Output to Input Through in the unit setup, the signal for the channel that you have selected is transmitted.

If you set Input Mode to Single Input in the unit setup, you cannot monitor channels A and B simultaneously. If you switch the input channel within a selected area, the input channel will also be switched in all the areas that are displaying the signal of the unit whose input channel you switched.

4.5   External Sync Signal Input

On the video signal waveform display, vector display, and status display (phase difference display), you can display waveforms by applying an external sync signal. Apply an external sync signal to an external sync signal input connector, and then press EXT on the front panel. The LV 5800 determines the sync signal format automatically.

As shown in the figure below, the external sync signal input connectors are loop-through. Apply the input signal to one of the two connectors, and terminate the other connector at 75 Ω, or connect it to another 75 Ω device. If you connect to another device, be sure to terminate the device at the end of the chain at 75 Ω. Connect cables with a characteristic impedance of 75 Ω to the input connectors.
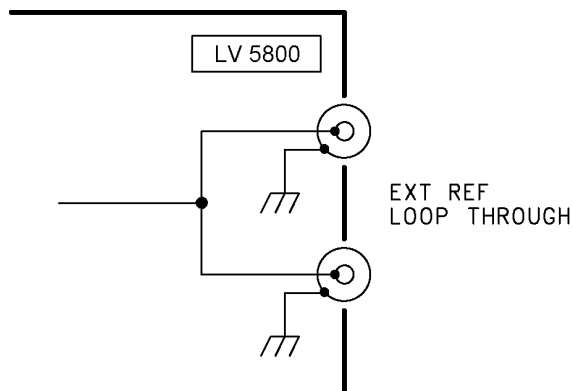
Figure 4-1   Loop Through

If you display the phase difference between the external sync signal (the reference) and the video signal waveform, the phase difference may fluctuate within the following ranges in cases such as when the signal is switched.

±3 clocks (for 3G-SDI level A, HD-SDI, SD-SDI, and HD dual link signals)
±6 clocks (for 3G-SDI level B signals)

External sync signals that are compatible with each input signal are indicated with a check mark in the following table.

Table 4-3   External sync signal formats

External Sync Signal Format \ Input Signal Format	525i/59.94	625i/50	1080i/60	1080i/59.94	1080i/50	1080PsF/30	1080PsF/29.97	1080PsF/25	1080PsF/24	1080PsF/23.98	1080p/30	1080p/29.97	1080p/25	1080p/24	1080p/23.98	720p/60	720p/59.94	720p/50	720p/30	720p/29.97	720p/25	720p/24	720p/23.98	1080p/60 (*1)	1080p/59.94 (*1)	1080p/50 (*1)
NTSC with 10 field ID (59.94Hz)(*2)	✓			✓			✓			✓		✓			✓		✓			✓			✓		✓	
NTSC (59.94Hz)	✓			✓			✓					✓					✓			✓						
PAL (50Hz)		✓			✓			✓					✓					✓			✓					✓
1080i/60			✓			✓																		✓		
1080i/59.94				✓			✓																		✓	
1080i/50					✓			✓																		✓
1080PsF/30						✓																		✓		
1080PsF/29.97							✓																		✓	
1080PsF/25								✓																		✓
1080PsF/24									✓																	
1080PsF/23.98										✓																
1080p/30											✓															
1080p/29.97												✓														
1080p/25													✓													
1080p/24														✓												
1080p/23.98															✓											
720p/60																✓										
720p/59.94																	✓									
720p/50																		✓								
720p/30																			✓							
720p/29.97																				✓						
720p/25																					✓					
720p/24																						✓				
720p/23.98																							✓			

*1   You cannot use the external sync signal to display the video signal waveform display and vector display. When the signal is HD dual link, the phase difference with the external sync signal cannot be measured.

*2   If the input signal is 1080PsF/23.98 or 1080p/23.98, the 10 field ID is automatically detected.

5. UNIT SETUP

In the unit setup, you can specify the input format, error detection settings, and other settings for individual units. If there is more than one LV 58SER06 installed in the LV 5800, you must set each LV 58SER06 individually.
The settings that you configure in the unit setup apply to both LV 58SER06 channels (A and B). You cannot configure settings for each channel individually.

To open the unit setup, in the system menu, press F•1 UNIT SETUP, and then press the function key (F•1 to F•4) of the unit number that corresponds to the slot that the LV 58SER06 is installed in.

SYS → F•1 UNIT SETUP →

UNIT1 SETUP	UNIT2 SETUP	UNIT3 SETUP	UNIT4 SETUP			up menu
F·1	F·2	F·3	F·4	F·5	F·6	F·7
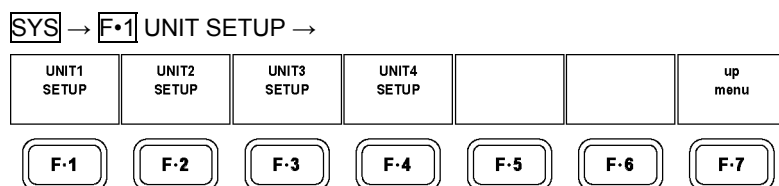
Figure 5-1   UNIT SETUP menu

5.1   Tab Menu Operations

You can usually use the function menu to change the settings, but the unit setup settings appear on a tab menu.
The list below explains how to perform different operations in the tab menu.

- **To Move the Cursor**

  Turn the function dial (F•D). Depending on what you are setting, you may not be able to move the cursor.

- **To Change the Tab**

  Press F•2 PREV or F•3 NEXT. Even if you switch to another tab, the settings are not confirmed until you press F•1 COMPLETE.

- **To Select a Checkbox**

  Press the function dial (F•D).

- **To Enter a Value**

  When you push the function dial (F•D), the color of the cursor changes from blue to green, and you can set the value by turning the function dial (F•D). To confirm the value that you have set, press the function dial (F•D) again.

- **To Apply the Tab 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 Tab Settings**

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

5.2   General Setup (GENERAL SETUP)

In the GENERAL SETUP tab, configure input mode, input signal format, and time code settings.

```
GENERAL SETUP  SDI OUT SETUP  ERROR SETUP1  ERROR SETUP2  ERROR SETUP3  ERROR SETUP4  ERROR SETUP5

        UNIT2 : LV58SER06 3G-SDI Input Unit
        Input Mode            ☑ Single Input        [Include HD-DualLink]
                              ☐ Simultaneous Input [Only HD/SD]

        Auto/Manual           ☑ Auto  ☐ Manual

        i/PsF Select          ☑ Interlace ☐ Segmented Frame(PsF)
        Format
              Link Format     ☐ 3G-A  ☐ 3G-B  ☐ HD-DualLink
                              ☑ HD      ☐ SD

              Color System    ☐ YCbCr(4:2:2) ☑ GBR(4:4:4)

              Pixel Depth     ☑ 10bit ☐ 12bit

              Scanning        ☐ 1080p ☑ 1080i ☐ 1080PsF
                              ☐ 720p

              Active Sample   ☑ 1920  ☐ 2048(2k)

              Frame Rate      ☐ 60     ☐ 59.94 ☐ 50    ☑ 30
                              ☐ 29.97 ☐ 25      ☐ 24    ☐ 23.98

        Time Code             ☑ Real Time ☐ LTC  ☐ VITC ☐ D-VITC(only SD)

        SDI Select Output     ☐ Ach/Bch   ☑ Ach

 COMPLETE    PREV      NEXT                              CANCEL
```

Figure 5-2   GENERAL SETUP display

- **Input Mode**

  Select the input mode. When you switch to a different input mode, "System reconfiguration" is displayed. It takes a few seconds for the input mode to be applied to the LV 5800.

Single Input:	All input formats are supported, but channels A and B cannot be monitored at the same time. The transmitted signal is a reclocked version of the input signal or a 3G-SDI test pattern. This is the default setting.
Simultaneous Input:	SD-SDI and HD-SDI input signals are supported. Channels A and B can be monitored at the same time. The transmitted signal is a reclocked version of the input signal.

- **Auto/Manual**

  Select the method for detecting the format.

Auto:	The format is automatically detected from the input signal. If the input signal is 3G-SDI or HD dual link, the format is automatically detected from the payload ID (SMPTE 325M). If there is no payload ID, the format indicated by the payload ID is not supported by the LV 58SER06, or the format indicated by the payload ID is different from the detected format of the input signal, "UNKNOWN" appears as an error message. This is the default setting.
Manual:	You must set the format manually. If the format that you set is different from the detected format of the input signal, the error message "UNKNOWN" appears.

- **i⁄PsF Select**

When Auto/Manual is set to Auto, select the display format for the following input formats. This setting cannot be chosen when Auto/Manual is set to Manual.
- 1080i/60 and 1080PsF/30
- 1080i/59.94 and 1080PsF/29.97
- 1080i/50 and 1080PsF/25

Interlace:	The input format is displayed as interlaced. This is the default setting.
Segmented Frame:	The input format is displayed as segmented frame.

- **Format**

When Auto/Manual is set to Manual, select the input format. This setting cannot be chosen when Auto/Manual is set to Auto.

The combinations shown below are the formats that you can select. (The cells in the table that are shaded in are fixed values. You cannot change these settings.) If you specify a format that is not one of the following combinations, "ILLEGAL FORMAT" will be displayed. Specify a correct format.

When Input Mode is set to Simultaneous Input, Link Format is set to HD or SD.

Table 5-1　Setting the Input Format

Link Format	Color System	Pixel Depth	Scanning	Active Sample	Frame Rate (*1)
3G-A, 3G-B	YCbCr(4:2:2)	10 bits	1080p	1920	60, 59.94, 50
		12 bits	1080p	1920	30, 29.97, 25, 24, 23.98
			1080i	1920	30, 29.97, 25
			1080PsF	1920	30, 29.97, 25, 24, 23.98
	GBR(4:4:4)	10 bits	1080p	1920	30, 29.97, 25, 24, 23.98
			1080i	1920	30, 29.97, 25
			1080PsF	1920	30, 29.97, 25, 24, 23.98
		12 bits	1080p	1920	30, 29.97, 25, 24, 23.98
			1080i	1920	30, 29.97, 25
			1080PsF	1920	30, 29.97, 25, 24, 23.98
			1080p	2048(2k)	24, 23.98
			1080PsF	2048(2k)	24, 23.98
HD-DualLink	YCbCr(4:2:2)	10 bits	1080p	1920	60, 59.94, 50
		12 bits	1080p	1920	30, 29.97, 25, 24, 23.98
			1080i	1920	30, 29.97, 25
			1080PsF	1920	30, 29.97, 25, 24, 23.98
	GBR(4:4:4)	10 bits	1080p	1920	30, 29.97, 25, 24, 23.98
			1080i	1920	30, 29.97, 25
			1080PsF	1920	30, 29.97, 25, 24, 23.98
		12 bits	1080p	1920	30, 29.97, 25, 24, 23.98
			1080i	1920	30, 29.97, 25
			1080PsF	1920	30, 29.97, 25, 24, 23.98
			1080p	2048(2k)	24, 23.98

Link Format	Color System	Pixel Depth	Scanning	Active Sample	Frame Rate (*1)
			1080PsF	2048(2k)	24, 23.98
HD	YCbCr(4:2:2)	10 bits	1080p	-	30, 29.97, 25, 24, 23.98
			1080i	-	30, 29.97, 25
			1080PsF	-	30, 29.97, 25, 24, 23.98
			720p	-	60, 59.94, 50, 30, 29.97, 25, 24, 23.98
SD	YCbCr(4:2:2)	10 bits	525i	-	59.94
			625i	-	50

*1   Note that when i/PsF Select is set to Interlace, the frame rate is displayed. For example, if the field rate is 59.94, set the frame rate to 29.97.

- **Time Code**

Select the type of clock that you want to display in places such as the top of the screen and the event log.

Real Time:	The time set in the system settings is displayed. This is the default setting.
LTC:	The LTC timecode embedded in the input signal is displayed.
VITC:	The VITC timecode embedded in the input signal is displayed.
D-VITC:	The D-VITC timecode embedded in the input signal is displayed. D-VITC timecodes are enabled when the input signal is SD-SDI.

- **SDI Select Output**

When Input Mode is set to Simultaneous Input, select the signal that is transmitted from OUTPUT A/B. This setting cannot be chosen when Input Mode is set to Single Input.

Ach/Bch:	The OUTPUT A/B connector transmits the reclocked version of the signal that has been received by the connector, either INPUT A or INPUT B, that you choose by pressing the A or B key on the front panel.
Ach:	The OUTPUT A/B connector transmits the reclocked version of the signal that has been received by the INPUT A connector. This is the default setting.

5.3 Output Setup (SDI OUT SETUP)

In the SDI OUT SETUP tab, configure settings for the LV 58SER06 output connectors.
When Input Mode is set to Simultaneous Input, this tab is not displayed. The transmitted signal is a reclocked version of the input signal.

```
┌GENERAL SETUP┐┌SDI OUT SETUP┐┌ERROR SETUP1┐┌ERROR SETUP2┐┌ERROR SETUP3┐┌ERROR SETUP4┐┌ERROR SETUP5
│
│     UNIT1 : LV58SER06 3G-SDI Input Unit
│
│     SDI OUT   A/Bch Output      ☑ Input Through  □ 3G Test Signal
│               Bch Output        ☑ Input Through  □ 3G Test Signal
│
│     3G Test Signal Format ( YCbCr 4:2:2 1080p )
│               3G-Level          □ A     ☑ B
│               Frame Rate        □ 60   ☑ 59.94 □ 50
│               Pattern           ☑ 100% Color Bar □ 75% Color Bar
│                                 □ 100% White     □ 50% White      □ Black
│                                 □ Check Field    □ EQ             □ PLL
│               Pattern Change ☑ OFF  □ ON    [ 30 ]  Frames(5~300)
│
│
├──────────────────────────────────────────────────────────────────
│ COMPLETE │  PREV  │  NEXT  │        │        │        │ CANCEL │
└──────────┴────────┴────────┴────────┴────────┴────────┴────────┘
```

Figure 5-3   SDI OUT SETUP display

- **A/Bch Output**

  You can select what kind of signal to transmit from the 3G-SDI A/B output connector.

Input Through:	The OUTPUT 3G-SDI A/B connector transmits the reclocked version of the signal that has been received by the connector, either INPUT 3G-SDI A or INPUT 3G-SDI B, that you choose by pressing the A or B key on the front panel. This is the default setting.
3G Test Signal:	The OUTPUT 3G-SDI A/B connector transmits a 3G-SDI test pattern signal.

- **Bch Output**

  You can select what kind of signal to transmit from the 3G-SDI B output connector.

Input Through:	The OUTPUT 3G-SDI B connector transmits the reclocked version of the signal that has been received by the INPUT 3G-SDI B connector. This is the default setting.
3G Test Signal:	The OUTPUT 3G-SDI B connector transmits a 3G-SDI test pattern signal.

- **3G-Level**

  Select the SMPTE 425M-specified level (level A or level B). The test pattern's transmission structure varies depending on the level.

  A or B. The default setting is B.

- **Frame Rate**

  Select the test pattern signal frame rate.

60, 59.94 (default setting), or 50

- **Pattern**

  Select the test pattern signal output pattern. You cannot select an output pattern when Pattern Change is set to ON.

100% Color Bar:	100 % color bar (100 % white, 100 % saturation). This is the default setting.
75% Color Bar:	75 % color bar (100 % white, 75 % saturation)
100 % White:	100 % white
50 % White:	50 % white
Black:	Black
Check Field:	Check field pattern (EQ + PLL)
EQ:	Equalizer test pattern
PLL:	PLL test pattern

- **Pattern Change**

  You can select whether or not to automatically switch the test pattern.

OFF:	The test pattern is not automatically switched. This is the default setting.
ON:	The test pattern is automatically switched.
	You can set the switching time within the range of 5 to 300 frames.
	(Default setting: 30 frames.)
	For example, if the frame rate is 60 and you set the switching time to 30 frames, the pattern will switch every 0.5 seconds when the 3G-Level is A or every second when the level is B.

5.4   Error Setup 1 (ERROR SETUP1)

In the ERROR SETUP1 tab, configure SDI error detection settings.

```
GENERAL SETUP  SDI OUT SETUP  ERROR SETUP1  ERROR SETUP2  ERROR SETUP3  ERROR SETUP4  ERROR SETUP

        UNIT2 : LV58SER06 3G-SDI Input Unit

        SDI Error Setup
            TRS Error                     ☑ ON ☐ OFF
            Line Number Error(except SD) ☑ ON ☐ OFF
            CRC Error(except SD)          ☑ ON ☐ OFF
            EDH Error(SD only)            ☑ ON ☐ OFF
            Illegal Code Error            ☑ ON ☐ OFF




  COMPLETE      PREV      NEXT                                    CANCEL
```

Figure 5-4   ERROR SETUP1 display

- **TRS Error**

  Select whether or not to detect TRS Pos and TRS Code errors.

  ON or OFF. The default setting is ON.

- **Line Number Error**

  Select whether or not to detect line number errors. This setting is valid when the input signal is 3G-SDI, HD-SDI, or HD dual link.

  ON or OFF. The default setting is ON.

- **CRC Error**

  Select whether or not to detect CRC errors. This setting is valid when the input signal is 3G-SDI, HD-SDI, or HD dual link.

  ON or OFF. The default setting is ON.

- **EDH Error**

  Select whether or not to detect EDH errors. This setting is valid when the input signal is SD-SDI.

  ON or OFF. The default setting is ON.

- **Illegal Code Error**

  Select whether or not to detect illegal code errors.

  ON or OFF. The default setting is ON.

5.5   Error Setup 2 (ERROR SETUP2)

In the ERROR SETUP2 tab, configure ancillary data and embedded audio error detection settings.

Figure 5-5   ERROR SETUP2 display

- **Parity Error**

  Select whether or not to detect parity errors in the ancillary data.

  ON or OFF. The default setting is ON.

- **Checksum Error**

  Select whether or not to detect checksum errors in the ancillary data.

  ON or OFF. The default setting is ON.

- **BCH Error**

  Select whether or not to detect BCH errors in the embedded audio. This setting is valid when the input signal is 3G-SDI, HD-SDI, or HD dual link.

  ON or OFF. The default setting is ON.

- **DBN Error**

  Select whether or not to detect DBN errors in the embedded audio.

  ON or OFF. The default setting is ON.

- **Parity Error**

  Select whether or not to detect parity errors in the embedded audio. This setting is valid when the input signal is 3G-SDI, HD-SDI, or HD dual link.

  ON or OFF. The default setting is ON.

• **Inhibit Line Error**

Select whether or not to detect embedding errors in the embedded audio.

ON or OFF. The default setting is ON.

5.6 Error Setup 3 (ERROR SETUP3)

In the ERROR SETUP3 tab, configure gamut error settings.

Figure 5-6   ERROR SETUP3 display

• **LowPass Frequency**

Select the frequency response of the low-pass filter used for gamut error and composite gamut error detection.
Set the low-pass frequency to remove transient errors caused by overshoot and other anomalies.

ALL:1MHz:	A 1 MHz low-pass filter is applied (IEEE STD 205). This is the default setting.
SD:1MHz Others:2.8MHz:	When the input signal is SD-SDI, a 1 MHz low-pass filter is applied. For all other signals, a 2.8 MHz low-pass filter is applied.
OFF:	No low-pass filter is applied.

• **Gamut Error**

Select whether or not to detect gamut errors.

ON or OFF. The default setting is ON.

• **Gamut Upper**

Set the gamut error upper limit. An error occurs when the input signal level exceeds the specified value.
In the 5 bar GBR display, levels that exceed the specified value are displayed in red.

90.8 to 109.4 % (default setting: 109.4 %)

- **Gamut Lower**

  Set the gamut error lower limit. An error occurs when the input signal level goes below the specified value.
  In the 5 bar GBR display, levels that go below the specified value are displayed in red.

  -7.2 to 6.1 % (default setting: -7.2 %)

- **Area**

  Specify the percentage of the active picture area over which errors must occur to be recognized. You cannot configure this setting when Gamut Error is set to OFF.

  0.0 to 5.0 % (default setting: 0.1 %)

- **Duration**

  Set the number of consecutive frames over which errors must occur to be recognized. You cannot configure this setting when Gamut Error is set to OFF.

  1 to 60 frames (default setting: 1 frame)

- **Composite Gamut Error**

  Select whether or not to detect composite gamut errors.

  ON or OFF. The default setting is ON.

- **Setup**

  Select the setup level to add when converting component signals to composite signals.

0%:	No setup level is added. This is the default setting.
7.5%:	A setup level of 7.5 % is added.

- **Composite Upper**

  Set the composite gamut error upper limit. An error occurs when the input signal level exceeds the specified value.
  In the 5 bar CMP display, levels that exceed the specified value are displayed in red.

  90.0 to 135.0 % (default setting: 135.0 %)

- **Composite Lower**

  Set the composite gamut error lower limit. An error occurs when the input signal level goes below the specified value.
  In the 5 bar CMP display, levels that go below the specified value are displayed in red.

  -40.0 to 20.0 % (default setting: -40 %)

- **Area**

  Specify the percentage of the active picture area over which errors must occur to be recognized. You cannot configure this setting when Composite Gamut Error is set to OFF.

  0.0 to 5.0 % (default setting: 0.1 %)

• **Duration**

Set the number of consecutive frames over which errors must occur to be recognized. You cannot configure this setting when Composite Gamut Error is set to OFF.

1 to 60 frames (default setting: 1 frame)

5.7   Error Setup 4 (ERROR SETUP4)

In the ERROR SETUP4 tab, configure freeze error and black error settings.
The settings that you configure here are valid when the input signal is HD-SDI or SD-SDI.

Figure 5-7   ERROR SETUP4 display

• **Freeze Error**

Select whether or not to detect freeze errors.

ON or OFF. The default setting is OFF.

• **Area Upper, Area Lower, Area Left, and Area Right**

Set what percent of each active picture area (the upper, lower, left, and right areas) will not be subject to error detection. You cannot configure this setting when Freeze Error is set to OFF.

0 to 100 % (default setting: 0 %)

• **Duration**

Set the number of consecutive frames over which errors must occur to be recognized. You cannot configure this setting when Freeze Error is set to OFF.

2 to 300 Frames (default setting: 2 Frames)

• **Black Error**

Select whether or not to detect black errors.

ON or OFF. The default setting is OFF.

- **Level**

  Set the black error level. Any signals that are less than or equal to the specified value will be detected as errors. You cannot configure this setting when Black Error is set to OFF.

  0 to 100% (default setting: 0 %)

- **Area**

  Specify the percentage of the active picture area over which errors must occur to be recognized. You cannot configure this setting when Black Error is set to OFF.

  1 to 100 % (default setting: 100 %)

- **Duration**

  Set the number of consecutive frames over which errors must occur to be recognized. You cannot configure this setting when Black Error is set to OFF.

  1 to 300 Frames (default setting: 1 Frames)

5.8 Error Setup 5 (ERROR SETUP5)

In the ERROR SETUP5 tab, configure level error settings.
The settings that you configure here are valid when the input signal is HD-SDI or SD-SDI.

```
┌──────────┬────────────┬─────────────┬─────────────┬─────────────┬─────────────┬─────────────┐
│GENERAL SETUP│SDI OUT SETUP│ERROR SETUP1│ERROR SETUP2│ERROR SETUP3│ERROR SETUP4│ERROR SETUP5│
└──────────┴────────────┴─────────────┴─────────────┴─────────────┴─────────────┴─────────────┘

        UNIT2 : LV58SER06 3G-SDI Input Unit

        Video Error Setup3 (HD,SD only)

        Level Error          □ ON ☑ OFF
          Luminance Upper      │ 766 │ mV(-51~766)
          Luminance Lower      │ -51 │ mV(-51~766)
          Chroma Upper         │ 399 │ mV(-400~399)
          Chroma Lower         │-400 │ mV(-400~399)




   ┌──────────┬──────────┬──────────┬──────┬──────┬──────┬──────────┐
   │ COMPLETE │   PREV   │   NEXT   │      │      │      │  CANCEL  │
   └──────────┴──────────┴──────────┴──────┴──────┴──────┴──────────┘
```

Figure 5-8   ERROR SETUP5 display

- **Level Error**

  Select whether or not to detect level errors.

  ON or OFF. The default setting is OFF.

- **Luminance Upper**

  Set the luminance error upper limit. An error occurs when the input signal level exceeds the specified value. You cannot configure this setting when Level Error is set to OFF.

  -51 to 766 mV (default setting: 766 mV)

- **Luminance Lower**

  Set the luminance error lower limit. An error occurs when the input signal level goes below the specified value. You cannot configure this setting when Level Error is set to OFF.

  -51 to 766 mV (default setting: -51 mV)

- **Chroma Upper**

  Set the chroma error upper limit. An error occurs when the input signal level exceeds the specified value. You cannot configure this setting when Level Error is set to OFF.

  -400 to 399 mV (default setting: 39 mV)

- **Chroma Lower**

  Set the chroma error lower limit. An error occurs when the input signal level goes below the specified value. You cannot configure this setting when Level Error is set to OFF.

  -400 to 399 mV (default setting: -400 mV)

6. VIDEO SIGNAL WAVEFORM DISPLAY

To display video signal waveforms, press the WFM key on the front panel.
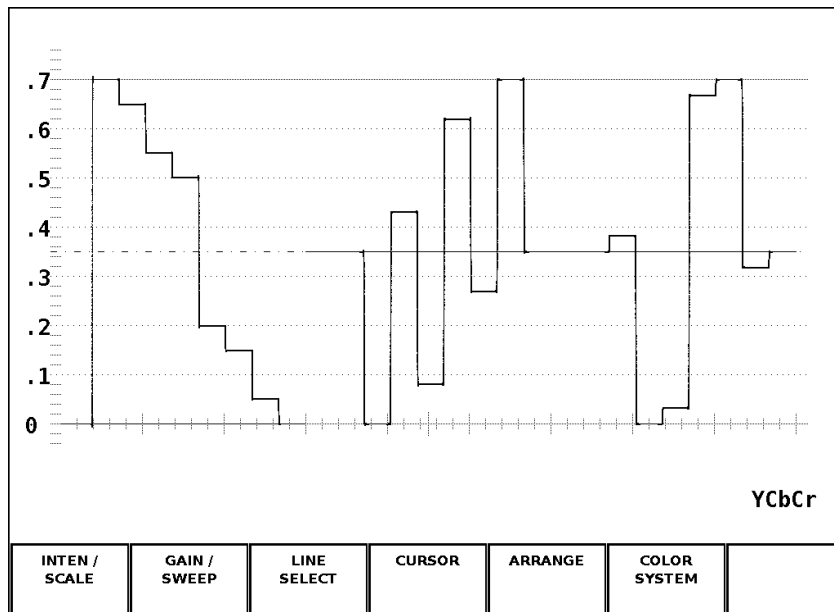
Figure 6-1   Video signal waveform display

6.1   Setting the Waveform Display Position

Use the V POS and H POS knobs on the front panel to adjust the display position of video signal waveforms.
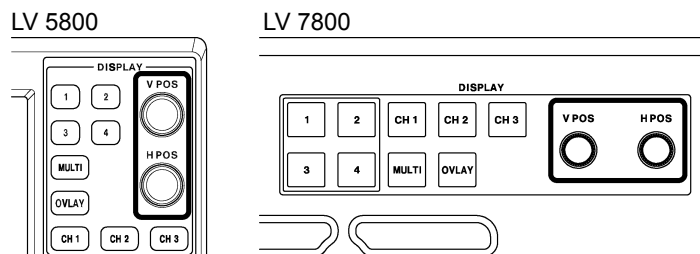
Figure 6-2   V POS and H POS knobs

- **V POS Knob**

  Adjusts the vertical position of the video signal waveform.
  Pressing the knob returns the waveform to its default position.

- **H POS Knob**

  Adjusts the horizontal position of the video signal waveform.
  Pressing the knob returns the waveform to its default position.

6.2   Setting the Display Mode

The video signal waveform display mode changes each time you press OVLAY on the front panel.

When the OVLAY key is lit, the display mode is Overlay (waveforms are overlaid), when the OVLAY key is not lit, the display mode is Parade (waveforms are shown side by side). The default setting is parade mode.

This setting is invalid when COLOR MATRIX is set to COMPOSITE or when the timing display or 4Y parade display is in use.

Reference: COLOR MATRIX → Section 6.9.1, "Selecting the Color Matrix"

LV 5800   LV 7800
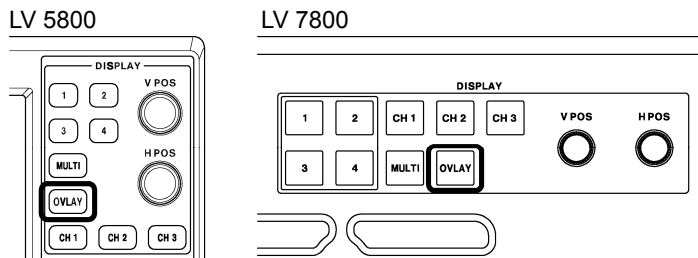
Figure 6-3   OVLAY key

OVLAY = ON   OVLAY = OFF
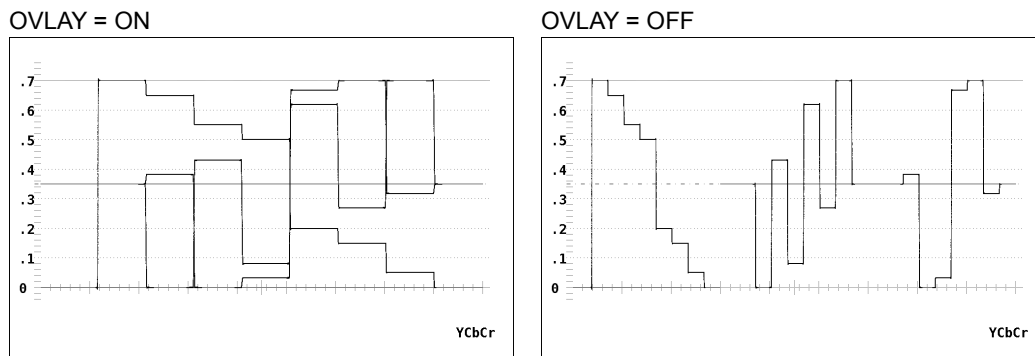
Figure 6-4   Overlay and parade displays

6.3   Selecting Which Channels to Display

Pressing a key from CH1 to CH3 turns on and off the display of the video signal waveform assigned to that key. The video signal waveform display is on when a key is lit and off when the key is not lit. By default, all of the video signal waveform displays are on.

This setting is invalid when COLOR MATRIX is set to COMPOSITE, when YGBR or YRGB is set to ON, or when the timing display or 4Y parade display is in use. You cannot turn the displays for all the keys off.

Reference: COLOR MATRIX → Section 6.9.1, "Selecting the Color Matrix"

YGBR, YRGB → Section 6.9.2, "Enabling YGBR (or YRGB) Display"

Timing display, 4Y parade display → Section 6.8.5, "Timing and 4Y Parade Displays"

LV 5800   LV 7800
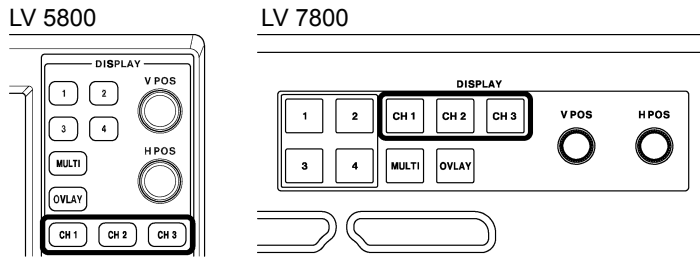
Figure 6-5   The CH1 to CH3 keys

Waveforms are assigned to the CH1 to CH3 keys as indicated below.

Table 6-1   Waveform assignments

COLOR MATRIX	CH 1	CH 2	CH 3
YCbCr	Y	Cb	Cr
GBR	G	B	R
RGB	R	G	B

6.4   Configuring the Intensity and Scale Settings

To configure the intensity and scale settings, press $\boxed{\text{F•1}}$ INTEN / SCALE in the video signal waveform menu.
You can set the intensities and display colors of the video signal waveforms and scales.

$\boxed{\text{WFM}}$ → $\boxed{\text{F•1}}$ INTEN / SCALE →

Figure 6-6   INTEN/SCALE menu

6.4.1   Adjusting the Waveform Intensity

To adjust the video signal waveform intensity, follow the procedure shown below.
Press the function dial (F•D) to return the setting to its default value (0).

• Procedure

$\boxed{\text{WFM}}$ → $\boxed{\text{F•1}}$ INTEN / SCALE → $\boxed{\text{F•1}}$ WFM INTEN

• Settings

Range: -128 to 127 (default setting: 0)

6.4.2 Selecting the Waveform Color

To select the video signal waveform color, follow the procedure shown below.

• Procedure

$\boxed{\text{WFM}} \rightarrow \boxed{\text{F•1}}$ INTEN / SCALE $\rightarrow \boxed{\text{F•2}}$ WFM COLOR

• Settings

WHITE:	The video signal waveforms are displayed in white. This is the default setting.
GREEN:	The video signal waveforms are displayed in green.
	Waveforms are displayed in white when PERSISTENCE is set to ON or INFINIT.
MULTI:	The following colors are assigned to the YCbCr and GBR component waveforms.
	Y: yellow, Cb: cyan, Cr: magenta, G: green, B: blue, R: red
	When COLOR MATRIX is set to COMPOSITE or when the timing display or 4Y parade display is in use, the video signal waveforms are displayed in white.
	This option is not selectable when the multi screen display is in use.

6.4.3 Adjusting the Scale Intensity

To adjust the scale intensity, follow the procedure shown below.
Press the function dial (F•D) to return the setting to its default value (4).

• Procedure

$\boxed{\text{WFM}} \rightarrow \boxed{\text{F•1}}$ INTEN / SCALE $\rightarrow \boxed{\text{F•3}}$ SCALE INTEN

• Settings

Range:	-8 to 7 (default setting: 4)

6.4.4 Selecting the Scale Unit

To select the scale unit, follow the procedure shown below.
When COLOR MATRIX is set to COMPOSITE, the unit for NTSC signals will be set to % and the unit for PAL signals will be set to V, regardless of the unit you choose here.

White 100 % on the video signal will fall on the 0.7 V or 100 % scale line.
Black 0 % on the video signal will fall on the 0 V or 0 % scale line.
Reference: COLOR MATRIX → Section 6.9.1, "Selecting the Color Matrix"

• Procedure

$\boxed{\text{WFM}} \rightarrow \boxed{\text{F•1}}$ INTEN / SCALE $\rightarrow \boxed{\text{F•4}}$ SCALE UNIT

● **Settings**

V:	The scale shows voltages. This setting cannot be chosen when the input signal is HD-SDI or SD-SDI. This is the default setting.
%:	The scale shows percentages. This setting cannot be chosen when the input signal is HD-SDI or SD-SDI.
HDV, SD%:	The scale shows voltages when the input signal is HD-SDI and percentages when the input signal is SD-SDI.
	This setting cannot be chosen when the input signal is 3G-SDI or HD dual link.
HDV, SDV:	The scale shows voltages. This setting cannot be chosen when the input signal is 3G-SDI or HD dual link.
HD%, SD%:	The scale shows percentages. This setting cannot be chosen when the input signal is 3G-SDI or HD dual link.
150%:	The scale shows percentages. (Starting from -50 %.) This setting cannot be selected when COLOR MATRIX is set to YCbCr or COMPOSITE.
1023:	The scale shows 0 to 100 % as 64 to 940 (for YGBR) or 64 to 960 (for CbCr). This setting cannot be chosen when COLOR MATRIX is set to COMPOSITE.
3FF:	The scale shows 0 to 100 % as 040 to 3AC (for YGBR) or 040 to 3C0 (for CbCr). This setting cannot be chosen when COLOR MATRIX is set to COMPOSITE.
1023,255:	The scale shows 0 to 100 % as 64 to 940 (for YGBR) or 16 to 235 (for CbCr). This setting cannot be chosen when COLOR MATRIX is set to COMPOSITE.

SCALE UNIT = V
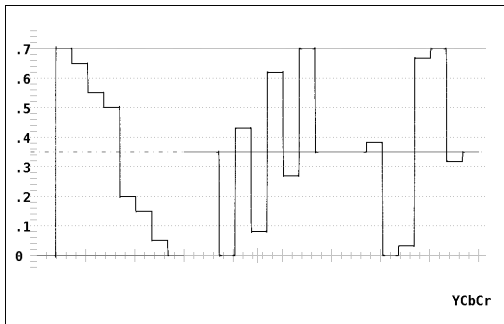
SCALE UNIT = %
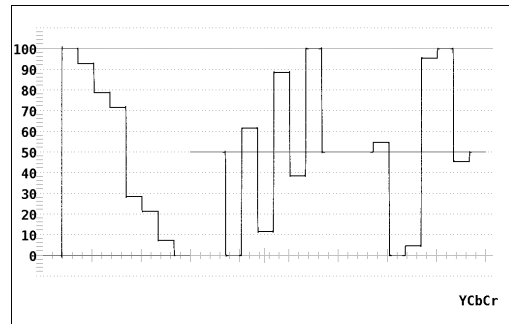
SCALE UNIT = 150%
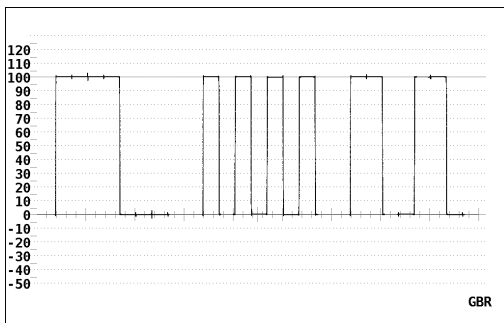
SCALE UNIT = 1023

SCALE UNIT = 3FF

SCALE UNIT = 1023,255
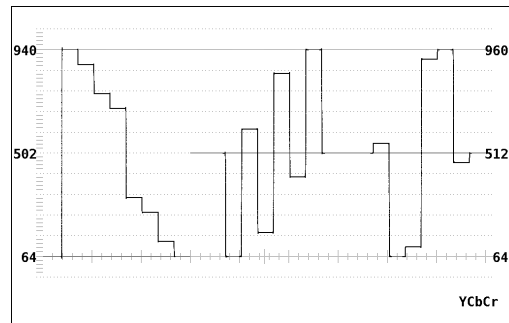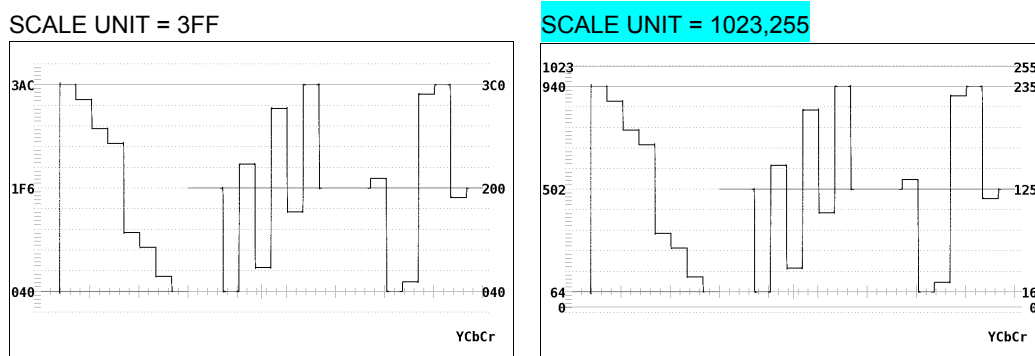
Figure 6-7   Selecting the scale unit

6.4.5   Displaying a Scale for 75 % Intensity Color Bars

To display a scale that matches the peak levels of the color difference signals for 75 % intensity color bars, follow the procedure shown below.
This menu item appears when COLOR MATRIX is set to YCbCr.

Reference: COLOR MATRIX → Section 6.9.1, "Selecting the Color Matrix"

• **Procedure**

WFM → F•1 INTEN / SCALE → F•5 75%COLOR SCALE

• **Settings**

ON: A scale for 75 % intensity color bars is displayed.
OFF: A scale for 75 % intensity color bars is not displayed. This is the default setting.

75%COLOR SCALE = ON

75%COLOR SCALE = OFF
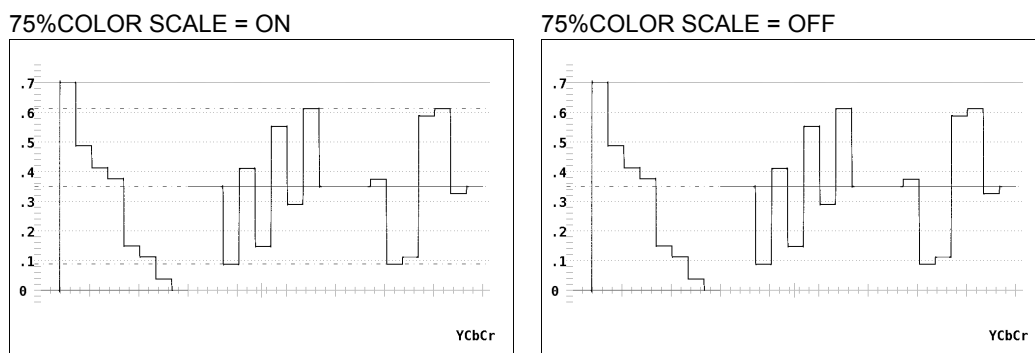
Figure 6-8   Displaying a scale for 75 % intensity color bars

6.4.6   Selecting the Scale Color

To select the scale color, follow the procedure shown below.

• **Procedure**

WFM → F•1 INTEN / SCALE → F•6 SCALE COLOR

• **Settings**

WHITE: The scale is displayed in white.
YELLOW: The scale is displayed in yellow. This is the default setting.
CYAN: The scale is displayed in cyan.
GREEN: The scale is displayed in green.
MAGENTA: The scale is displayed in magenta.
RED: The scale is displayed in red.
BLUE: The scale is displayed in blue.

6.5   Gain and Sweep Settings

To set the gain and sweep, press F•2 GAIN/SWEEP in the video signal waveform menu.
You can configure the video signal waveform magnification.
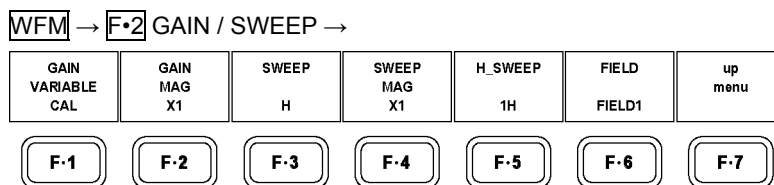
WFM → F•2 GAIN / SWEEP →

Figure 6-9   GAIN / SWEEP menu

6.5.1   Selecting the Fixed Gain

To select the fixed video signal waveform gain, follow the procedure shown below.

• **Procedure**

WFM → F•2 GAIN / SWEEP → F•2 GAIN MAG

• **Settings**

X1:   Waveforms are displayed at ×1 magnification. This is the default setting.
X5:   Waveforms are displayed at ×5 magnification.

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6.5.2　Setting the Variable Gain

To set the video signal waveform gain, follow the procedure shown below.

• Procedure

WFM → F•2 GAIN / SWEEP → F•1 GAIN VARIABLE

• Settings

CAL:　　　　The gain is fixed. This is the default setting.

VARIABLE:　You can adjust the waveform gain by turning the function dial (F•D). Press the function dial (F•D) to return the setting to its default value (1.000 or 5.000). The adjusted gain value (the combination of F•1 GAIN VARIABLE and F•2 GAIN MAG) appears in the upper right of the screen.
0.200 to 2.000 (when GAIN MAG = ×1)
1.000 to 10.000 (when GAIN MAG = ×5)

GAIN MAG = X5 / GAIN VARIABLE = CAL　　　　GAIN MAG = X1 / GAIN VARIABLE = VARIABLE
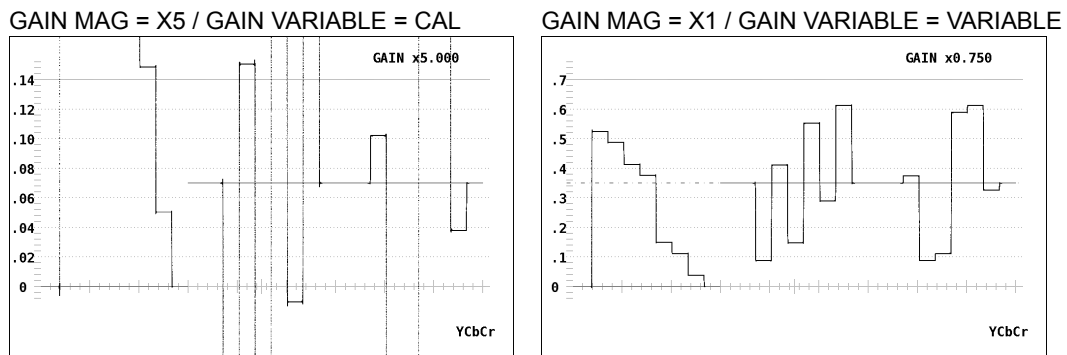
Figure 6-10　Gain settings

6.5.3　Selecting the Sweep Method

To select the video signal waveform sweep method, follow the procedure shown below.

• Procedure

WFM → F•2 GAIN / SWEEP → F•3 SWEEP

• Settings

H:　　　　　Lines are displayed. This is the default setting.

V:　　　　　Fields or frames are displayed. Because the sampled data is downsampled, aliasing distortion occurs.

SWEEP = H　　　　SWEEP = V
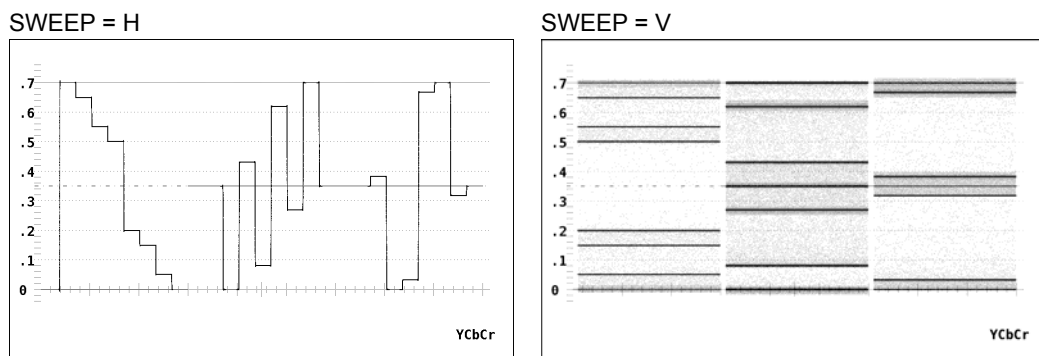
Figure 6-11　Selecting the sweep method

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6.5.4   Selecting the Line Display Format

To select the line display sweep time, follow the procedure shown below.
When the OVLAY key is not lit (Parade display), this setting is fixed at 1H and does not appear on the menu.

• **Procedure**

WFM → F•2 GAIN / SWEEP → F•5 H_SWEEP

• **Settings**

1H: The sweep time is set to that of one line. This is the default setting.
2H: The sweep time is set to that of two lines.

H_SWEEP = 1H   H_SWEEP = 2H
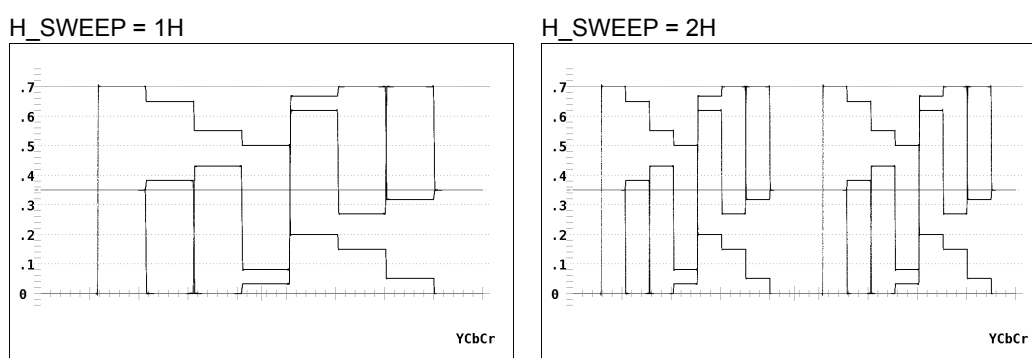
Figure 6-12   Selecting the line display format

6.5.5   Selecting the Field Display Format

To select the field display sweep time, follow the procedure shown below.
When the OVLAY key is not lit (when the parade display is in use) or when the input signal is progressive, this setting is fixed at 1V and does not appear on the menu.

• **Procedure**

WFM → F•2 GAIN / SWEEP → F•5 V_SWEEP

• **Settings**

1V: The sweep time is set to that of one field. This is the default setting.
2V: The sweep time is set to that of one frame.

V_SWEEP = 1V   V_SWEEP = 2V
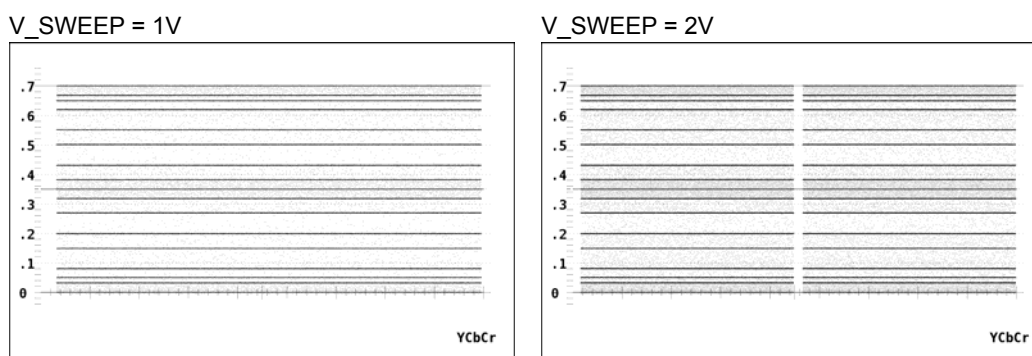
Figure 6-13   Selecting the field display format

In addition, when F•5 V_SWEEP is set to 1V, follow the procedure shown below to select which field is displayed.

• Procedure

WFM → F•2 GAIN / SWEEP → F•6 FIELD

• Settings

FIELD1:   Field 1 is displayed. This is the default setting.
FIELD2:   Field 2 is displayed.

6.5.6   Selecting the Horizontal Magnification

To select the horizontal magnification, follow the procedure shown below. The magnifications that you can select vary as shown below depending on how you configure settings such as COLOR MATRIX.

Table 6-2   Horizontal magnifications

SWEEP	COLOR MATRIX	OVLAY Key	H_SWEEP	X1	X10	X20	X40	ACTIVE	BLANK
H	YCbCr	OFF	-	Yes	Yes	Yes	No	Yes	Yes
	GBR	ON	1H	Yes	Yes	Yes	No	Yes	Yes
	RGB		2H	Yes	Yes	Yes	No	No	Yes
	COMPOSITE	OFF	-	Yes	No	No	No	Yes	No
		ON	1H	Yes	No	No	No	Yes	No
			2H	Yes	No	No	No	No	No
V	-	-	-	Yes	No	Yes	Yes	No	No

• Procedure

WFM → F•2 GAIN / SWEEP → F•4 SWEEP MAG

• Settings

X1:   The video signal waveforms are displayed so that they fit in the screen. This is the default setting.
X10:   The waveforms are magnified from the center of the display to 10 times X1.
X20:   The waveforms are magnified from the center of the display to 20 times X1.
X40:   The waveforms are magnified from the center of the display to 40 times X1.
ACTIVE: Everything but the video signal waveform blanking interval is magnified.
BLANK: The video signal waveform blanking interval is magnified.

SWEEP MAG = X1   SWEEP MAG = X10

SWEEP MAG = ACTIVE

SWEEP MAG = BLANK
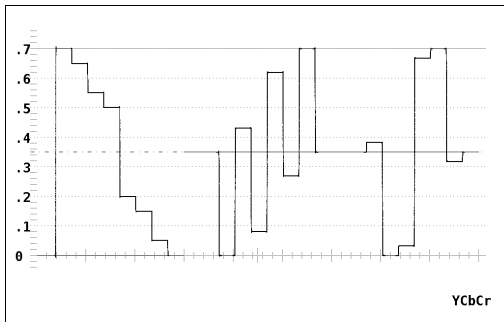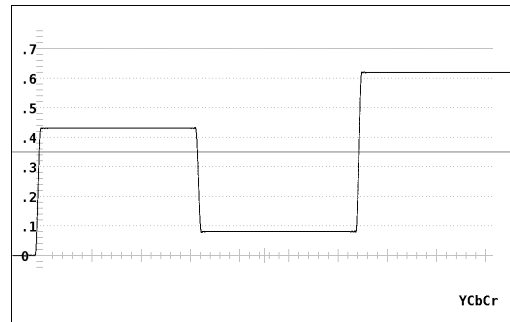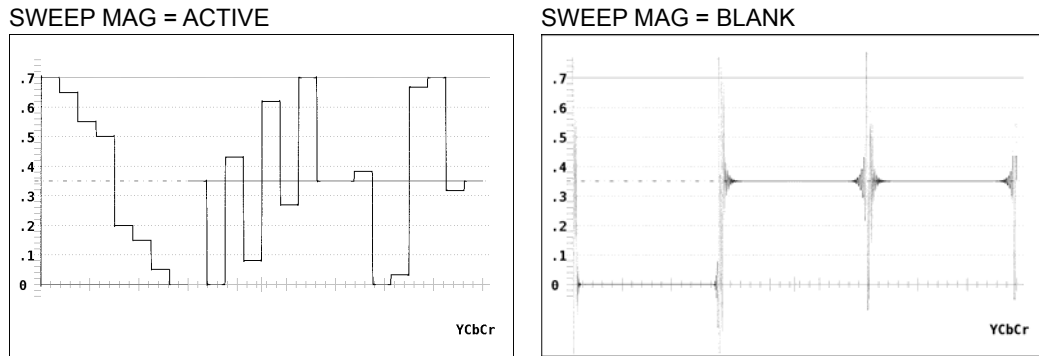
Figure 6-14   Horizontal magnifications

6.6   Selecting Lines

To configure the line select settings, press F•3 LINE SELECT in the video signal waveform menu. You can display the waveforms of the selected line.
F•3 LINE SELECT does not appear when SWEEP is set to V.

Reference: SWEEP → Section 6.5.3, "Selecting the Sweep Method"

WFM → F•3 LINE SELECT →

LINE SELECT OFF	FIELD FRAME					up menu
F·1	F·2	F·3	F·4	F·5	F·6	F·7
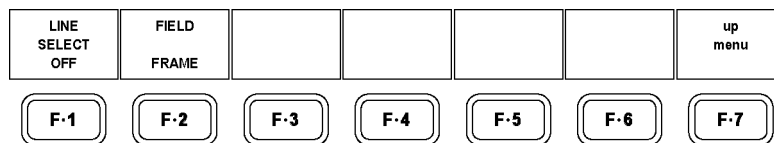
Figure 6-15   LINE SELECT menu

6.6.1   Turning Line Selection On and Off

To display the waveforms of the selected line, follow the procedure shown below.

• Procedure

WFM → F•3 LINE SELECT → F•1 LINE SELECT

• Settings

ON: The waveforms of the selected line are displayed. You can select a line with the function dial (F•D). The number of the selected line appears in the bottom left of the display.

OFF: The waveforms of all lines are displayed on top of each other. This is the default setting.

LINE SELECT = ON
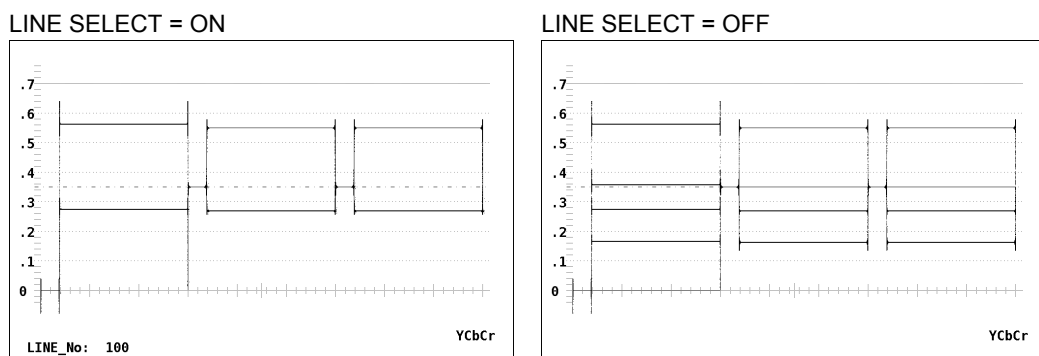
LINE SELECT = OFF

Figure 6-16   Turning line selection on and off

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6.6.2   Setting the Line Selection Range

To set the line selection range, follow the procedure shown below.
This menu item does not appear when the input signal is progressive.

• **Procedure**

$\boxed{\text{WFM}}$ → $\boxed{\text{F•3}}$ LINE SELECT → $\boxed{\text{F•2}}$ FIELD

• **Settings**

FIELD1:   A line from field 1 can be selected. (Example: 1 to 563)
FIELD2:   A line from field 2 can be selected. (Example: 564 to 1125)
FRAME: All lines can be selected. This is the default setting. (Example: 1 to 1125)

6.7   Configuring Cursor Settings

To configure cursor settings, press $\boxed{\text{F•4}}$ CURSOR in the video signal waveform menu.
You can display cursors and use them to make measurements.

$\boxed{\text{WFM}}$ → $\boxed{\text{F•4}}$ CURSOR →

CURSOR	XY SEL	Y UNIT	FD VAR	REF SET		up menu
OFF	Y	mV	REF			
F·1	F·2	F·3	F·4	F·5	F·6	F·7
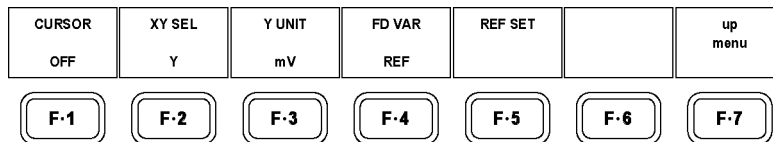
Figure 6-17   CURSOR menu

6.7.1   Displaying Cursors

To display cursors, follow the procedure shown below.
The REF cursor is displayed in blue, and the DELTA cursor is displayed in green. The value of DELTA - REF appears as a measured value in the bottom right of the screen. (When Y UNIT is set to DEC or HEX, absolute values are displayed.)

• **Procedure**

$\boxed{\text{WFM}}$ → $\boxed{\text{F•4}}$ CURSOR → $\boxed{\text{F•1}}$ CURSOR

• **Settings**

ON: Cursors are displayed.
OFF: Cursors are not displayed. This is the default setting.

6.7.2 Selecting X or Y Cursors

To select X (time measurement) or Y (amplitude measurement) cursors, follow the procedure shown below. When COLOR MATRIX is set to COMPOSITE, the cursor type is fixed at Y regardless of the setting you make here.

Reference: COLOR MATRIX → Section 6.9.1, "Selecting the Color Matrix"

• Procedure

$\boxed{\text{WFM}}$ → $\boxed{\text{F•4}}$ CURSOR → $\boxed{\text{F•2}}$ XY SEL

• Settings

X: X cursors are displayed for measuring time.

Y: Y cursors are displayed for measuring amplitude. This is the default setting.
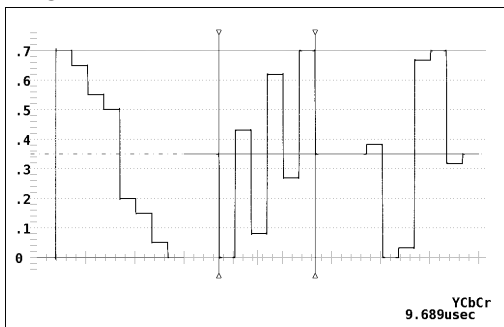
XY SEL = X   XY SEL = Y
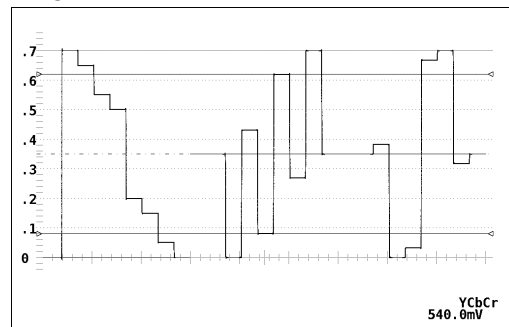
Figure 6-18   Selecting X or Y cursors

6.7.3 Moving Cursors

To move a cursor, follow the procedure shown below to select a cursor. Then, move the cursor by turning the function dial (F•D). Triangles appear on both sides of the selected cursor.

You can also select a cursor by pressing the function dial (F•D). Each time you press the function dial (F•D), the selected cursor switches from REF, to DELTA, to TRACK, and so on.

• Procedure

$\boxed{\text{WFM}}$ → $\boxed{\text{F•4}}$ CURSOR → $\boxed{\text{F•4}}$ FD VAR

• Settings

REF: The REF cursor (blue) is selected. This is the default setting.

DELTA: The DELTA cursor (green) is selected.

TRACK: The REF cursor and DELTA cursor are both selected.

6.7.4   Selecting the Unit of Measurement

To select the units used in cursor measurement, follow the procedure shown below.

• Procedure

WFM → F•4 CURSOR →   F•3 Y UNIT (when XY SEL is set to Y)

F•3 X UNIT (when XY SEL is set to X)

• Settings for Y UNIT

mV: Measurements are made in units of voltage. This setting cannot be chosen when COLOR MATRIX is set to COMPOSITE. This is the default setting.

%:   Measurements are made as percentages. When COLOR MATRIX is set to COMPOSITE (NTSC), 714 mV is 100 %. Otherwise, 700 mV is 100 %.

R%:   Measurements are made as percentages, with the amplitude where REF SET is pressed set to 100 %.
This setting cannot be chosen when COLOR MATRIX is set to COMPOSITE.

DEC: The scale shows 0 to 100 % in decimal as 64 to 940.
This setting cannot be chosen when COLOR MATRIX is set to COMPOSITE.

HEX: The scale shows 0 to 100 % in hexadecimal as 040 to 3AC.
This setting cannot be chosen when COLOR MATRIX is set to COMPOSITE.

• Settings for X UNIT

sec: Measurements are made in units of time. This is the default setting.

Hz: Measurements are made in units of frequency, with the length of one period set to the distance between the two cursors.

6.7.5   Setting the Reference Amplitude

When Y UNIT is set to R%, follow the procedure shown below to set the amplitude at the location of your choice to 100 %.
This menu item is available when Y UNIT is set to R%.

• Procedure

WFM → F•4 CURSOR → F•5 REF SET

6.8 Configuring Display Settings

To configure display settings, press $\boxed{\text{F•5}}$ ARRANGE in the video signal waveform menu.
You can configure filter, blanking display, waveform persistence, timing display, and 4Y parade display settings.

$\boxed{\text{WFM}} \to \boxed{\text{F•5}}$ ARRANGE $\to$

FILTER	BLANKING	PERSISTENCE	SPECIAL FORM			up menu
FLAT	REMOVE		NORMAL			
F·1	F·2	F·3	F·4	F·5	F·6	F·7
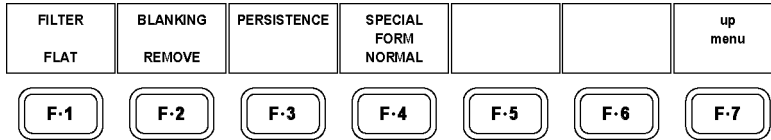
Figure 6-19   ARRANGE menu

6.8.1 Selecting the Filter

To select the filter to apply to video signal waveforms, follow the procedure shown below.
The filters that you can select vary depending on how COLOR MATRIX is set.

Reference: COLOR MATRIX $\to$ Section 6.9.1, "Selecting the Color Matrix"

• Procedure

$\boxed{\text{WFM}} \to \boxed{\text{F•5}}$ ARRANGE $\to \boxed{\text{F•1}}$ FILTER

• Settings When COLOR MATRIX Is Set to YCbCr, GBR, or RGB

FLAT: A filter with a flat frequency response over the entire bandwidth of the input signal is used. This is the default setting.

LOW PASS: A low-pass filter with the following characteristics is used.
Attenuation of 20 dB or more at 40 MHz (When the input signal is HD-SDI and the video format is 1080p/60, 59.94, or 50.)
Attenuation of 20 dB or more at 20 MHz (When the input signal is HD-SDI and the video format is not 1080p/60, 59.94, or 50.)
Attenuation of 20 dB or more at 3.8 MHz (When the input signal is SD-SDI.)

FILTER = FLAT
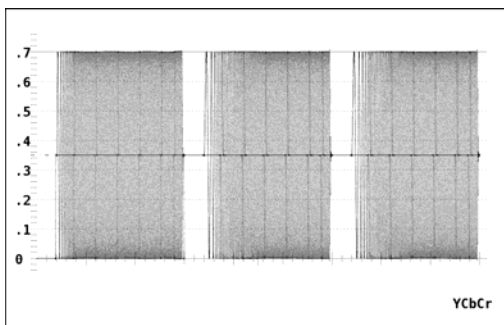
FILTER = LOW PASS
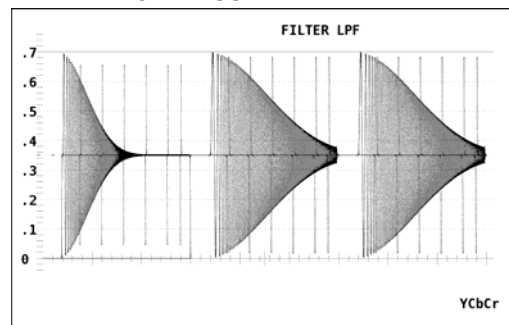
Figure 6-20   Selecting the filter (component)

• **Settings When COLOR MATRIX Is Set to COMPOSITE**

FLAT: Only the pseudo-composite signal is displayed. This is the default setting.

FLAT+LUM: The pseudo-composite signal and the luminance signal are displayed side by side. A filter with an attenuation of 20 dB or more at 40 MHz is applied to the luminance signal.

LUM+CHROMA: The luminance and chrominance signals are displayed side by side. A filter with an attenuation of 20 dB or more at 40 MHz is applied to the luminance signal.

FILTER = FLAT

FILTER = FLAT+LUM

FILTER = LUM+CHROMA
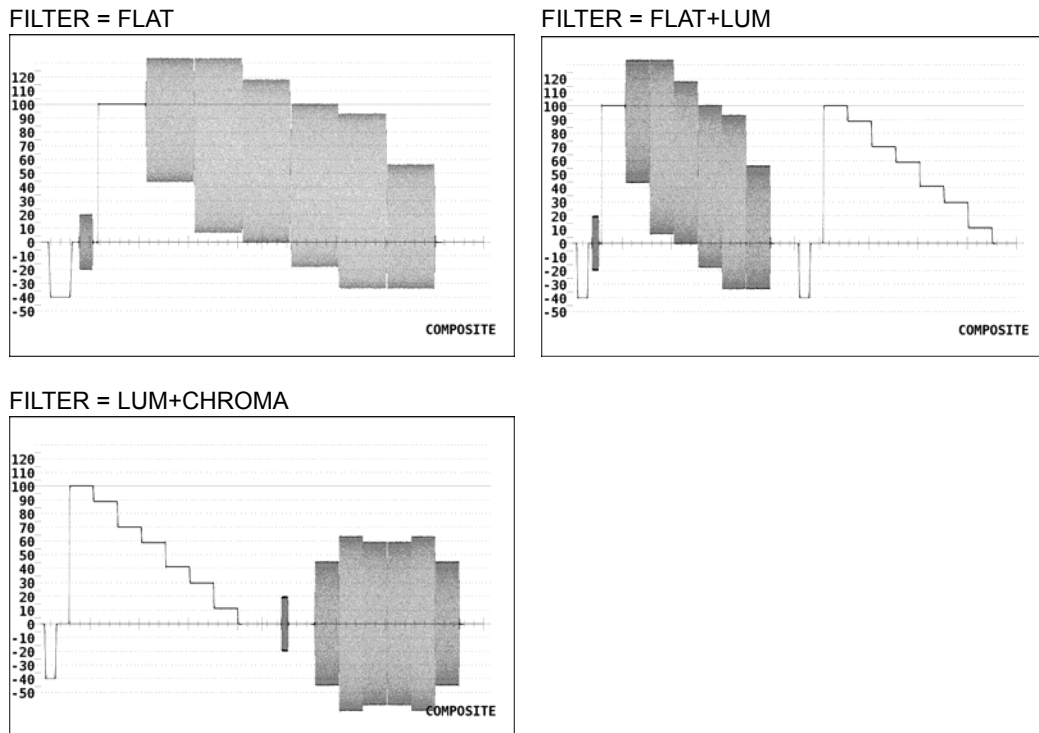
Figure 6-21   Selecting the filter (composite)

6.8.2   Displaying the Blanking Interval

To set how the waveforms in the blanking interval are displayed, follow the procedure shown below.

• **Procedure**

WFM → F•5 ARRANGE → F•2 BLANKING

• **Settings**

REMOVE: Only the active interval is displayed. This is the default setting.

H VIEW: The active interval and the horizontal blanking interval are displayed.
This setting cannot be chosen when COLOR MATRIX is set to COMPOSITE.

V VIEW: The active interval and the vertical blanking interval are displayed.

ALL VIEW: The entire input signal is displayed.
This setting cannot be chosen when COLOR MATRIX is set to COMPOSITE.

BLANKING = REMOVE   BLANKING = ALL VIEW
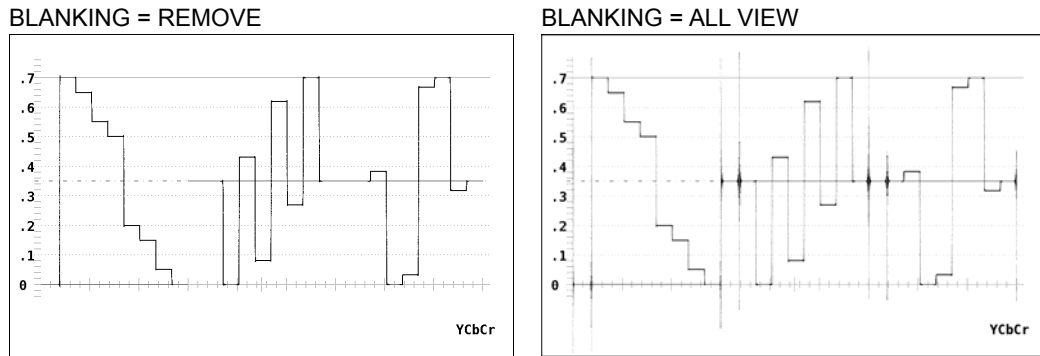
Figure 6-22   Blanking interval displays

6.8.3   Setting Waveform Persistence

To set waveform persistence, press F•3 PERSISTENCE in the video signal waveform menu. By making waveforms persistent, you can display past waveforms and present waveforms together.

WFM → F•5 ARRANGE → F•3 PERSISTENCE →
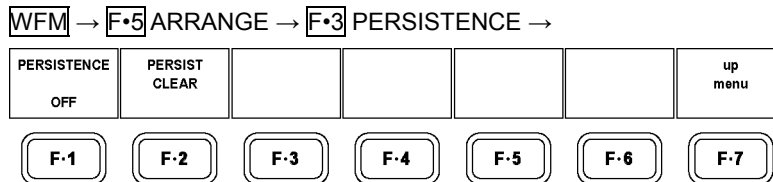
Figure 6-23   PERSISTENCE menu

To set waveform persistence, follow the procedure shown below.

• Procedure

WFM → F•5 ARRANGE → F•3 PERSISTENCE → F•1 PERSISTENCE

• Settings

ON: Waveform persistence is enabled.
OFF: Waveform persistence is disabled. This is the default setting.
INFINIT: Waveforms are displayed on top of each other.

6.8.4   Clearing Persistent Waveforms

When F•1 PERSISTENCE is set to INFINIT, you can clear persistent waveforms by following the procedure shown below.

• Procedure

WFM → F•5 ARRANGE → F•3 PERSISTENCE → F•2 PERSIST CLEAR

6.8.5   Timing and 4Y Parade Displays

To show the timing or 4Y parade display, follow the procedure shown below. When these displays are in use, the OVLAY key and the CH1 to CH3 keys are disabled.

• **Procedure**

WFM → F•5 ARRANGE → F•4 SPECIAL FORM

• **Settings**

NORMAL: Shows the video signal waveform display. This is the default setting.
TIMING: Shows the timing display.
4Y PARADE: Shows the 4Y parade display. This setting cannot be chosen when the multi screen display is in use.

SPECIAL FORM = TIMING   SPECIAL FORM = 4Y PARADE
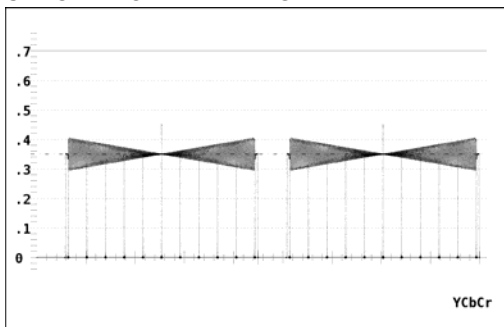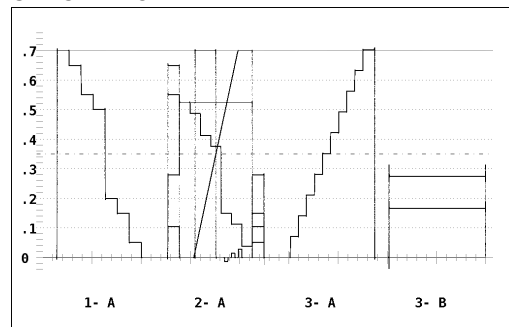
Figure 6-24   Timing and 4Y parade displays

• **Timing Display Explanation**

The time and amplitude differences between the Y(G) signal and the C_B(B) and C_R(R) signals can be measured by using a bowtie signal(*1) as the signal source. The two timing displays are shown side by side. The left display shows the differences between the Y(G) signal and the C_B(B) signal. The right display shows the differences between the Y(G) signal and the C_R(R) signal.

To measure the time difference, examine the space between the pinched area of the waveform, referred to as the null, and the long reference marker in the center of the waveform. If you use an LT 443D signal as the signal source, the marker spacing indicates a time difference of 1 ns. If the null is to the left of the reference marker, it indicates that the C_B(B) or C_R(R) signal is ahead of the Y(G) signal. If null is to the right of the reference marker, it indicates that these signals are behind the Y(G) signal.

To measure the amplitude difference, examine the width of the pinched area of the waveform. When there is an amplitude difference compared to the Y(G) signal, the pinched area is wide.

*1   Permission to use patented technology granted by Tektronix, Inc.

• **4Y Parade Display Explanation**

The luminance signals from areas 1 to 4 are displayed in order from left to right. The input units and channels are displayed at the bottom of the screen.

Note the following points about the 4Y parade display.
- The four input signals must be of the same format, and they must be synchronized.
- Any areas (from area 1 to 4) whose MODE settings are not set to WFM will not be displayed.
- Frame-captured waveforms are not displayed.
- You cannot switch the input channels (A and B) and the display areas (1 to 4).

6.9 Configuring the Color System Settings

To configure the color system settings, press $\boxed{F•6}$ COLOR SYSTEM in the video signal waveform menu.
You can set the color matrix and configure other settings that relate to the color system.

$\boxed{WFM} \rightarrow \boxed{F•6}$ COLOR SYSTEM $\rightarrow$

COLOR MATRIX YCbCr	YGBR ON		COMPOSITE FORMAT AUTO	SETUP 0%		up menu
F·1	F·2	F·3	F·4	F·5	F·6	F·7
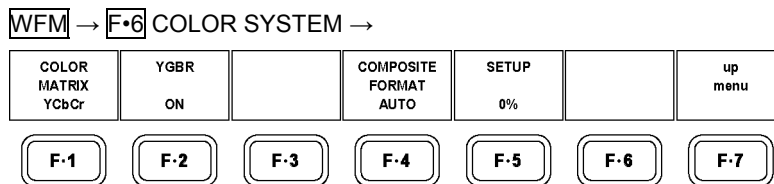
Figure 6-25   COLOR SYSTEM menu

6.9.1 Selecting the Color Matrix

The LV 58SER06 can use matrix calculation to display a YC_BC_R signal as a GBR, RGB, or pseudo-composite signal. The signal components are assigned to CH1 to CH3, and they can be turned on and off. (This does not apply to pseudo-composite signals.)
Follow the procedure shown below to select a waveform display format. The selected display format is indicated in the lower right of the display.

• Procedure

$\boxed{WFM} \rightarrow \boxed{F•6}$ COLOR SYSTEM $\rightarrow \boxed{F•1}$ COLOR MATRIX

• Settings

YCbCr: The YC_BC_R signal is displayed without changes. This setting cannot be chosen when the input signal is GBR (4:4:4). This is the default setting.

GBR: The YC_BC_R signal is converted into a GBR signal and displayed.

RGB: The YC_BC_R signal is converted into an RGB signal and displayed.

COMPOSITE: The YC_BC_R signal is converted into a pseudo NTSC or PAL composite signal and displayed.
- Color burst frequencies do not match those of PAL and NTSC.
- Color burst and sync signal widths and locations are different from those of PAL and NTSC.
- The signal bandwidth is that of the original signal.

COLOR MATRIX = YCbCr

COLOR MATRIX = GBR

COLOR MATRIX = RGB

COLOR MATRIX = COMPOSITE
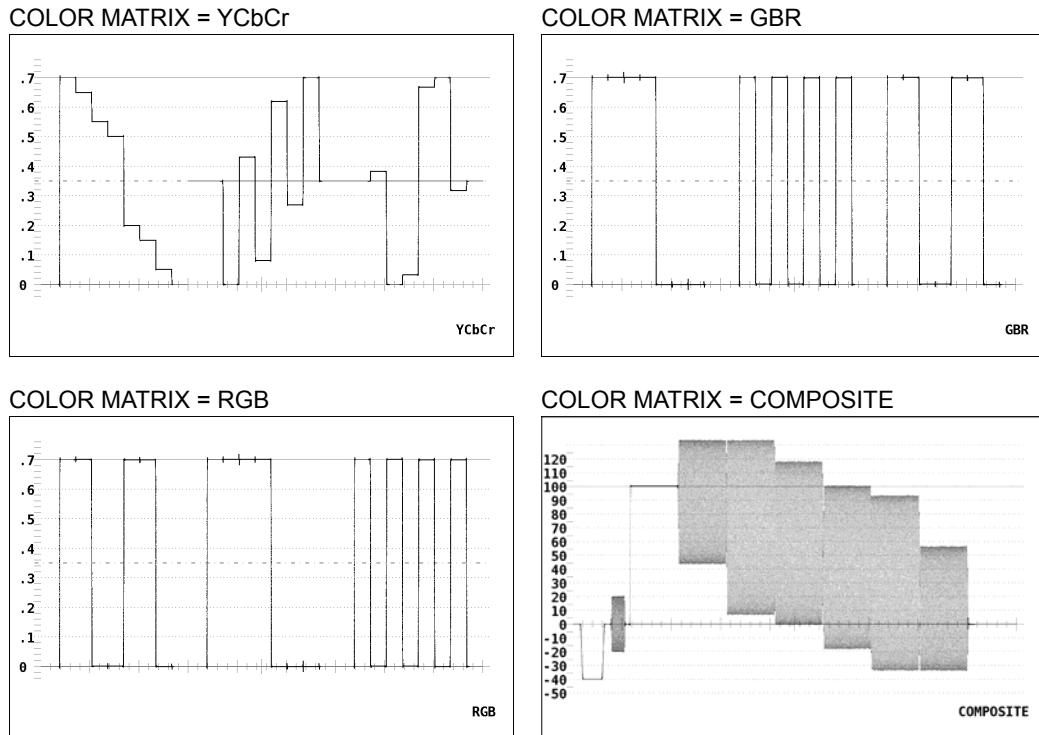
Figure 6-26   Selecting the color matrix

6.9.2   Enabling YGBR (or YRGB) Display

To simultaneously display a luminance signal (Y) when COLOR MATRIX is set to GBR or RGB, follow the procedure shown below. When YGBR or YRGB is enabled, the CH1 to CH3 keys are disabled.

These settings are available when F•1 COLOR MATRIX is set to GBR or RGB.

• Procedure

WFM → F•6 COLOR SYSTEM   → F•2 YGBR
                          → F•2 YRGB

• Settings

ON: YGBR or YRGB display waveforms are displayed.
OFF: GBR or RGB waveforms are displayed. This is the default setting.

YGBR = ON

YRGB = ON
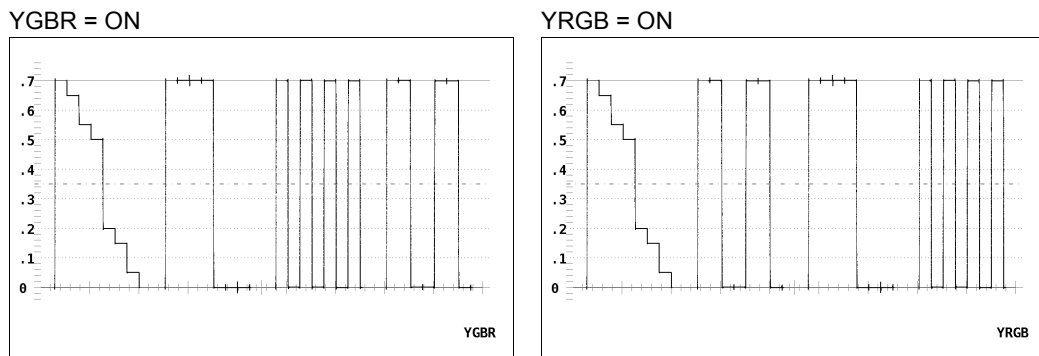
Figure 6-27   YGBR and YRGB displays

6.9.3   Setting the Composite Display Format

To select the format for the pseudo-composite display, follow the procedure shown below.

• **Procedure**

WFM → F•6 COLOR SYSTEM → F•4 COMPOSITE FORMAT

• **Settings**

AUTO: When the input signal frame rate is 50 Hz, the format is PAL. Otherwise, the format is NTSC. This is the default setting.

NTSC: The format is NTSC. The scale shows percentages.

PAL: The format is PAL. The scale shows voltages.
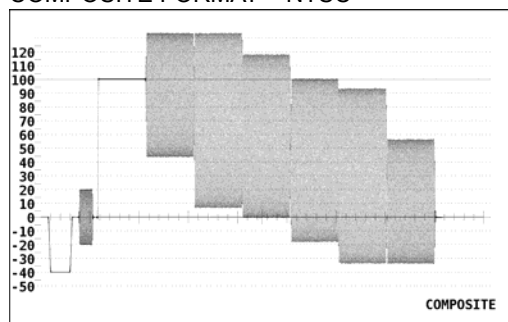
COMPOSITE FORMAT = NTSC   COMPOSITE FORMAT = PAL
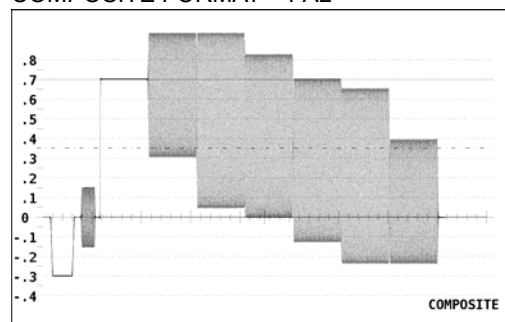
Figure 6-28   Setting the composite display format

6.9.4   Setting the Setup Level

To select the setup level for the pseudo-composite display, follow the procedure shown below. This menu item does not appear when the composite display format is PAL.

• **Procedure**

WFM → F•6 COLOR SYSTEM → F•5 SETUP

• **Settings**

0%:   No setup level is added. This is the default setting.

7.5%:   A setup level of 7.5 % is added.
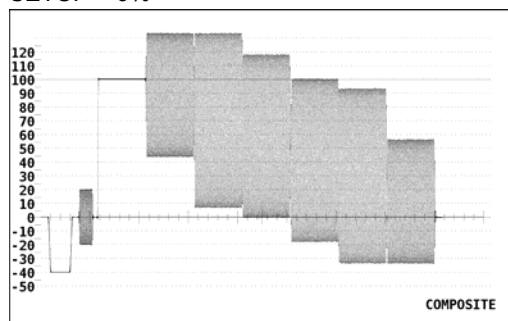
SETUP = 0%   SETUP = 7.5%
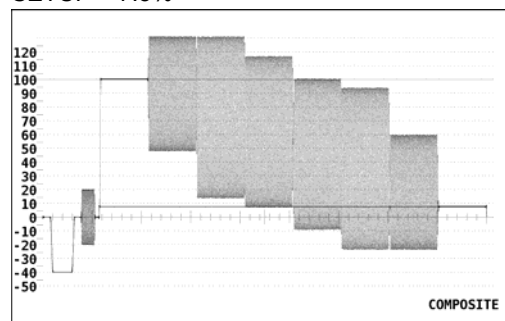
Figure 6-29   Setting the setup level

7. VECTOR DISPLAY

To display vectors, press the VECT key on the front panel.
Component signal vector displays are X-Y displays based on C_B (horizontal) and C_R (vertical).
The vector display scale has the following qualities.
• Border: ±3 % of the full scale value of 0.7 V
• Circle: +20 % of green
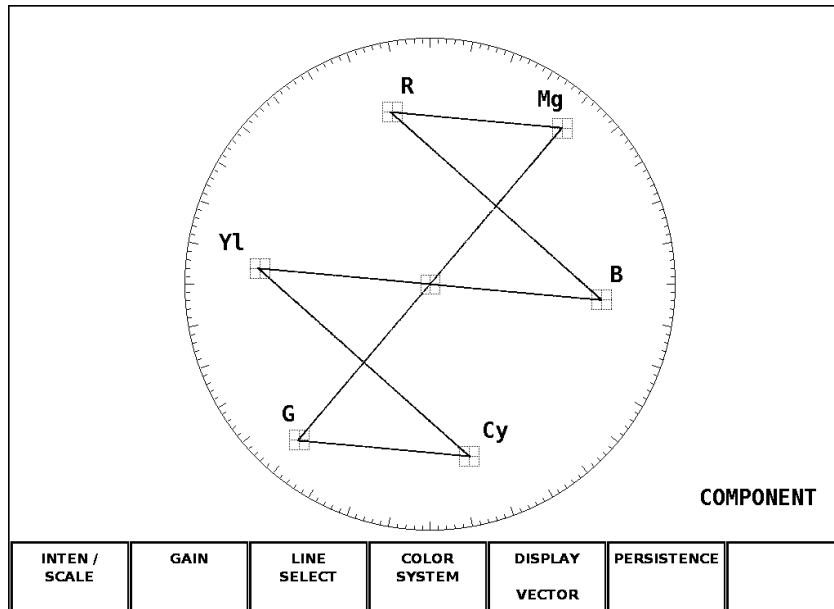
Figure 7-1   Vector display

7.1   Configuring the Intensity and Scale Settings

To configure the intensity and scale settings, press F•1 INTEN / SCALE in the vector menu.
You can set the intensities and colors of the vector and scale.
F•1 INTEN / SCALE does not appear when DISPLAY is set to an option other than VECTOR.
Reference: DISPLAY → Section 7.6, "Switching the Display Mode"

VECT → F•1 INTEN / SCALE →
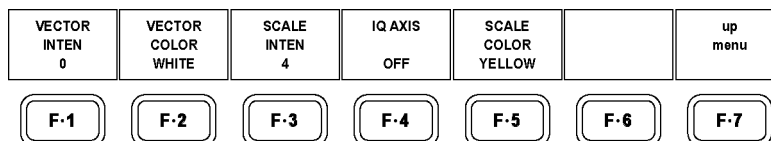
Figure 7-2   INTEN/SCALE menu

7.1.1 Adjusting the Vector Intensity

To adjust the intensity of vectors and CIE chromaticity diagram waveforms, follow the procedure shown below.
Press the function dial (F•D) to return the setting to its default value (0).

• Procedure

$\boxed{\text{VECT}} \rightarrow \boxed{\text{F•1}}$ INTEN / SCALE $\rightarrow \boxed{\text{F•1}}$ VECTOR INTEN

• Settings

Range: -128 to 127 (default setting: 0)

7.1.2 Selecting the Vector Color

To select the color of vectors and CIE chromaticity diagram waveforms, follow the procedure shown below.

• Procedure

$\boxed{\text{VECT}} \rightarrow \boxed{\text{F•1}}$ INTEN / SCALE $\rightarrow \boxed{\text{F•2}}$ VECTOR COLOR

• Settings

WHITE: Vectors are displayed in white. This is the default setting.
GREEN: Vectors are displayed in green.

7.1.3 Adjusting the Scale Intensity

To adjust the scale intensity, follow the procedure shown below.
Press the function dial (F•D) to return the setting to its default value (4).

• Procedure

$\boxed{\text{VECT}} \rightarrow \boxed{\text{F•1}}$ INTEN / SCALE $\rightarrow \boxed{\text{F•3}}$ SCALE INTEN

• Settings

Range: -8 to 7 (default setting: 4)

7.1.4 Displaying the I and Q Axes

To display the I and Q axes, follow the procedure shown below.
When the full scale value of 0.7 V is 100 %, the I and Q axes are displayed at the following values.

Table 7-1   Displaying the I and Q axes

	I-axis	Q-axis
G	44.559 %	37.056 %
B	27.865 %	84.085 %
R	69.120 %	62.417 %

• Procedure

$\boxed{\text{VECT}} \rightarrow \boxed{\text{F•1}}$ INTEN / SCALE $\rightarrow \boxed{\text{F•4}}$ IQ AXIS

• Settings

ON:	The I and Q axes are displayed.
OFF:	The I and Q axes are not displayed. This is the default setting.

IQ AXIS = OFF
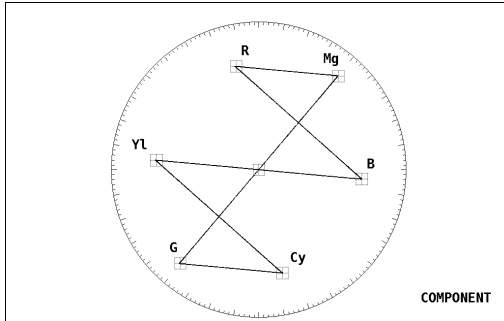
IQ AXIS = ON
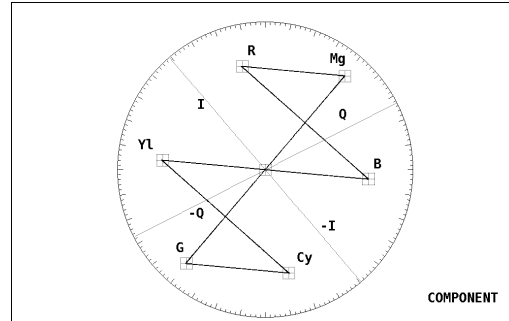
Figure 7-3   Displaying the I and Q axes

7.1.5   Selecting the Scale Color

To select the scale color, follow the procedure shown below.

• Procedure

VECT → F•1 INTEN / SCALE → F•5 SCALE COLOR

• Settings

WHITE:	The scale is displayed in white.
YELLOW:	The scale is displayed in yellow. This is the default setting.
CYAN:	The scale is displayed in cyan.
GREEN:	The scale is displayed in green.
MAGENTA:	The scale is displayed in magenta.
RED:	The scale is displayed in red.
BLUE:	The scale is displayed in blue.

7.2   Setting the Gain

To set the gain, press F•2 GAIN in the vector menu.
F•2 GAIN does not appear when DISPLAY is set to an option other than VECTOR.

Reference: DISPLAY → Section 7.6, "Switching the Display Mode"

VECT → F•2 GAIN →
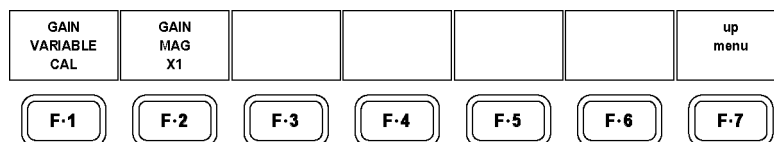
Figure 7-4   GAIN menu

7.2.1 Selecting the Fixed Gain

To select the fixed vector gain, follow the procedure shown below.

• **Procedure**

VECT → F•2 GAIN→ F•2 GAIN MAG

• **Settings**

X1: Vectors are displayed at ×1 magnification. This is the default setting.
X5: Vectors are displayed at ×5 magnification.
IQ-MAG: Vectors are displayed at ×3.140 magnification.
(The gain is set so that the IQ signal fits within the perimeter of the vector scale when NTSC SMPTE color bars are up-converted to HDTV.)

7.2.2 Setting the Variable Gain

To set the variable vector gain, follow the procedure shown below.

• **Procedure**

VECT → F•2 GAIN→ F•1 GAIN VARIABLE

• **Settings**

CAL: The gain is fixed. This is the default setting.
VARIABLE: You can adjust the vector gain by turning the function dial (F•D). Press the function dial (F•D) to return the setting to its default value (1.000, 3.140, or 5.000).
The adjusted gain value (the combination of F•1 GAIN VARIABLE and F•2 GAIN MAG) appears in the upper right of the screen.
0.200 to 2.000 (when GAIN MAG is set to X1)
1.000 to 10.000 (when GAIN MAG is set to X5)
0.628 to 6.280 (when GAIN MAG is set to IQ-MAG)

GAIN MAG = X1
GAIN VARIABLE = VARIABLE
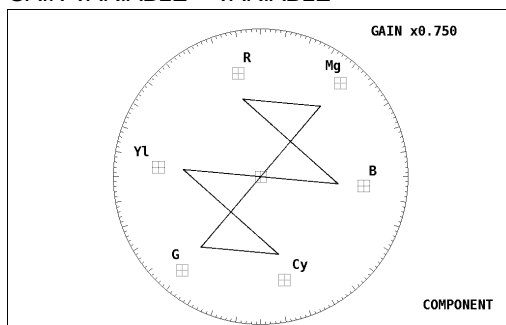
GAIN MAG = IQ-MAG
GAIN VARIABLE = CAL
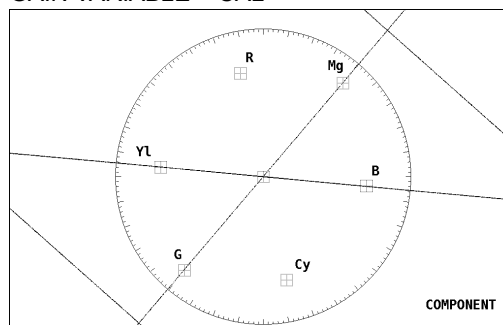
Figure 7-5 Gain Settings

7.3 Selecting Lines

To configure the line select settings, press F•3 LINE SELECT in the vector menu.
You can display the vectors of the selected line.
F•3 LINE SELECT does not appear when DISPLAY is set to HISTOGRAM.
Reference: DISPLAY → Section 7.6, "Switching the Display Mode"

VECT → F•3 LINE SELECT →

LINE SELECT OFF	FIELD FRAME					up menu
F·1	F·2	F·3	F·4	F·5	F·6	F·7
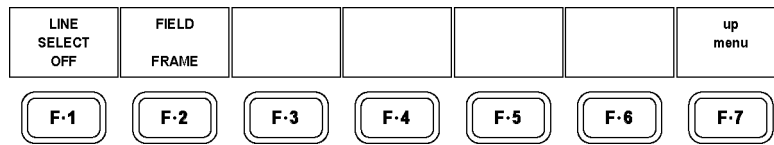
Figure 7-6   LINE SELECT menu

7.3.1 Turning Line Selection On and Off

To display the vectors of the selected line, follow the procedure shown below.

• **Procedure**

VECT → F•3 LINE SELECT → F•1 LINE SELECT

• **Settings**

ON: The vectors of the selected line are displayed. You can select a line with the
             function dial (F•D). The number of the selected line appears in the bottom left
             of the display.

OFF: The vectors of all lines are displayed on top of each other. This is the default
             setting.
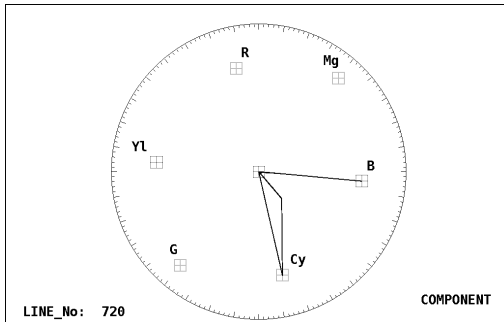
LINE SELECT = ON   LINE SELECT = OFF
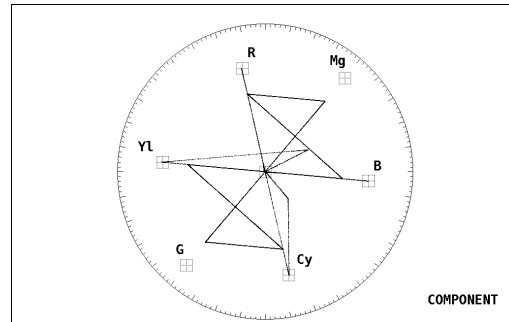
Figure 7-7   Turning line selection on and off

7.3.2 Setting the Line Selection Range

To set the line selection range, follow the procedure shown below.
This menu item does not appear when the input signal is progressive.

• **Procedure**

VECT → F•3 LINE SELECT → F•2 FIELD

• Settings

FIELD1:	A line from field 1 can be selected. (Example: 1 to 563)
FIELD2:	A line from field 2 can be selected. (Example: 564 to 1125)
FRAME:	All lines can be selected. This is the default setting. (Example: 1 to 1125)

7.4   Configuring the Color System Settings

To configure the color system settings, press F•4 COLOR SYSTEM in the vector menu.
You can set the color matrix and configure other settings that relate to the color system.
F•4 COLOR SYSTEM does not appear when DISPLAY is set to an option other than VECTOR.

Reference: DISPLAY → Section 7.6, "Switching the Display Mode"

VECT → F•4 COLOR SYSTEM →
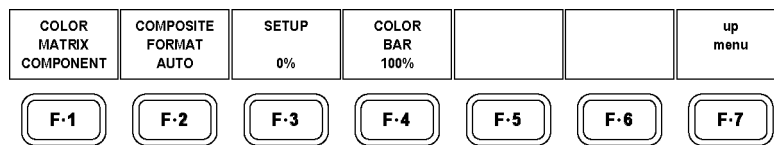
Figure 7-8   COLOR SYSTEM menu

7.4.1   Selecting the Color Matrix

To select the vector display format, follow the procedure shown below. The selected display format is indicated in the lower right of the display.

• Procedure

VECT → F•4 COLOR SYSTEM → F•1 COLOR MATRIX

• Settings

COMPONENT:	The component chrominance signal is displayed on the X and Y axes. This is the default setting.
COMPOSITE:	The component signal is converted into a pseudo-composite signal, and the composite signal's chrominance signal is displayed on the X and Y axes.

COLOR MATRIX = COMPONENT   COLOR MATRIX = COMPOSITE
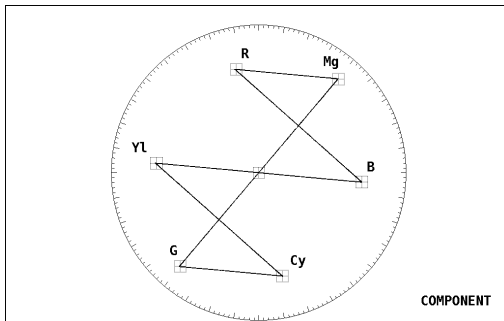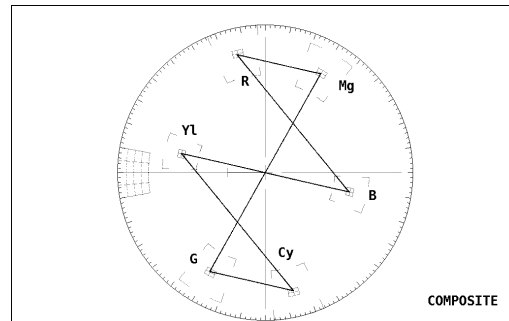
Figure 7-9   Selecting the color matrix

7.4.2 Selecting the Composite Display Format

To select the format for the pseudo-composite display, follow the procedure shown below.

• Procedure

VECT → F•4 COLOR SYSTEM → F•2 COMPOSITE FORMAT

• Settings

AUTO: When the input signal frame rate is 50 Hz, the format is PAL. Otherwise, the format is NTSC. This is the default setting.
NTSC: All input signals are converted into NTSC pseudo-composite signals.
PAL: All input signals are converted into PAL pseudo-composite signals.
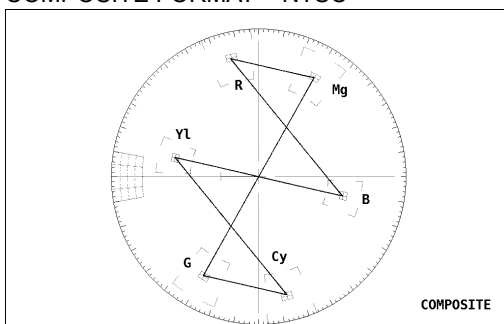
COMPOSITE FORMAT = NTSC   COMPOSITE FORMAT = PAL
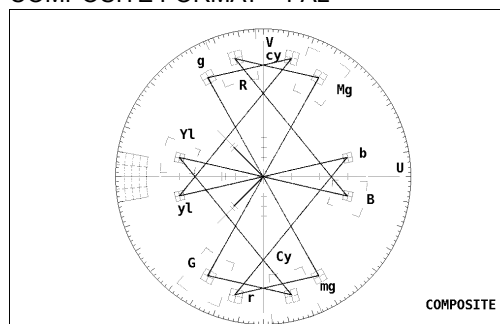
Figure 7-10   Selecting the Composite Display Format

7.4.3 Selecting the Setup Level

To select the setup level for the pseudo-composite display, follow the procedure shown below.
This menu item does not appear when F•1 COLOR MATRIX is set to COMPONENT or the composite display format is set to PAL.

• Procedure

VECT → F•4 COLOR SYSTEM → F•3 SETUP

• Settings

0%: No setup level is added. This is the default setting.
7.5%: A setup level of 7.5 % is added.

7.4.4　Displaying a Scale for 75 % Intensity Color Bars

To display a scale for 75 % intensity color bars, follow the procedure shown below.

• Procedure

VECT → F•4 COLOR SYSTEM → F•4 COLOR BAR

• Settings

100%:　　　A scale that matches the peak levels of 100 % intensity color bars is displayed. This is the default setting.

75%:　　　A scale that matches the peak levels of 75 % intensity color bars is displayed.

COLOR BAR = 100%　　　　　　　　　　　　COLOR BAR = 75%
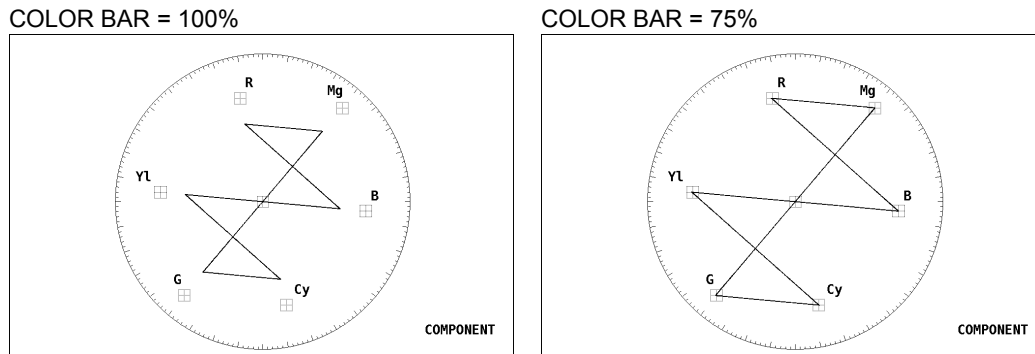
Figure 7-11　Displaying a scale for 75 % intensity color bars
(when receiving a 75 % intensity color bar signal)

7.5　Setting Vector Persistence

To set vector persistence, press F•6 PERSISTENCE in the vector menu.
By making vectors persistent, you can display past vectors and present vectors together.
F•6 PERSISTENCE does not appear when DISPLAY is set to an option other than VECTOR.
Reference:　DISPLAY → Section 7.6, "Switching the Display Mode"

VECT → F•6 PERSISTENCE →
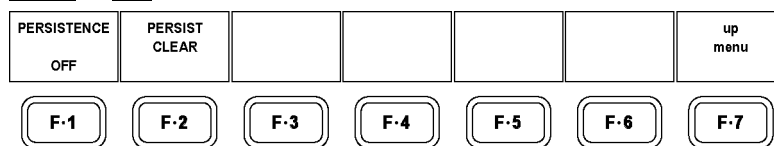
Figure 7-12　PERSISTENCE menu

7.5.1　Setting Vector Persistence

To set vector persistence, follow the procedure shown below.

• Procedure

VECT → F•6 PERSISTENCE → F•1 PERSISTENCE

• Settings

ON:　　　　Vector persistence is enabled.

OFF:　　　Vector persistence is disabled. This is the default setting.

INFINIT:　Vectors are displayed on top of each other.

7.5.2 Clearing Persistent Vectors

When F•1 PERSISTENCE is set to INFINIT, you can clear persistent vectors by following the procedure shown below.

• Procedure

VECT → F•6 PERSISTENCE → F•2 PERSIST CLEAR

7.6 Switching the Display Mode

To switch between the vectorscope display, 5 bar display, histogram display, and CIE chromaticity diagram display, follow the procedure shown below.

Reference: 5 bar display → Section 7.7, "Configuring the 5 Bar Display"

Histogram display → Section 7.8, "Configuring the Histogram Display"

CIE chromaticity diagram display → Section 7.9, "Configuring the CIE Chromaticity Diagram Display"

• Procedure

VECT → F•5 DISPLAY

• Settings

VECTOR: The vector display is shown. This is the default setting.

5BAR: The 5 bar display is shown.

HISTOGRAM: The histogram display is shown.

CIE1931: The CIE chromaticity diagram display is shown.

DISPLAY = 5BAR
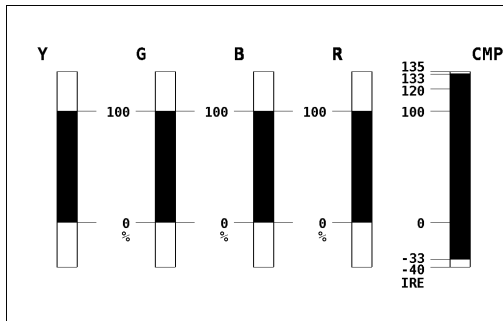
DISPLAY = HISTOGRAM
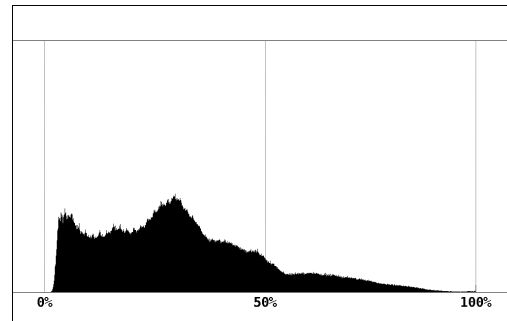
DISPLAY = CIE1931
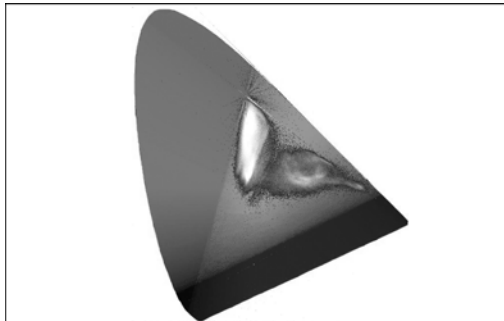
Figure 7-13 Switching the display mode

7.7   Configuring the 5 Bar Display

7.7.1   5 Bar Display Explanation

In the 5 bar display, the YC_BC_R signal is converted into a GBR or pseudo-composite signal, and the peak levels of the converted signal's Y, G, B, R, and CMP (composite) components are displayed simultaneously using five bars.

The five bars are typically displayed in cyan, but portions that exceed their limits are displayed in red.

- Y: Levels less than 0 % or greater than 100 % are displayed in red.
- GBR: Levels that fall outside of the range that you set using Gamut Upper and Lower in the unit setup display are displayed in red.
- CMP: Levels that fall outside of the range that you set using Composite Upper and Lower in the unit setup display are displayed in red.

Reference: Section 5.6, "Error Setup 3 (ERROR SETUP3)"

When you set F•5 DISPLAY to 5BAR, F•4 5BAR SETUP appears, and you can press it to configure the 5 bar display settings. When F•5 DISPLAY is set to an option other than 5BAR, this menu item does not appear.

VECT → F•4 5BAR SETUP →
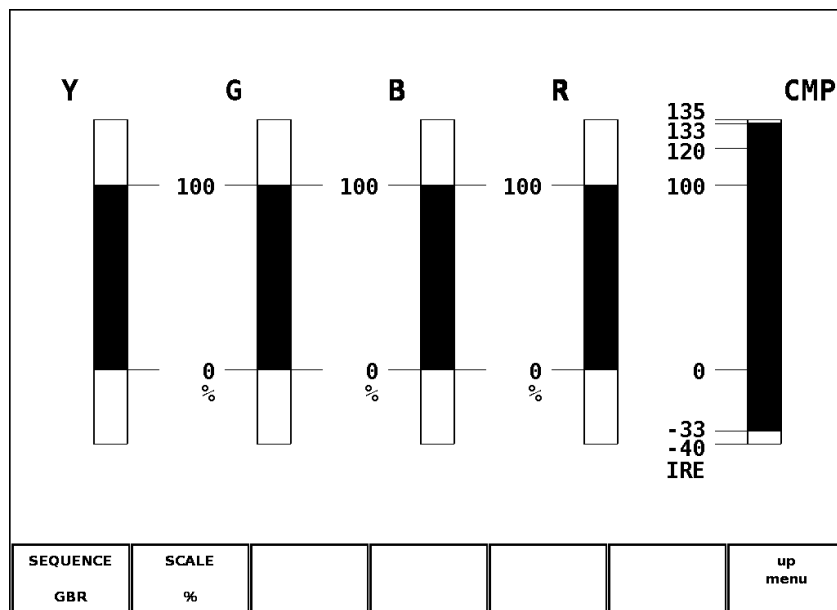
Figure 7-14   5 bar display

7.7.2 Selecting the Display Order

To select the 5 bar display order, follow the procedure shown below.

• **Procedure**

VECT → F•4 5BAR SETUP → F•1 SEQUENCE

• **Settings**

GBR: The signals are displayed in this order: Y, G, B, R, CMP. This is the default setting.

RGB: The signals are displayed in this order: Y, R, G, B, CMP.
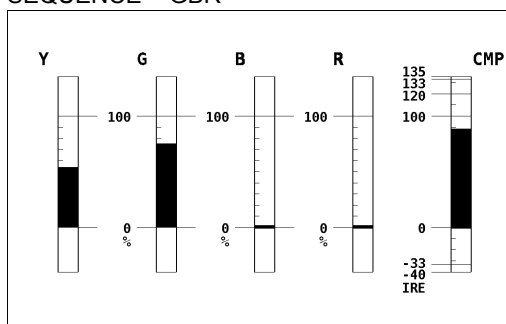
SEQUENCE = GBR   SEQUENCE = RGB
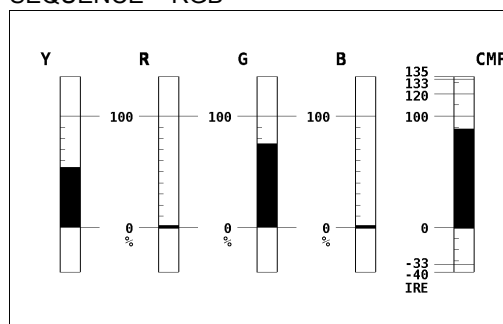
Figure 7-15   Selecting the display order

7.7.3 Selecting the Scale Unit

To select the scale unit, follow the procedure shown below.

Reference: Section 7.4.2, "Selecting the Composite Display Format"

• **Procedure**

VECT → F•4 5BAR SETUP → F•2 SCALE

• **Settings**

%:   A percentage scale is displayed for YGBR, and an IRE scale is displayed for CMP. This is the default setting.

mV: A millivolt scale is displayed. Depending on the composite display format, the scale differs as follows:
NTSC: 100 % = 700 mV (YGBR) and 100 IRE = 714 mV (CMP)
PAL: 100 % (IRE) = 700 mV
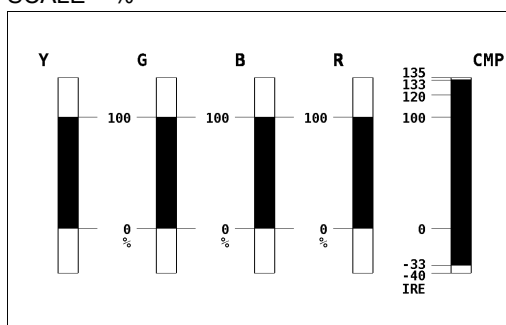
SCALE = %   SCALE = mV
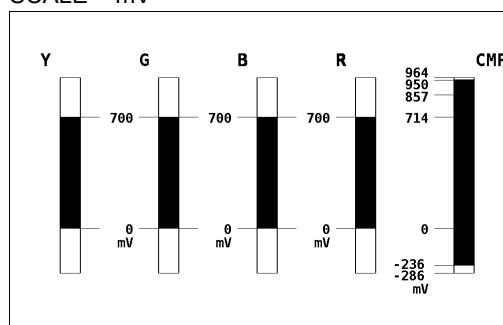
Figure 7-16   Selecting the scale unit (with an NTSC signal)

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7.8   Configuring the Histogram Display

The histogram shows the distribution of the image data by plotting brightness on the horizontal axis and the number of pixels at each brightness level on the vertical axis. Dark points are displayed on the left of the histogram and bright points are displayed on the right.

To configure histogram display settings, set DISPLAY to HISTOGRAM on the vector menu. If DISPLAY is set to an option other than HISTOGRAM, F•1 MODE, F•2 R, F•3 G, and F•4 B do not appear.

Reference: Section 7.6, "Switching the Display Mode"
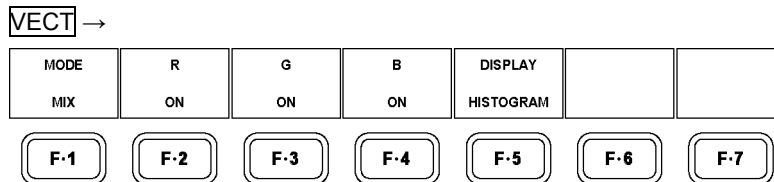
VECT →

Figure 7-17   Vector menu

7.8.1   Selecting the Display Mode of the Histogram

Carry out the procedure below to select the display mode.

• Procedure

VECT → F•1 MODE

• Settings

LUMA: The histogram of the Y (luminance) signal is displayed. This is the default setting.

ALIGN: The histograms of the Y, R, G, and B signals (in this order) are displayed side by side.

MIX: The histograms of the Y, R, G, and B signals are displayed on top of each other as lines.

MODE = LUMA   MODE = ALIGN

MODE = MIX
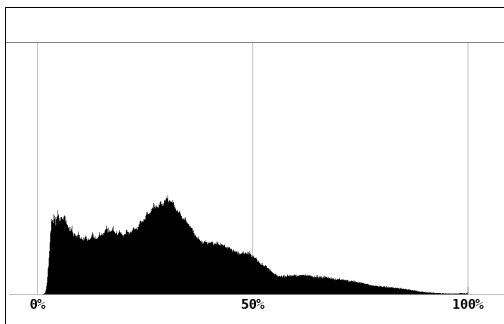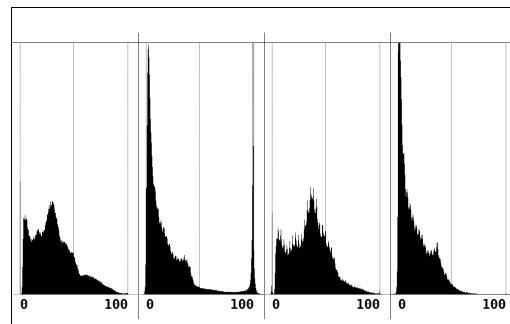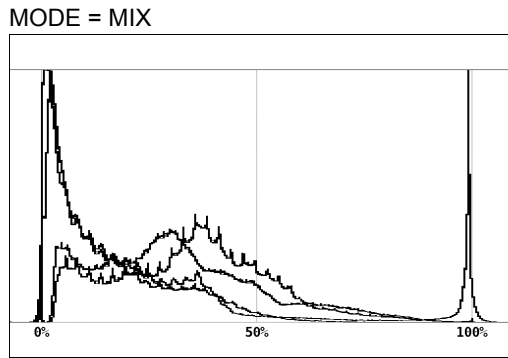
Figure 7-18   Selecting the display mode of the histogram

7.8.2   Turning the RGB Signals On and Off

When $\boxed{\text{F•1}}$ MODE is set to MIX, carry out the procedure below to turn the R, G, and B signals on and off separately.

• **Procedure**

$\boxed{\text{VECT}} \rightarrow \boxed{\text{F•2}}$ R
$\qquad\quad \rightarrow \boxed{\text{F•3}}$ G
$\qquad\quad \rightarrow \boxed{\text{F•4}}$ B

• **Settings**

ON: The R, G, or B signal is displayed. This is the default setting.
OFF: The R, G, or B signal is not displayed.

7.9   Configuring the CIE Chromaticity Diagram Display

On the CIE chromaticity diagram display, YC_BC_R or GBR signals are converted into CIE1931xy chromaticity coordinates and displayed.

To configure CIE chromaticity diagram display settings, set DISPLAY to CIE1931 on the vector menu.
If DISPLAY is set to an option other than CIE1931, $\boxed{\text{F•1}}$ SCALE, $\boxed{\text{F•2}}$ MODE, $\boxed{\text{F•4}}$ CURSOR, $\boxed{\text{F•6}}$ GAMMA, and $\boxed{\text{F•7}}$ FILTER do not appear.
Reference: Section 7.6, "Switching the Display Mode"

$\boxed{\text{VECT}} \rightarrow$

SCALE	MODE	LINE	CURSOR	DISPLAY	GAMMA	FILTER
		SELECT				
	DIAGRAM			CIE1931	2.2	FLAT
F·1	F·2	F·3	F·4	F·5	F·6	F·7
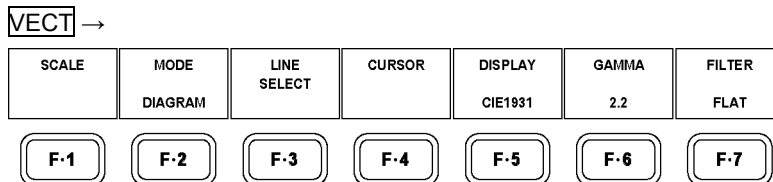
Figure 7-19   Vector menu

7.9.1 Displaying the Color Triangle

Carry out the procedure below to display a color triangle that has R, G, and B at its three vertices. The x and y coordinates of CIE chromaticity diagrams based on the selected standard are shown below.

Table 7-2   RGB coordinates

F•1 TRIANGLE	R		G		B	
	x	y	x	y	x	y
NTSC	0.670	0.330	0.210	0.710	0.140	0.080
EBU	0.640	0.330	0.290	0.600	0.150	0.060
ITU-R 709	0.640	0.330	0.300	0.600	0.150	0.060
DCI	0.680	0.320	0.265	0.690	0.150	0.060

• **Procedure**

VECT → F•1 SCALE → F•1 TRIANGLE

• **Settings**

NTSC: A color triangle that corresponds to the ITU-R BT.470-6 NTSC specifications is displayed.
EBU: A color triangle that corresponds to the ITU-R BT.470-6 EBU specifications is displayed.
ITU-R 709:   A color triangle that corresponds to ITU-R BT.709-5 is displayed.
DCI: A color triangle that corresponds to SMPTE EG432-1 is displayed.
OFF: The color triangle is not displayed. This is the default setting.

TRIANGLE = NTSC
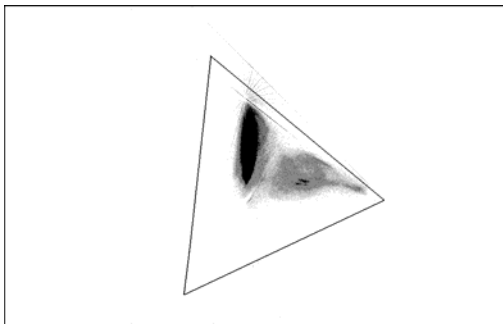
Figure 7-20   Displaying the color triangle

7.9.2 Displaying the Color Scale

Carry out the procedure below to turn the horseshoe-shaped color scale on and off. This color scale conforms to CIE1931, and it displays color approximations for chromaticity coordinates.

• **Procedure**

VECT → F•1 SCALE → F•2 COLOR

• **Settings**

ON: The color scale is displayed. This is the default setting.
OFF: The color scale is not displayed.

7.9.3   Displaying the Black-Body Radiation Curve

Carry out the procedure below to turn the black-body radiation curve on and off. This black-body radiation curve conforms to CIE1960, and it displays changes to color temperatures.

• **Procedure**

VECT → F•1 SCALE → F•3 TEMP SCALE

• **Settings**

ON: The Black-Body radiation curve is displayed.
OFF: The Black-Body radiation curve is not displayed. This is the default setting.

TEMP SCALE = ON
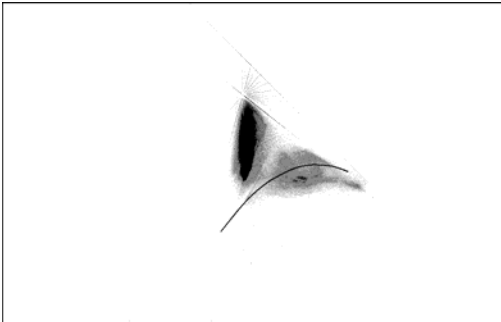
Figure 7-21   Displaying the black-body radiation curve

7.9.4   Selecting the Display Mode of the Chromaticity Diagram

Carry out the procedure below to select the display mode.

• **Procedure**

VECT → F•2 MODE

• **Settings**

DIAGRAM: Nearly all of the CIE chromaticity diagram is displayed. This is the default setting.
TEMP: The vicinity of the white point is magnified by a factor of two in the horizontal and vertical directions and displayed. Only the black-body radiation curve and the correlated color temperature lines are displayed. F•1 SCALE is not displayed.
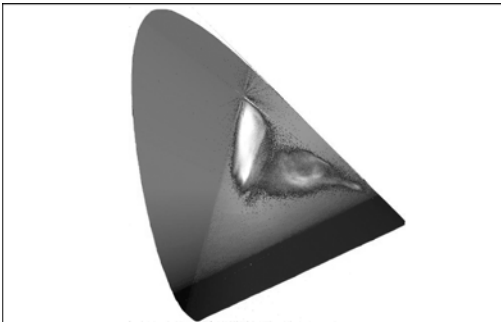
MODE = DIAGRAM   MODE = TEMP
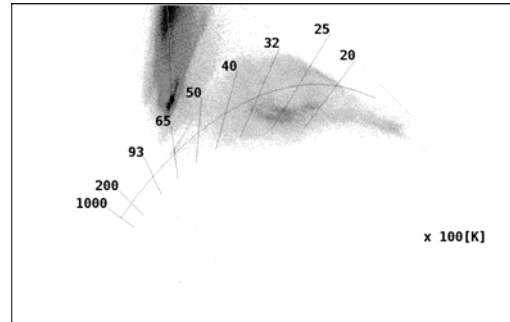
Figure 7-22   Selecting the display mode of the chromaticity diagram

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7.9.5   Cursor Measurement

Carry out the procedure below to turn cursors on and off.
If you select "ON," the cursors and the coordinates of the intersection of the cursors are displayed. To move the X axis cursor, turn the H POS knob. To move the Y axis cursor, turn the V POS knob. If you press both knobs, the cursors move to the D65 white point.

• **Procedure**

VECT → F•4 CURSOR → F•1 CURSOR

• **Settings**

ON: The cursor is displayed.
OFF: The cursor is not displayed. This is the default setting.
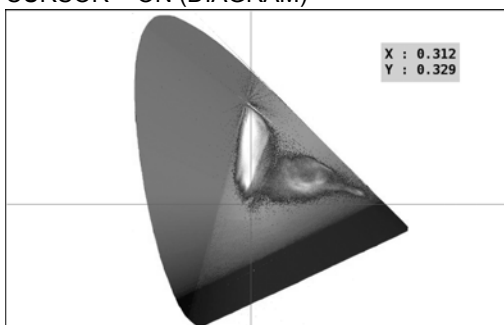
CURSOR = ON (DIAGRAM)   CURSOR = ON (TEMP)
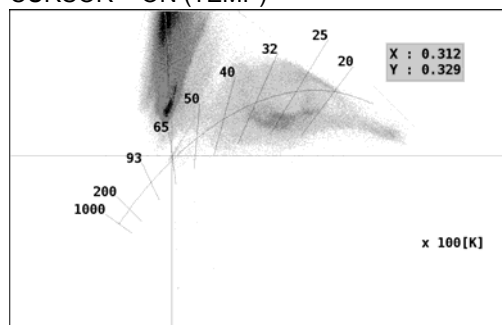
Figure 7-23   Cursor measurement

7.9.6   Selecting the Inverse Gamma Correction Value

On the CIE chromaticity diagram display, when the input signal is converted into xy chromaticity coordinates, inverse gamma correction is performed. Carry out the procedure below to select the inverse gamma correction value.

• **Procedure**

VECT → F•6 GAMMA

• **Settings**

2.2:   The inverse gamma correction value is set to 2.2. This corresponds to ITU-R BT.1361. This is the default setting.
2.6:   The inverse gamma correction value is set to 2.6. This corresponds to SMPTE EG432-1.

7.9.7   Selecting the Filter

Carry out the procedure below to select the filter to apply to input signals.

• **Procedure**

VECT → F•7 FILTER

• **Settings**

LOW PASS: A low-pass filter with the following characteristics is used.

Attenuation of 20 dB or more at 40 MHz (When the input signal is HD-SDI and the video format is 1080p/60, 59.94, or 50.)

Attenuation of 20 dB or more at 20 MHz (When the input signal is HD-SDI and the video format is not 1080p/60, 59.94, or 50.)

Attenuation of 20 dB or more at 3.8 MHz (When the input signal is SD-SDI.)

FLAT: A filter with a flat frequency response over the entire bandwidth of the input signal is used. This is the default setting.

8. PICTURE DISPLAY

To display the picture, press the PIC key on the front panel.
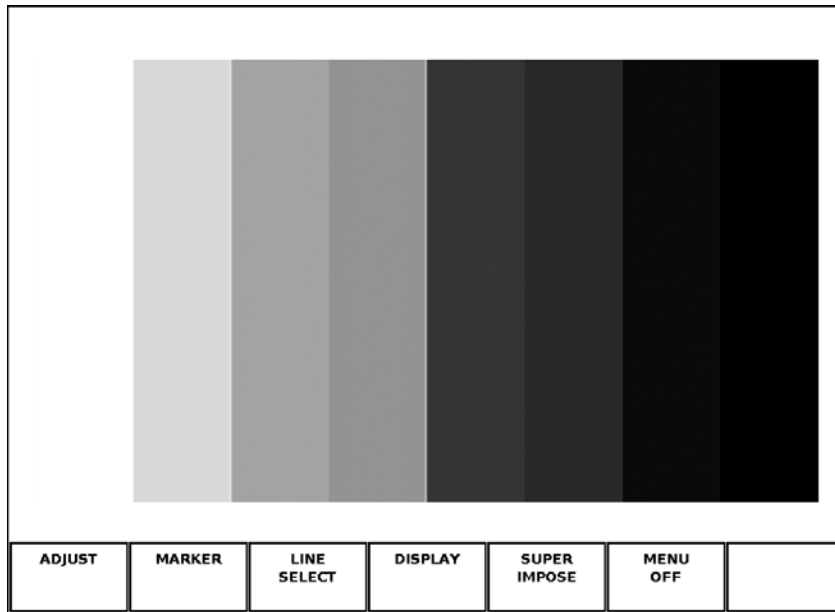
Figure 8-1   Picture display

*   Notes about the picture display:
- Because the sampled data is downsampled, aliasing distortion occurs.
- Data is processed in 8 bits.
- The two lines of pixels farthest to the left, right, top and bottom may not be displayed, depending on the picture processing circumstances.

8.1   Adjusting the Picture

To adjust the picture, press F•1 ADJUST in the picture menu.
You can adjust the picture brightness, contrast, gain, and bias.

PIC → F•1 ADJUST →
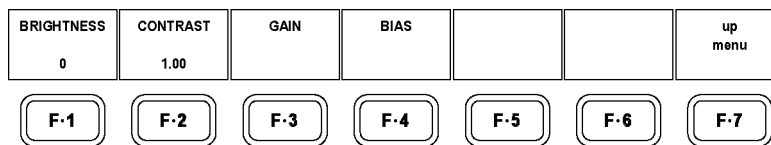
Figure 8-2   ADJUST menu

8.1.1 Adjusting the Brightness

To adjust the picture brightness, follow the procedure shown below. (Set the value as a percentage.)
Press the function dial (F•D) to return the setting to its default value (0).

• Procedure

$\boxed{\text{PIC}} \rightarrow \boxed{\text{F•1}}$ ADJUST $\rightarrow$ $\boxed{\text{F•1}}$ BRIGHTNESS

• Settings

Range: -30 to 30 (default setting: 0)

8.1.2 Adjusting the Contrast

To adjust the picture contrast, follow the procedure shown below. (Set the value to multiply by.)
Press the function dial (F•D) to return the setting to its default value (1.00).

• Procedure

$\boxed{\text{PIC}} \rightarrow \boxed{\text{F•1}}$ ADJUST $\rightarrow$ $\boxed{\text{F•2}}$ CONTRAST

• Settings

Range: 0.70 to 1.30 (default setting: 1.00)

8.1.3 Adjusting the Gain

To adjust the picture gain for R, G, and B, follow the procedure shown below. (Set the value to multiply by.)
Press the function dial (F•D) to return the setting to its default value (1.00).

• Procedure

$\boxed{\text{PIC}} \rightarrow \boxed{\text{F•1}}$ ADJUST $\rightarrow$ $\boxed{\text{F•3}}$ GAIN $\rightarrow$ $\boxed{\text{F•1}}$ R GAIN
$\rightarrow$ $\boxed{\text{F•2}}$ G GAIN
$\rightarrow$ $\boxed{\text{F•3}}$ B GAIN

• Settings

Range: 0.70 to 1.30 (default setting: 1.00)

8.1.4 Adjusting the Bias

To adjust the picture bias for R, G, and B, follow the procedure shown below.
(Set the value as a multiple of 100 %.)
Press the function dial (F•D) to return the setting to its default value (0.00).

• Procedure

$\boxed{\text{PIC}} \rightarrow \boxed{\text{F•1}}$ ADJUST $\rightarrow$ $\boxed{\text{F•4}}$ BIAS $\rightarrow$ $\boxed{\text{F•1}}$ R BIAS
$\rightarrow$ $\boxed{\text{F•2}}$ G BIAS
$\rightarrow$ $\boxed{\text{F•3}}$ B BIAS

• Settings

Range: -0.30 to 0.30 (default setting: 0.00)

8.2 Configuring Marker Settings

To configure marker settings, press F•2 MARKER in the picture menu.
You can display various types of markers on the picture display.
F•2 MARKER does not appear when SIZE is set to REAL or FULL_FRM.

Reference: SIZE → Section 8.4.1, "Selecting the Display Size"

PIC → F•2 MARKER →

ASPECT MARKER OFF	SAFE ACTION OFF	SAFE TITLE OFF	CENTER OFF	FRAME OFF	SHADOW 0	up menu
F·1	F·2	F·3	F·4	F·5	F·6	F·7
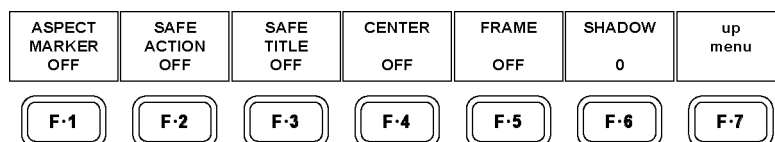
Figure 8-3   MARKER menu 『図面変更(F5)』

8.2.1 Aspect Marker

To display the aspect marker, follow the procedure shown below.

• Procedure

PIC → F•2 MARKER → F•1 ASPECT MARKER

• Settings

OFF: An aspect marker is not displayed. This is the default setting.

16:9 :   A 16:9 aspect marker is displayed.
             This setting cannot be chosen when the input signal is 3G-SDI, HD-SDI, or HD
             dual link.

14:9:   A 14:9 aspect marker is displayed.

13:9:   A 13:9 aspect marker is displayed.

4:3 :   A 4:3 aspect marker is displayed.
             This setting cannot be chosen when the input signal is SD-SDI.

2.39:1:   A 2.39:1 aspect marker is displayed.
             This setting cannot be chosen when the input signal is SD-SDI.

AFD: The area around the active area that is written in the AFD (Active Format
             Description) is indicated with a shadow. (If there are no AFD packets
             embedded in the input signal, the aspect marker is not displayed.)
             This setting cannot be chosen when the input signal is 3G-SDI or HD dual link.

8.2.2 AFD Marker Settings

When F•1 ASPECT MARKER is set to AFD, follow the procedure shown below to select the
darkness of the shadow. The larger the number, the darker the shadow. If you specify 0, the
active area specified by the AFD is indicated with a line. If there are no AFD packets
embedded in the signal and you specify 0, the picture frame is indicated with a line.
Press the function dial (F•D) to return the setting to its default value (0).

• Procedure

PIC → F•2 MARKER → F•6 SHADOW

• Settings

Range: 0 to 100 (default setting: 0)
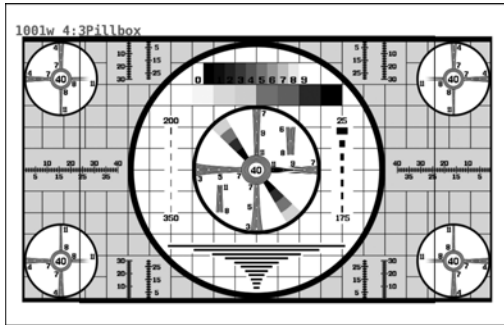
SHADOW = 0   SHADOW = 50
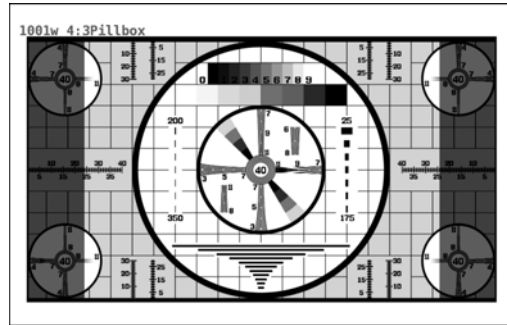
Figure 8-4   AFD marker settings

8.2.3   Safe Action Marker

To display a safe action marker, follow the procedure shown below.
When the aspect marker is set to ON, the marker is displayed relative to the aspect marker.
When F•1 ASPECT MARKER is set to AFD, this menu item does not appear.

• Procedure

PIC → F•2 MARKER → F•2 SAFE ACTION

• Settings

ARIB:	An ARIB TR-B4 safe action marker is displayed.
SMPTE:	An SMPTE RP-218 safe action marker is displayed.
OFF:	A safe action marker is not displayed. This is the default setting.

8.2.4   Safe Title Marker

To display a safe title marker, follow the procedure shown below.
When the aspect marker is set to ON, the marker is displayed relative to the aspect marker.
When F•1 ASPECT MARKER is set to AFD, this menu item does not appear.

• Procedure

PIC → F•2 MARKER → F•3 SAFE TITLE

• Settings

ARIB:	An ARIB TR-B4 safe title marker is displayed.
SMPTE:	An SMPTE RP-218 safe title marker is displayed.
OFF:	A safe title marker is not displayed. This is the default setting.

8.2.5   Center Marker

To display a crosshair at the center of the picture display, follow the procedure shown below.
When F•1 ASPECT MARKER is set to AFD, this menu item does not appear.

• Procedure

PIC → F•2 MARKER → F•4 CENTER

• Settings

ON:	A center marker is displayed.
OFF:	A center marker is not displayed. This is the default setting.

8.2.6　　　Frame Marker

To display a marker around the outer edge of the picture, follow the procedure below.

• Procedure

PIC → F•2 MARKER → F•5 FRAME

• Settings

ON:　　　　A frame marker is displayed.

OFF:　　　　A frame marker is not displayed. This is the default setting.

8.3　　Selecting Lines

To configure line selection settings, press F•3 LINE SELECT in the picture menu.

The line selection feature allows you to display a marker on the selected line.

F•3 LINE SELECT does not appear when SIZE is set to REAL or FULL_FRM.

Reference:　SIZE → Section 8.4.1, "Selecting the Display Size"

PIC → F•3 LINE SELECT →

LINE SELECT OFF	FIELD FRAME					up menu
F·1	F·2	F·3	F·4	F·5	F·6	F·7
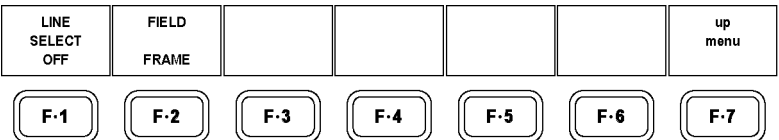
Figure 8-5　　LINE SELECT menu

8.3.1　　Turning Line Selection On and Off

To display a marker on the selected line, follow the procedure shown below.

• Procedure

PIC → F•3 LINE SELECT → F•1 LINE SELECT

• Settings

ON:　　　　A marker appears on the selected line. You can select a line with the function
dial (F•D). The number of the selected line appears in the bottom left of the
display.

OFF:　　　　A marker does not appear on the selected line. This is the default setting.

LINE SELECT = ON　　　　　　　　　　　　LINE SELECT = OFF

LINE_No:　555
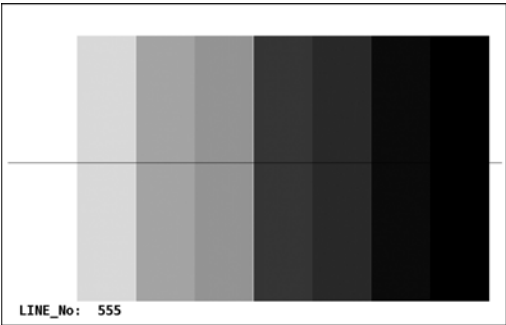
Figure 8-6　　Turning line selection on and off

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8.3.2   Setting the Line Selection Range

To set the line selection range, follow the procedure shown below.
This menu item does not appear when the input signal is progressive.

• Procedure

PIC → F•3 LINE SELECT → F•2 FIELD

• Settings

FIELD1:   A line from field 1 can be selected. (Example: 1 to 563)
FIELD2:   A line from field 2 can be selected. (Example: 564 to 1125)
FRAME: All lines can be selected. This is the default setting. (Example: 1 to 1125)

8.4   Configuring Display Settings

To configure the display settings, press F•4 DISPLAY in the picture menu.
You can configure the display size, histogram, gamut error display, and AFD display settings.

PIC → F•4 DISPLAY →

SIZE	HISTOGRAM	GAMUT ERROR	GAMUT PATTERN		AFD ASPECT INFO	up menu
FIT	OFF	OFF	WHITE		OFF	
F·1	F·2	F·3	F·4	F·5	F·6	F·7
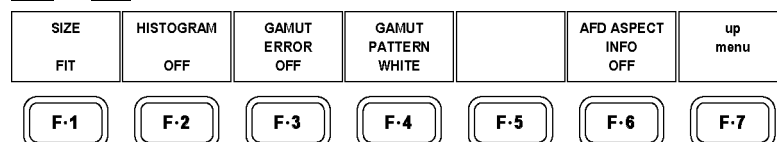
Figure 8-7   DISPLAY menu

8.4.1   Selecting the Display Size

To select the picture display size, follow the procedure shown below.
The LV 58SER06 uses simple filtering to enlarge and reduce the picture.

• Procedure

PIC → F•4 DISPLAY → F•1 SIZE

• Settings

FIT: The picture is displayed at the optimal size for the screen. This is the default
             setting.
REAL: A single sample of the video signal is displayed with a single pixel on the
             screen.
             When the input signal is HD-SDI or HD dual link, you can use the V POS and H
             POS knobs to adjust the picture's display position. Press a knob to return the
             picture to the corresponding default location.
             This setting cannot be chosen when the input signal is 3G-SDI, 1080p/60,
             59.94, or 50.
FULL_FRM: A single frame, including the blanking interval, is displayed.

SIZE = FIT
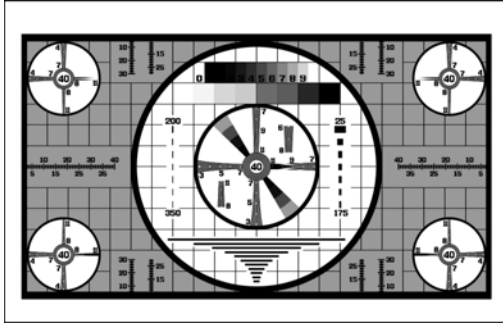
SIZE = REAL
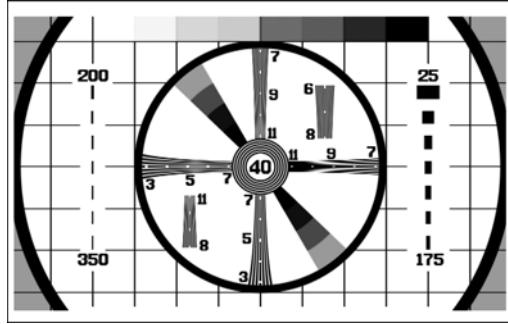
SIZE = FULL_FRM
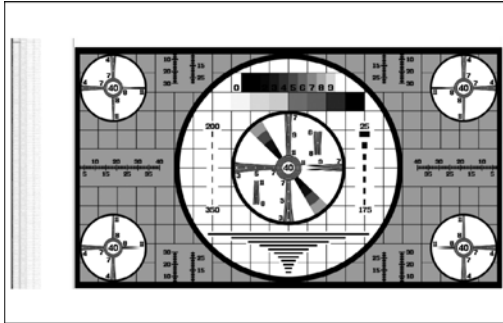
Figure 8-8   Selecting the display size

8.4.2   Displaying a Histogram

To display a histogram in the bottom right of the picture display, follow the procedure shown below.

The histogram shows the distribution of the image data by plotting brightness on the horizontal axis and the number of pixels at each brightness level on the vertical axis. Dark points are displayed on the left of the histogram and bright points are displayed on the right.

• **Procedure**

PIC → F•4 DISPLAY → F•2 HISTOGRAM

• **Settings**

ON: A histogram is displayed.

OFF: A histogram is not displayed. This is the default setting.

HISTOGRAM = ON

HISTOGRAM = OFF

Figure 8-9   Displaying a histogram

8.4.3 Gamut Error Display

To display the locations of gamut errors and level errors (only for luminance signals) on the picture, follow the procedure shown below. Any values that are outside of the Gamut Upper/Lower, Composite Upper/Lower, and Luminance Upper/Lower ranges specified in the unit set up are detected as errors.

This menu item does not appear when, in the unit setup display, Gamut Error, Composite Gamut Error, and Level Error are all set to OFF.

Reference: Section 5.6, "Error Setup 3 (ERROR SETUP3)"
Section 5.8, "Error Setup 5 (ERROR SETUP5)"

* The display of level errors is not supported when the input signal is 3G-SDI or HD dual link.

• **Procedure**

PIC → F•4 DISPLAY → F•3 GAMUT ERROR

• **Settings**

ON:	Gamut errors are displayed.
OFF:	Gamut errors are not displayed. This is the default setting.

8.4.4 Selecting the Gamut Error Display Format

To select the gamut error display format, follow the procedure shown below. This setting is valid when F•3 GAMUT ERROR is set to ON.

This menu item does not appear when, in the unit setup display, Gamut Error, Composite Gamut Error, and Level Error are all set to OFF.

Reference: Section 5.6, "Error Setup 3 (ERROR SETUP3)"
Section 5.8, "Error Setup 5 (ERROR SETUP5)"

• **Procedure**

PIC → F•4 DISPLAY → F•4 GAMUT PATTERN

• **Settings**

WHITE:	The picture brightness is halved, and gamut error locations are marked in white. This is the default setting.
RED:	The picture brightness is halved, and gamut error locations are marked in red.
MESH:	Gamut error locations are filled with a mesh pattern.

8.4.5 Displaying AFDs

To display abbreviations for SMPTE 2016-1-2007 standard AFD (Active Format Description) codes in the upper left of the display, follow the procedure shown below. If there are no AFD packets embedded in the input signal, "---------" is displayed.

This is not supported when the input signal is 3G-SDI or HD dual link, so this menu item is not displayed.

• **Procedure**

PIC → F•4 DISPLAY → F•6 AFD ASPECT INFO

• Settings

ON: AFD code abbreviations are displayed.

OFF: AFD code abbreviations are not displayed. This is the default setting.

AFD ASPECT INFO = ON
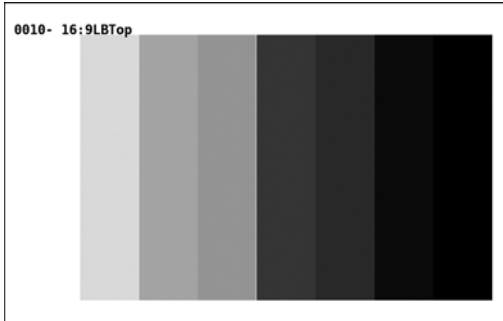
Figure 8-10   Displaying AFDs

The AFD is abbreviated according to the coded frame or the AFD code. The displayed abbreviations are shown in the following table.

Table 8-1   Displaying AFD

Coded Frame	AFD Code	Displayed AFD	Explanation
0 (4:3)	0000	0000- UNDEFINED	Undefined
0 (4:3)	0001	0001- RESERVED	Reserved
0 (4:3)	0010	0010- 16:9LBTop	Letterbox 16:9 image, at top of the coded frame
0 (4:3)	0011	0011- 14:9LBTop	Letterbox 14:9 image, at top of the coded frame
0 (4:3)	0100	0100- >16:9LBox	Letterbox image with an aspect ratio greater than 16:9, vertically centered in the coded frame
0 (4:3)	0101	0101- RESERVED	Reserved
0 (4:3)	0110	0110- RESERVED	Reserved
0 (4:3)	0111	0111- RESERVED	Reserved
0 (4:3)	1000	1000- FullFrame	Full frame 4:3 image, the same as the coded frame
0 (4:3)	1001	1001- Full Frame	Full frame 4:3 image, the same as the coded frame
0 (4:3)	1010	1010- 16:9LBox	Letterbox 16:9 image, vertically centered in the coded frame with all image areas protected
0 (4:3)	1011	1011- 14:9LBox	Letterbox 14:9 image, vertically centered in the coded frame
0 (4:3)	1100	1100- RESERVED	Reserved
0 (4:3)	1101	1101-4:3Full14:9	Full frame 4:3 image, with alternative 14:9 center
0 (4:3)	1110	1110-16:9LB14:9	Letterbox 16:9 image, with alternative 14:9 center
0 (4:3)	1111	1111-16:9LB4:3	Letterbox 16:9 image, with alternative 4:3 center
1 (16:9)	0000	0000w UNDEFINED	Undefined
1 (16:9)	0001	0001w RESERVED	Reserved
1 (16:9)	0010	0010w Full Frame	Full frame 16:9 image, the same as the coded frame
1 (16:9)	0011	0011w 14:9Pillbox	Pillarbox 14:9 image, horizontally centered in the coded frame
1 (16:9)	0100	0100w >16:9LBox	Letterbox image with an aspect ratio greater than 16:9,

Coded Frame	AFD Code	Displayed AFD	Explanation
			vertically centered in the coded frame
1 (16:9)	0101	0101w RESERVED	Reserved
1 (16:9)	0110	0110w RESERVED	Reserved
1 (16:9)	0111	0111w RESERVED	Reserved
1 (16:9)	1000	1000w FullFrame	Full frame 16:9 image, the same as the coded frame
1 (16:9)	1001	1001w 4:3Pillbox	Pillarbox 4:3 image, horizontally centered in the coded frame
1 (16:9)	1010	1010w FullNoCrop	Full frame 16:9 image, with all image areas protected
1 (16:9)	1011	1011w14:9Pillbox	Pillarbox 14:9 image, horizontally centered in the coded frame
1 (16:9)	1100	1100w RESERVED	Reserved
1 (16:9)	1101	1101w4:3PB14:9	Pillarbox 4:3 image, with alternative 14:9 center
1 (16:9)	1110	1110wFul14:9Safe	Full frame 16:9 image, with alternative 14:9 center
1 (16:9)	1111	1111wFull4:3Safe	Full frame 16:9 image, with alternative 4:3 center

8.5   Configuring Closed Caption Information Settings

To display the closed caption information, press F•5 SUPER IMPOSE on the picture menu. You can display closed captions in English and Japanese.

Note the following points about the closed caption display.
- The closed caption display is not supported when the input signal is 3G-SDI or HD dual link, so F•5 SUPER IMPOSE is not displayed.
- If you leave the SUPER IMPOSE menu, closed captions will not be displayed.
- The various markers and line select markers will not be displayed on the SUPER IMPOSE menu.
- In the multi display, you cannot display closed-caption information in multiple areas.

PIC → F•5 SUPER IMPOSE →
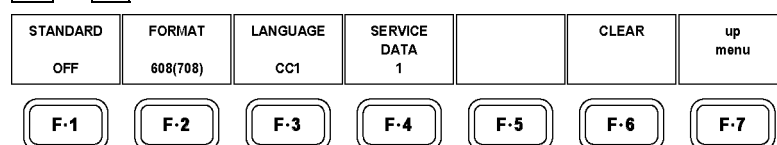
Figure 8-11   SUPER IMPOSE menu

8.5.1   Displaying the Closed Caption Information

To display closed caption information, follow the procedure shown below.

• Procedure

PIC → F•5 SUPER IMPOSE → F•1 STANDARD

• Settings

OFF: Closed caption information is not displayed.
CC SMPTE: SMPTE closed caption information is displayed in English.
CC ARIB: Simple ARIB closed caption information is displayed in Japanese.

• **CS Display on the Japanese Closed Caption Display**

If a clear screen packet is received, "CS" is displayed in cyan for approximately 0.5 seconds in the upper right of the screen.

8.5.2   Selecting the Format of English Closed Captions

When F•1 STANDARD is set to CC SMPTE, follow the procedure shown below to select the format of English closed captions.

• **Procedure**

PIC → F•5 SUPER IMPOSE → F•2 FORMAT

• **Settings**

608(708):   CEA/EIA-608-B closed caption information that is embedded in EIA-708-B CDP packets is displayed. This is the default setting.

608(608):   CEA/EIA-608-B closed caption information is displayed.

VBI: CEA/EIA-608-B closed caption information that is embedded in vertical blanking intervals is displayed.

708:    EIA-708 closed caption information that is embedded in EIA-708-B CDP packets is displayed.

8.5.3   Selecting the Display Details of English Closed Captions

When F•1 STANDARD is set to CC SMPTE, follow the procedure shown below to select the display details of English closed captions.

When F•2 FORMAT is set to an option other than 708, press F•3 LANGUAGE to select the setting.

• **Procedure**

PIC → F•5 SUPER IMPOSE → F•3 LANGUAGE

• **Settings**

Range: CC1 to CC4, TEXT1 to TEXT4 (default setting: CC1)

When F•2 FORMAT is set to 708, press F•4 SERVICE DATA to select the setting.
Press the function dial (F•D) to return the setting to its default value (1).

• **Procedure**

PIC → F•5 SUPER IMPOSE → F•4 SERVICE DATA

• **Settings**

Range: 1 to 63 (default setting: 1)

8.5.4   Selecting the Format of Japanese Closed Captions

When $\boxed{\text{F•1}}$ STANDARD is set to CC ARIB, follow the procedure shown below to select the format of Japanese closed captions. A border is displayed around the name of the selected format of Japanese closed captions in the upper right of the screen.
The closed caption format names are displayed in green when packets of the corresponding closed caption format are being received and in white otherwise.

• Procedure

$\boxed{\text{PIC}}$ → $\boxed{\text{F•5}}$ SUPER IMPOSE → $\boxed{\text{F•2}}$ FORMAT

• Settings

HD:	HD closed caption information is displayed. This is the default setting.
SD:	SD closed caption information is displayed.
ANALOG:	Analog closed caption information is displayed.
CELLULAR:	Cellular closed caption information is displayed.

8.5.5   Selecting the Display Details of Japanese Closed Captions

When $\boxed{\text{F•1}}$ STANDARD is set to CC ARIB, follow the procedure shown below to select the display details of Japanese closed captions.

• Procedure

$\boxed{\text{PIC}}$ → $\boxed{\text{F•5}}$ SUPER IMPOSE → $\boxed{\text{F•3}}$ LANGUAGE

• Settings

1:	Language 1 is displayed. This is the default setting.
2:	Language 2 is displayed.

8.5.6   Clearing Japanese Closed Captions

When $\boxed{\text{F•1}}$ STANDARD is set to CC ARIB, follow the procedure shown below to clear Japanese closed captions.

• Procedure

$\boxed{\text{PIC}}$ → $\boxed{\text{F•5}}$ SUPER IMPOSE → $\boxed{\text{F•6}}$ CLEAR

8.6 Configuring Clear Screen Log Settings

When $\boxed{F \cdot 1}$ STANDARD is set to CC ARIB, follow the procedure shown below to display the clear screen (CS) log.

• Procedure

$\boxed{PIC}$ → $\boxed{F \cdot 5}$ SUPER IMPOSE → $\boxed{F \cdot 5}$ CS LOG

```
    CS LOG LIST   SAMPLE No.=  277   << NOW LOGGING >>

  277: LTC TC20:13:53:15 3,A HD 1080i/59.94  T_DSP
  276: LTC TC20:13:53:15 3,A HD 1080i/59.94  CS
  275: LTC TC20:13:47:25 3,A HD 1080i/59.94  T_DSP
  274: LTC TC20:13:47:25 3,A HD 1080i/59.94  CS
  273: LTC TC20:13:45:26 3,A HD 1080i/59.94  T_DSP
  272: LTC TC20:13:45:26 3,A HD 1080i/59.94  CS
  271: LTC TC20:13:42:01 3,A HD 1080i/59.94  T_DSP
  270: LTC TC20:13:42:01 3,A HD 1080i/59.94  CS
  269: LTC TC20:13:39:05 3,A HD 1080i/59.94  T_DSP
  268: LTC TC20:13:39:05 3,A HD 1080i/59.94  CS
  267: LTC TC20:13:34:26 3,A HD 1080i/59.94  T_DSP
  266: LTC TC20:13:34:26 3,A HD 1080i/59.94  CS
  265: LTC TC20:13:31:10 3,A HD 1080i/59.94  T_DSP
  264: LTC TC20:13:31:10 3,A HD 1080i/59.94  CS
  263: LTC TC20:13:27:26 3,A HD 1080i/59.94  T_DSP
  262: LTC TC20:13:27:26 3,A HD 1080i/59.94  CS
```

LOUDNESS MODE OFF	LOG START	CLEAR	LOG MODE OVER WR	TIMECODE SET	USB MEMORY	up menu

Figure 8-12   CS log

8.6.1 Clear Screen Log Explanation

The clear screen log entries are listed in order with the most recent events listed first. By turning the function dial (F•D) to the right, you can scroll the screen to view older entries in the log. Press the function dial (F•D) to display the latest entries in the log.

The times that are displayed in the clear screen log are determined by the time that you select for Time Code in the unit setup. Set the time code to LTC or VITC. D-VITC is not supported.

Reference: Time Code → Section 5.2, "General Setup (GENERAL SETUP)"

Normally, log entries are displayed in white. During closed caption checking, log entries are displayed in red when closed captions are displayed during the closed caption prohibited time and in green otherwise.

The displayed commands are listed below.

Table 8-2   Commands

Command name	Description
CS	Detection of a clear screen command
T_DSP	Detection of closed caption display

Precautions

- Even if there are multiple LV 58SER06 units installed in the instrument, there is only one log file.
- The CS log can be recorded when the Japanese closed caption screen or the CS log screen is displayed. Use the multi screen display or other means to keep these screens from closing during measurement.
- If you rewind a VCR, reset the log buffer before starting the CS log. On the CS log screen, press F•2 LOG(START/STOP) or F•3 CLEAR. On the Japanese closed caption screen, press F•6 CLEAR.
- The CS log recording period is approximately 83 minutes when the closed caption changes every 2 seconds.
- Closed caption codes and decoded closed captions cannot be logged.

8.6.2 Simultaneous Measurement with Loudness Measurement

If an LV 58SER40A is installed, follow the procedure below to measure the loudness simultaneously with closed caption checking.

• Procedure

PIC → F•5 SUPER IMPOSE → F•5 CS LOG → F•1 LOUDNESS MODE

• Settings

ON: Closed caption checking and loudness measurement are performed simultaneously. The check start and stop time codes that have been set using F•5 TIMECODE SET are applied to the measurement start and stop on the loudness screen. If the Trigger setting on the loudness screen is changed, simultaneous measurement is turned off.

OFF: Only closed caption checking is performed. This is the default setting.

8.6.3 Starting Clear Screen Logging

To start CS logging, follow the procedure shown below.

• Procedure

PIC → F•5 SUPER IMPOSE → F•5 CS LOG → F•2 LOG

• Settings

START: CS logging is started. "NOW LOGGING" appears in upper right of the CS log.

STOP: CS logging is stopped. "LOGGING STOPPED" appears in upper right of the CS log. This is the default setting.

8.6.4 Clearing the Clear Screen Log

To clear the CS log, follow the procedure shown below. If simultaneous loudness measurement is enabled, the chart on the loudness screen will also be cleared.

• Procedure

PIC → F•5 SUPER IMPOSE → F•5 CS LOG
→ F•3 CLEAR (When LOUDNESS MODE is OFF or when an LV 58SER40A is not installed)
→ F•3 LOG/CHART CLEAR (When LOUDNESS MODE is ON)

8.6.5   Selecting the Overwrite Mode

The CS log can record up to 5,000 entries. Carry out the procedure below to select the operation that is taken when 5,000 items are exceeded.

• **Procedure**

PIC → F•5 SUPER IMPOSE → F•5 CS LOG → F•4 LOG MODE

• **Settings**

OVER WR: Discard the old log and overwrite. This is the default setting.
STOP: Not record logs that occur after the 5,000th item.

8.6.6   Configuring the Closed Caption Checking Function

Follow the procedure below to set Trigger to Timecode. Whether closed caption is displayed in the closed caption prohibited time will be checked.
Closed caption checking is not performed if Trigger is set to OFF (logging is possible).

• **Procedure**

PIC → F•5 SUPER IMPOSE → F•5 CS LOG → F•5 TIMECODE SET

```
TIMECODE SETTING

    Trigger              □ OFF              ☑ Timecode
      Start Time    0 :  0 :  0 :  0
      End   Time    0 :  0 :  5 :  0
    Non Caption Time
      Front       1.0  S
      Rear        1.0  S
```

Figure 8-13   TIMECODE SETTING display

• **Trigger**

If you select Timecode, set the check period to 4 s or longer using Start Time and End Time. If Time Code in the system settings is set to Real Time, you cannot set the trigger.

• **Non Caption Time**

Set the closed caption prohibited time. If closed captions are displayed between Start Time and Front seconds after Start Time or between Rear seconds before End Time to End Time, the check result will be NG.

Measurement Example

As an example, this section describes how to simultaneously perform closed caption checking on TV commercial material and loudness measurement.
On the loudness screen, configure the necessary settings. Trigger can be left turned off.

1. **Press SYS -> F•1 UNIT SETUP -> F•* UNIT* SETUP to set Time Code to LTC or VITC.**

    In the asterisks, enter an installed LV 58SER06 unit. After setting the time code, press F•1 COMPLETE.

2. **Press PIC -> F•5 SUPER IMPOSE -> F•1 STANDARD to select CC ARIB.**

3. **Set F•2 FORMAT and F•3 LANGUAGE.**

4. **Press F•5 CS LOG.**

5. **Press F•1 LOUDNESS MODE to select ON.**

6. **Press F•5 TIMECODE SET to set the time code.**

    Set Trigger to Timecode first, and then set the timecode and closed caption prohibited time. After setting them, press F•1 COMPLETE.

7. **Press F•2 LOG to select START.**

    From this point until the end of measurement, do not exit the CS log screen or Japanese closed caption screen.

8. **Start the TV commercial material.**

    Closed caption checking and loudness measurement will start at the specified time.
    On the CS log screen, log entries are displayed in red when closed captions are displayed during the closed caption prohibited time and in green otherwise.

9. **When the check result is displayed, press any key.**

    The caption check result is displayed in the top line as OK or NG. The long term loudness check result is displayed in the bottom line as OK or NG.
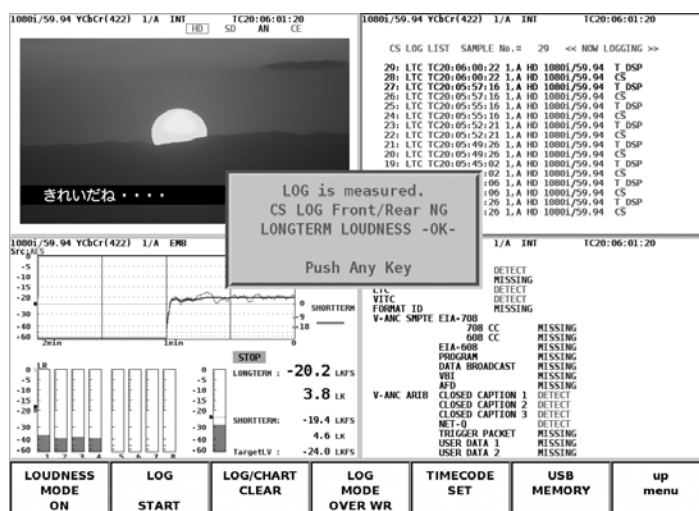
Figure 8-14   Check result screen

10. If necessary, press F•6 USB MEMORY to save the measurement results to USB memory.

The CS log file, loudness setup file, and loudness log file are saved simultaneously.

8.6.7 Saving to USB Memory

You can save the CS log to USB memory. To do so, follow the procedure shown below.

1. Connect a USB memory device to the USB port.

2. Press F•6 USB MEMORY.

The file list display appears.
This menu item appears when USB memory is connected.

```
External USB DEVICE CS LOG & LOUDNESS FILE LIST

        No. FileName          Date        Time       Size(Byte)
        1  cs_cslog.txt       2012/ 3/23  10:24:11   10823
        2  lo_cslog csv       2012/ 3/23  10:24:12   14975
        3  lo_cslog.txt       2012/ 3/23  10:24:12   723




        MAX SIZE:    251906 kB
        FREE SIZE:   28096 kB

     CS/LO_  CSLOG.TXT/CSV

  NAME      STORE              FILE      FILENAME          up
  INPUT                        DELETE    AUTO INC          menu
                                         OFF
```

Figure 8-15   File list display

3. **Press** F•1 **NAME INPUT.**

    The file name input display appears.

Figure 8-16   File name input display

4. **Enter a file name using up to 20 characters.**

    The key operations on the file name input display are explained below.
    Spaces are invalid. The spaces that you enter are ignored.

    F•1 CLEAR ALL: Deletes all characters.
    F•2 DELETE: Deletes the character at the cursor position.
    F•3 INSERT: Inserts an underscore (_) 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.

    You can copy the file name of an already saved file. To copy a file name, move the
    cursor to the file in the file list whose name you want to copy, and then press the
    function dial (F•D). If F•5 FILENAME AUTO INC is set to ON, a two-digit number will
    automatically be added to the end of the copied file name.

5. **Press** F•7 **up menu.**

6. **Press** F•2 **STORE.**

    When the message "Saving file - Please wait." disappears, the file has been
    successfully saved.
    If there is more than one file with the same name in the USB memory, an overwrite
    confirmation menu appears. If you want to overwrite the current file, press F•1 OVER
    WR YES. Otherwise, press F•3 OVER WR NO.

- **Deleting a CS Log**

  To delete a CS log that has been saved to USB memory, select the log file in the file list display, and then press F•4 FILE DELETE. To delete the file, press F•1 DELETE YES. To cancel the delete operation, press F•3 DELETE NO.

- **Setting File Numbering**

  When you set F•5 FILENAME AUTO INC in the file list display to ON, a two-digit number is automatically added to the entered file name (starting with 00). The default setting is OFF.
  This number returns to 00 if you initialize the settings or turn the power on and off.

- **USB Memory Folder Structure**

  In the USB memory, the file is saved in the following folder hierarchy.

  🗍 USB memory
  └ 🗀 LOG
      └ 🗋 ****.TXT .... CS log file

  When loudness is measured simultaneously, the files are saved in the following folder hierarchy.
  Prefixes "CS_" and "LO_" are automatically added.

  🗍 USB memory
  └ 🗀 LOG
      ├ 🗋 CS_****.TXT .... CS log file (with check result)
      ├ 🗋 LO_****.TXT .... Loudness setup file (with check result)
      └ 🗋 LO_****.CSV .... Loudness log file

8.7 Hiding Menus and Markers

To hide the display of items other than the picture, such as menus and markers, follow the procedure shown below. To redisplay the hidden items, press a key on the front panel.
This menu item does not appear when the multi screen display is in use.

• Procedure

PIC → F•6 MENU OFF

9. STATUS DISPLAY

To show the status display, press the STATUS key on the front panel. The status display shows various error counters, the embedded audio channels, and other information.
Switching video formats or input channels may cause disturbances in the signal that will cause errors to be counted.

```
SDI Status

  SDI
    Signal          DETECT       Format       1080i/59.94
    CRC Ych             0         CRC Cch              0
    EDH                 0         A/B Delay            0
    TRS Pos             0         TRS Code             0
    Illegal Code        0         Line Number          0

  ANC
    Checksum            0         Parity               0
  Video Quality
    Gamut               0         Comp Gamut           0
    Freeze              0         Black                0
    Level Ych           0         Level Cch            0
  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        00:00:17
```

EVENT LOG		SDI ANALYSIS	ANC DATA VIEWER	ANC PACKET	COUNTER SEC	ERROR CLEAR

Figure 9-1   Status display

9.1   Status Display Explanation

- **Signal**

  Whether or not an SDI signal is being applied to one of the SDI input connectors is indicated here. When SDI signal input has been detected, "DETECT" appears. Otherwise, "NO SIGNAL" appears. "NO SIGNAL" may appear even when a signal is applied to a connector if the signal amplitude is small or if there is a lot of jitter. If "NO SIGNAL" appears, the rest of the information listed below will be blank.

- **Format**

  The input signal video format is indicated here. "-----" appears when the input signal format is not supported by the LV 58SER06 or when it is different than the format specified in the unit setup. When this happens, the rest of the information will be blank.
  Reference: Section 5.2, "General Setup (GENERAL SETUP)"

- **CRC (When the input signal is 3G-SDI)**

  An error is counted when the CRC embedded in the input signal is different from the CRC that the LV 58SER06 detects.
  When CRC Error is set to OFF in the unit setup, errors are not counted.
  Reference: CRC Error → Section 5.4, "Error Setup 1 (ERROR SETUP1)"

- **CRC Ych, CRC Cch (When the input signal is HD-SDI or HD dual link)**

  An error is counted when the CRC embedded in the input signal is different from the CRC that the LV 58SER06 detects. Errors are counted separately for the luminance signal (Ych) and the chrominance signal (Cch).

When CRC Error is set to OFF in the unit setup, errors are not counted.

Reference: CRC Error → Section 5.4, "Error Setup 1 (ERROR SETUP1)"

• **EDH (When the input signal is SD-SDI)**

An error is counted when the EDH packet contains an ancillary data error flag, an active
picture error flag, or a full-field error flag and when the CRC in the EDH packet is different
from the CRC that the LV 58SER06 calculates from the video data.
When EDH Error is set to OFF in the unit setup, errors are not counted.

Reference: EDH Error → Section 5.4, "Error Setup 1 (ERROR SETUP1)"

• **A/B Delay (When the input signal is HD dual link)**

An error is counted if the phase difference between links A and B exceeds 100 clocks.
(There is an error of ±3 clocks.)

• **TRS Pos**

Input signal TRS (Timing Reference Signal) errors are displayed here.
An error is counted when the EAV (End of Active Video) and SAV (Start of Active Video)
header word (3FFh, 000h, and 000h) locations are wrong and when the F, V, and H TRS
protection bits do not conform to the video standard.
When TRS Error is set to OFF in the unit setup, errors are not counted.

Reference: TRS Error → Section 5.4, "Error Setup 1 (ERROR SETUP1)"

• **TRS Code**

Input signal TRS (Timing Reference Signal) protection bit errors are displayed here.
An error is counted when the F, V, and H protection bits in the XYZ word in the EAV (End of
Active Video) and SAV (Start of Active Video) packets and the response to the P3, P2, P1,
and P0 error correction flags do not conform to the video standard.
When TRS Error is set to OFF in the unit setup, errors are not counted.

Reference: TRS Error → Section 5.4, "Error Setup 1 (ERROR SETUP1)"

• **Illegal Code**

An error is counted when the input signal data falls within the timing reference signal (TRS)
range or the range specified for the ancillary data flag (ADF).
In SDI signals, 10-bit levels 000h through 003h and 3FCh through 3FFh are reserved for the
timing reference signal and the ancillary data flag, so they cannot be used for video signal
data or ancillary data. When data other than TRS and ADF data is found in these bits, an
error is counted.
When Illegal Code Error is set to OFF in the unit setup, errors are not counted.

Reference: Illegal Code Error → Section 5.4, "Error Setup 1 (ERROR SETUP1)"

• **Line Number (When the input signal is 3G-SDI, HD-SDI, or HD dual link)**

An error is counted when the line number that is embedded in the input signal does not
match the line number that has been counted by the LV 58SER06.
When Line Number Error is set to OFF in the unit setup, errors are not counted.

Reference: Line Number Error → Section 5.4, "Error Setup 1 (ERROR SETUP1)"

• **Checksum**

The LV 58SER06 uses the checksum in the input signal's ancillary data header to count
errors.

When Checksum Error is set to OFF in the unit setup, errors are not counted.

Reference:　Checksum Error → Section 5.5, "Error Setup 2 (ERROR SETUP2)"

- **Parity**

  The LV 58SER06 uses the parity bit in the input signal's ancillary data header to count errors.

  When Parity Error is set to OFF in the unit setup, errors are not counted.

  Reference:　Parity Error → Section 5.5, "Error Setup 2 (ERROR SETUP2)"

- **Gamut**

  The gamut error count is displayed here.

  You can specify the error search range under Gamut Error in the unit setup. When Gamut Error is set to OFF, errors are not counted.

  Reference:　Gamut Error → Section 5.6, "Error Setup 3 (ERROR SETUP3)"

- **Comp Gamut**

  Even when each of the component signals is within the specified limits, the limits may be exceeded when the signal is converted into a composite signal. An error is counted here when the conversion of the component signal into a composite signal results in a gamut error.

  You can specify the error search range under Composite Gamut Error in the unit setup. When Composite Gamut Error is set to OFF, errors are not counted.

  Reference:　Gamut Error → Section 5.6, "Error Setup 3 (ERROR SETUP3)"

- **Freeze (When the input signal is HD-SDI or SD-SDI)**

  An error is counted when a pause is detected in the video data. The LV 58SER06 detects these errors by finding the checksum of one frame of video data from the point when signal processing began, and then comparing that checksum between frames.

  You can specify the error detection range under Area and Duration in the unit setup. When Freeze Error is set to OFF, errors are not counted.

  Reference:　Freeze Error → Section 5.7, "Error Setup 4 (ERROR SETUP4)"

- **Black (When the input signal is HD-SDI or SD-SDI)**

  An error is counted when, in a single frame, a given amount of Y video data at or lower than the black level exists.

  You can specify the error detection range under Level, Area, and Duration in the unit setup. When Black Error is set to OFF, errors are not counted.

  Reference:　Black Error → Section 5.7, "Error Setup 4 (ERROR SETUP4)"

- **Level Ych, Level Cch (When the input signal is HD-SDI or SD-SDI)**

  An error is counted when the video data exceeds the specified level. Errors are counted separately for the luminance signal (Ych) and the chrominance signal (Cch).

  You can specify the error detection range under Luminance and Chroma in the unit setup. When Level Error is set to OFF, errors are not counted.

  Reference:　Level Error → Section 5.8, "Error Setup 5 (ERROR SETUP5)"

- **BCH (When the input signal is 3G-SDI, HD-SDI, or HD dual link)**

  Errors in the BCH code in the input signal's embedded audio are displayed here. When the input signal is 3G-SDI level B, only stream 1 errors are counted. When the input signal is HD

dual link, only link A errors are counted.

When BCH Error is set to OFF in the unit setup, errors are not counted.

Reference: BCH Error → Section 5.5, "Error Setup 2 (ERROR SETUP2)"

• **Parity (When the input signal is 3G-SDI, HD-SDI, or HD dual link)**

Parity errors in the input signal's embedded audio are displayed here. When the input signal is 3G-SDI level B, only stream 1 errors are counted. When the input signal is HD dual link, only link A errors are counted.

When Parity Error is set to OFF in the unit setup, errors are not counted.

Reference: Parity Error → Section 5.5, "Error Setup 2 (ERROR SETUP2)"

• **DBN**

Continuity errors in the input signal's embedded audio are displayed here. When the input signal is 3G-SDI level B, only stream 1 errors are counted. When the input signal is HD dual link, only link A errors are counted.

Embedded audio packets contain data block number (DBN) words that indicate the packet's continuity. Packets are cyclically numbered from 1 to 255. An error is counted when a packet's DBN is out of sequence.

When DBN Error is set to OFF in the unit setup, errors are not counted.

Reference: DBN Error → Section 5.5, "Error Setup 2 (ERROR SETUP2)"

• **Inhibit**

An error is counted when embedded audio packets are found in lines where they should not be embedded. When the input signal is 3G-SDI level B, only stream 1 errors are counted. When the input signal is HD dual link, only link A errors are counted.

When Inhibit Line Error is set to OFF in the unit setup, errors are not counted.

Reference: Inhibit Line Error → Section 5.5, "Error Setup 2 (ERROR SETUP2)"

• **CH**

The channels of the audio packets embedded in the input signal are displayed here.

When audio control packets are embedded, the LV 58SER06 detects the channels from the ACT bit. Otherwise, it detects the channels from the audio data packet.

When the input signal is 3G-SDI level B, only the stream 1 channel is detected. When the input signal is HD dual link, only the link A channel is detected.

• **From Reset**

The time that has elapsed since the errors were cleared is displayed here.

Errors are cleared when you press F•7 ERROR CLEAR, initialize the system settings, or turn the power on and off.

9.2 Switching the Error Count Unit

To switch the error count unit, follow the procedure shown below.

• Procedure

STATUS → F•6 COUNTER

• Settings

SEC: Errors are counted in units of seconds. Even if multiple errors occur within the same second, only a single error is counted. This is the default setting.

FIELD: Errors are counted in units of fields. The number of fields that have errors in them is displayed.

%FIELD: The percentage of the fields since the start of error counting that contain errors is displayed.

9.3 Clearing the Error Count

To reset the error count and From Reset values to zero, follow the procedure shown below.

• Procedure

STATUS → F•7 ERROR CLEAR

9.4 3G-SDI Line Numbers

When the input signal is level B, line numbers are indicated differently depending on the display as shown below.

The DATA DUMP LINE No. indicated in the data dump display is the Original Picture source raster Line Number. (*1)

The INTERFACE LINE No. indicated in the format ID, control packet, and custom search displays is the Digital Interface Line Number. (*2) On the format ID and control packet screens, if a line number that has packets embedded in it is outside of the standards, it is displayed in red.

Table 9-1 Level B line numbers

Original Picture Source Raster Line Number		Digital Interface Line Number
Stream 1	Stream 2	
2	3	1
4	5	2
1122	1123	561
1124	1125	562
1	2	563
3	4	564
1121	1122	1123
1123	1124	1124
1125	1	1125

When the input signal is level A, the Original Picture source raster Line Number and the Digital Interface Line Number are the same, so the line number is not indicated differently depending on the display.

*1   Original Picture source raster Line Number: An original video line number
*2   Digital Interface Line Number: A line number that the transmission structure has

• **Explanation**

The LV 58SER06 also handles level B signals, which are 3G-SDI signals mapped from HD dual link (SMPTE 372M-compliant) signals. In HD dual link, two HD-SDI signals (link A and link B) are transmitted over two coaxial cables. The 1125-line progressive scans of the 1080p/60 (50, 59.94) original video are mapped into the second line of link A, the third line of link B, etc., and are transmitted. In this manner, you can transmit videos that have twice the frame rate of signals that are handled with HD-SDI. However, because the lines of the original video are mapped into the lines of the line numbers that each transmission structure, link A and link B, has, there will be differences in the two line number values.

Packets such as ANC packets are managed by the line numbers of the transmission structures. Videos must be managed by their original line numbers. Therefore, the line select numbers of videos are managed by the original line numbers, and the data dumps that are linked to the line select numbers of videos are also managed by the original line numbers.

When you want to map HD dual link to 3G-SDI level B, map link A to stream 1 and link B to stream 2. Therefore, there will be differences in the line numbers in the same manner as was described above for HD dual link.

9.5   Configuring Event Log Settings

To view the event log, follow the procedure shown below.
You can view a log of the events that have occurred on each unit.

• **Procedure**

STATUS → F•1 EVENT LOG

```
ERROR LOG LIST  SAMPLE No.=   18   << NOW LOGGING >>

  18: 2009/09/08 11:08:34 1,A 1080p/60
  17: 2009/09/08 11:08:34 1,A UnKnown
  16: 2009/09/08 11:08:34 1,A 1080p/60
  15: 2009/09/08 11:08:34 1,A UnKnown
  14: 2009/09/08 11:08:34 1,A 1080p/59.94
  13: 2009/09/08 11:08:34 1,A NO_SIGNAL
  12: 2009/09/08 10:55:58 1,A 1080p/59.94
  11: 2009/09/08 10:55:58 1,A 1080p/59.94 TRS_P,LINE,
  10: 2009/09/08 10:55:58 1,A 1080p/59.94 TRS_P,TRS_C,ILLEGAL,
   9: 2009/09/08 10:55:58 1,A 1080p/59.94 TRS_P,LINE,
   8: 2009/09/08 10:55:58 1,A 1080p/59.94 TRS_P,TRS_C,ILLEGAL,
   7: 2009/09/08 10:55:58 1,A NO_SIGNAL
   6: 2009/09/08 10:55:53 1,B NO_SIGNAL
   5: 2009/09/08 10:55:53 1,B 1080p/59.94
   4: 2009/09/08 10:54:16 4,A NO_SIGNAL
   3: 2009/09/08 10:54:16 3,B 1080i/59.94
```

	LOG START	CLEAR	LOG MODE OVER WR		USB MEMORY	up menu

Figure 9-2   Event log

9.5.1   Event Log Explanation

Events are listed in the event log by the time of their occurrence.
By turning the function dial (F•D) to the right, you can scroll the screen to view older events in the log. Also, by pressing the function dial (F•D), you can display the latest events in the log.
The times that are displayed in the event log are determined by the time that you select for Time Code in the unit setup.
Reference: Time Code → Section 5.2, "General Setup (GENERAL SETUP)"

Precautions

• If Input Mode is set to Single Input in the unit setup, only the events from the currently selected channel are displayed. You cannot log the events of channels A and B simultaneously.
• Even if multiple units are installed on the LV 5800, there is only one log file. For example, if both an LV 58SER06 and an LV 58SER01A are installed, the events from up to four channels are displayed as one file.
• When the same event occurs successively and when multiple events occur at the same time, they are treated as a single event.
• When multiple events occur at the same time, you may not be able to check all of the events on the screen. When this happens, you can view all of the events by saving them to USB memory.
• The event display is cleared when you initialize the system settings or turn the power on and off.
• Switching video formats or input channels may cause disturbances in the signal that will cause errors to be displayed.

The events that are displayed in the event log are listed below.
Out of the events listed below, only the events that have been set to ON in the 5 unit setup are displayed.

Table 9-2   Events

Event Name	Description
CRC	CRC error (Only 3G-SDI signals)
CRC_Y	Ych CRC error (Only HD-SDI and HD dual link signals)
CRC_C	Cch CRC error (Only HD-SDI and HD dual link signals)
EDH	EDH error (Only SD-SDI signals)
SDI_DELAY	A/B delay error (Only HD dual link signals)
TRS_P	TRS position error
TRS_C	TRS code error
ILLEGAL	Illegal code error
LINE	Line number error (Only 3G-SDI, HD-SDI, and HD dual link signals)
CHK	Ancillary data checksum error
PRTY	Ancillary data parity error
GMUT	Gamut error
CGMUT	Composite gamut error
FRZ	Freeze error (Only HD-SDI and SD-SDI signals)
BLK	Black error (Only HD-SDI and SD-SDI signals)
LVL_Y	Ych level error (Only HD-SDI and SD-SDI signals)

Event Name	Description
LVL_C	Cch level error (Only HD-SDI and SD-SDI signals)
A_BCH	Embedded audio BCH error (Only 3G-SDI, HD-SDI, and HD dual link signals)
A_PRTY	Embedded audio parity error (Only 3G-SDI, HD-SDI, and HD dual link signals)
A_DBN	Embedded audio DBN error
A_INH	Embedded audio INHIBIT error
NO_SIGNAL	No signal
UnKnown	The input signal format is not supported or is different from the specified format.

9.5.2   Starting Event Logging

To start event logging, follow the procedure shown below.

• **Procedure**

STATUS → F•1 EVENT LOG → F•2 LOG

• **Settings**

START: Event logging is started. "NOW LOGGING" appears in upper right of the event log.

STOP: Event logging is stopped. "LOGGING STOPPED" appears in upper right of the event log. This is the default setting.

9.5.3   Clearing the Event Log

To clear the event log, follow the procedure shown below.

• **Procedure**

STATUS → F•1 EVENT LOG → F•3 CLEAR

9.5.4   Selecting the Overwrite Mode

The LV 5800 can display up to 5000 events. To select the action to perform when more than 5000 events occur, follow the procedure shown below.

• **Procedure**

STATUS → F•1 EVENT LOG → F•4 LOG MODE

• **Settings**

OVER WR: When more than 5000 events occur, the LV 5800 writes over older events. This is the default setting.

STOP: Events after the 5000th event are not logged.

9.5.5 Saving to USB Memory

You can save the event log to USB memory as a text file.
To do so, follow the procedure shown below.

1. **Connect a USB memory device to the USB port.**

2. **Press F•6 USB MEMORY.**

   The file list display appears.
   This menu item appears when USB memory is connected.

```
External USB DEVICE LOG FILE LIST

      No. FileName              Date        Time       Size(Byte)
      1  log01.txt             2009/ 9/ 8   11:11:13   1172
      2  log01.txt             2009/ 9/ 8   11:11:17   1172
      3  log02.txt             2009/ 9/ 8   11:11:20   1172
      4  log03.txt             2009/ 9/ 8   11:11:26   1172









      MAX SIZE:    251906 kB
      FREE SIZE:   28096 kB

      LOG.TXT
```

NAME INPUT	STORE		FILE DELETE	FILENAME AUTO INC OFF		up menu

Figure 9-3   File list display

3. **Press F•1 NAME INPUT.**

   The file name input display appears.

```
      0  1  2  3  4  5  6  7  8  9

      A  B  C  D  E  F  G  H  I  J

      K  L  M  N  O  P  Q  R  S  T

      U  V  W  X  Y  Z  _

      [F.D NOB] = CHAR SELECT , [F.D PUSH] = CHAR SET
      & Function Key EDIT

      LOG   STORE FILE NAME
      LOG                          . TXT
```

CLEAR ALL	DELETE	INSERT	<=	=>	CHAR SET	up menu

Figure 9-4   File name input display

4. **Enter a file name using up to 20 characters.**

The key operations on the file name input display are explained below.
Spaces are invalid. The spaces that you enter are ignored.

F•1	CLEAR ALL:	Deletes all characters.
F•2	DELETE:	Deletes the character at the cursor position.
F•3	INSERT:	Inserts an underscore (_) 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.

You can copy the file name of an already saved file. To copy a file name, move the cursor to the file in the file list whose name you want to copy, and then press the function dial (F•D). If F•5 FILENAME AUTO INC is set to ON, a two-digit number will automatically be added to the end of the copied file name.

5. **Press F•7 up menu.**

6. **Press F•2 STORE.**

When the message "Saving file - Please wait." disappears, the file has been successfully saved.
If there is more than one file with the same name in the USB memory, an overwrite confirmation menu appears. If you want to overwrite the current file, press F•1 OVER WR YES. Otherwise, press F•3 OVER WR NO.

• **Deleting an Event Log**

To delete an event log that has been saved to USB memory, select the log file in the file list display, and then press F•4 FILE DELETE. To delete the file, press F•1 DELETE YES. To cancel the delete operation, press F•3 DELETE NO.

• **Setting File Numbering**

When you set F•5 FILENAME AUTO INC in the file list display to ON, a two-digit number is automatically added to the entered file name (starting with 00). The default setting is OFF.
This number returns to 00 if you initialize the settings or turn the power on and off.

• **USB Memory Folder Structure**

Event logs are saved in the LOG folder. If there is no LOG folder in the USB memory, the LV 5800 will create a folder automatically.

🗄 USB memory
└ 🗁 LOG
  └ 🗋 ****.TXT

9.6　Data Dump Settings

To view the data dump, follow the procedure shown below.
In the data dump, the data of the selected line is listed.

• **Procedure**

STATUS → F•3 SDI ANALYSIS → F•1 DATA DUMP

```
        DATA DUMP LINE No.   20
              SAMPLE      Y        Cb/Cr
[EAV]         <1923>     2D8        2D8
              <1924>     228        228
              <1925>     200        200
              <1926>     1B0        1FC
              <1927>     1FF        22B
ADF           <1928>     000        200
ADF           <1929>     3FF        200
ADF           <1930>     3FF        200
DID           <1931>     241        200
SDID          <1932>     101        200
DC            <1933>     104        200
UDW           <1934>     18A        200
UDW           <1935>     14A        200
UDW           <1936>     200        200
UDW           <1937>     101        200
CS            <1938>     21B        200
```

MODE	DISPLAY	JUMP	F.D 1CLICK	F.D FUNCTION	USB MEMORY	up menu
RUN	STREAM 1	EAV	1	SAMPLE		

Figure 9-5　Data dump

9.6.1　Data Dump Explanation

In the data dump, the input signal's embedded ancillary data is detected, and the following detection codes are displayed.

Table 9-3　Detection code list

Detection Code	Display Color	Description
ADF	Cyan	Ancillary data flags (000h, 3FFh, and 3FFh)
DID	Cyan	Data identification (the data after ADF)
SDID	Cyan	Secondary data identification (the secondary format data when the DID is smaller than 80H)
DBN	Cyan	Data block numbers (the primary data format when the DID is larger than 80H)
DC	Cyan	Data count (the data after the SDID/DBN)
UDW	Cyan	User data words (the user data words of the data count length after ADF)
CS	Magenta	Checksum (the data immediately after UDW)
AP	Yellow	Active picture (the active picture from after the SAV to just before the EAV when the selected line is within the active video area)

9.6.2 Selecting the Display Mode

To select the data dump display mode, follow the procedure shown below.

Reference: Section 10.2, "Acquiring Frame Capture Data"

• Procedure

$\boxed{\text{STATUS}} \rightarrow \boxed{\text{F•3}}$ SDI ANALYSIS $\rightarrow \boxed{\text{F•1}}$ DATA DUMP $\rightarrow \boxed{\text{F•1}}$ MODE

• Settings

RUN: The input signal data is automatically updated and displayed. This is the default setting.

HOLD: The input signal data is displayed statically.
You cannot change lines.

FRM CAP: The frame capture data is displayed.
You cannot select this option when there is no frame capture data in the LV 5800 or when the frame capture data and the input signal format are different.

9.6.3 Selecting the Content to Display

To select the content to display in the data dump, follow the procedure shown below.

• Procedure

$\boxed{\text{STATUS}} \rightarrow \boxed{\text{F•3}}$ SDI ANALYSIS $\rightarrow \boxed{\text{F•1}}$ DATA DUMP $\rightarrow \boxed{\text{F•2}}$ DISPLAY

• Settings (When the input signal is 3G-SDI level B)

STREAM 1: Stream 1 are displayed. This is the default setting.

STREAM 2: Stream 2 are displayed.

STREAM 1/2: Streams 1 and 2 are combined, and their data sequences are displayed.

• Settings (When the input signal is HD dual link)

LINK A: The parallel converted data sequences of link A are displayed. This is the default setting.

LINK B: The parallel converted data sequences of link B are displayed.

LINK A/B: Links A and B are combined, and their parallel data sequences are displayed.

When you select LINK A/B, the content that is displayed varies, as shown below, depending on the format of the input signal.

• YCbCr (4:2:2) 10 bits

Because the selected line in the picture is embedded alternately in links A and B for each frame, the LV 58SER06 switches between links A and B at an irregular interval to display the information of the selected line.

• YCbCr (4:2:2) 12 bits

The lower 2 bits that have been assigned to link B are appended to the Y and CbCr channels, and these channels are displayed in 12 bits.

- **GBR (4:4:4) 10 bits**

  Links A and B are combined to form G, B, R, and A, and these are displayed in 10 bits.

- **GBR (4:4:4) 12 bits**

  The lower 2 bits that have been assigned to link B are appended to the G, B, and R channels, and these channels are displayed in 12 bits.

YCbCr (4:2:2) 10 bits

```
    DATA DUMP LINE No.    1
            SAMPLE    Y      Cb/Cr
[EAV]     <1920>    3FF      3FF
[EAV]     <1921>    000      000
[EAV]     <1922>    000      000
[EAV]     <1923>    3C4      3C4
          <1924>    194      194
          <1925>    220      220
          <1926>    200      24C
          <1927>    150      284
    ADF   <1928>    040      000
    ADF   <1929>    040      3FF
    ADF   <1930>    040      3FF
    DID   <1931>    040      2E7
    DBN   <1932>    040      218
    DC    <1933>    040      218
    UDW   <1934>    040      2C3
    UDW   <1935>    040      101
```

YCbCr (4:2:2) 12 bits

```
    DATA DUMP LINE No.    1
            SAMPLE    Y      Cb/Cr     A
[EAV]     <1920>    FFF      FFF      3FF
[EAV]     <1921>    000      003      000
[EAV]     <1922>    000      000      000
[EAV]     <1923>    B63      B60      2D8
          <1924>    810      810      204
          <1925>    800      801      200
          <1926>    AEE      BDF      2F7
          <1927>    8F0      7A2      1E8
          <1928>    101      000      000
          <1929>    101      FFC      3FF
          <1930>    101      FFC      3FF
          <1931>    101      B9C      2E7
          <1932>    101      B9C      2E7
          <1933>    101      860      218
          <1934>    101      904      241
          <1935>    101      814      205
```

GBR (4:4:4) 10 bits

```
    DATA DUMP LINE No.    1
            SAMPLE    G       B       R       A
[EAV]     <1920>    3FF      3FF     000     3FF
[EAV]     <1921>    000      3FF     000     000
[EAV]     <1922>    000      000     2D8     000
[EAV]     <1923>    2D8      000     2D8     2D8
          <1924>    204      204     200     204
          <1925>    200      204     200     200
          <1926>    2BB      2F7     1E8     2BB
          <1927>    23C      2F7     1E8     23C
          <1928>    040      000     3FF     040
          <1929>    040      000     3FF     040
          <1930>    040      3FF     2E7     040
          <1931>    040      3FF     2E7     040
          <1932>    040      2E7     218     040
          <1933>    040      2E7     218     040
          <1934>    040      241     205     040
          <1935>    040      241     205     040
```

GBR (4:4:4) 12 bits

```
    DATA DUMP LINE No.    1
            SAMPLE    G       B       R
[EAV]     <1920>    FFF      FFF     003
[EAV]     <1921>    000      FFC     000
[EAV]     <1922>    000      000     B60
[EAV]     <1923>    B63      001     B62
          <1924>    810      810     801
          <1925>    800      810     800
          <1926>    AEE      BDF     7A2
          <1927>    8F0      BDF     7A3
          <1928>    101      000     FFC
          <1929>    101      000     FFC
          <1930>    101      FFC     B9C
          <1931>    101      FFC     B9C
          <1932>    101      958     860
          <1933>    101      958     860
          <1934>    101      904     814
          <1935>    101      904     814
```

Figure 9-6   Displaying HD dual link signals (link A and link B)

- **Settings (When the input signal is 3G-SDI level A, HD-SDI, or SD-SDI)**

SERIAL: The parallel converted data sequences are displayed. This is the default setting.

COMPO: The parallel converted data sequences are divided into YCbCr or RGB and displayed.

BINARY: The parallel converted data sequences are displayed in binary.

HD-SDI, DISPLAY = SERIAL

```
    DATA DUMP LINE No.    1
            SAMPLE    Y      Cb/Cr
[EAV]     <1920>    3FF      3FF
[EAV]     <1921>    000      000
[EAV]     <1922>    000      000
[EAV]     <1923>    2D8      2D8
          <1924>    204      204
          <1925>    200      200
          <1926>    2BB      2F7
          <1927>    23C      1E8
    ADF   <1928>    040      000
    ADF   <1929>    040      3FF
    ADF   <1930>    040      3FF
    DID   <1931>    040      2E7
    DBN   <1932>    040      296
    DC    <1933>    040      218
    UDW   <1934>    040      10D
    UDW   <1935>    040      102
```

SD-SDI, DISPLAY = SERIAL

```
    DATA DUMP LINE No.    4
            SAMPLE   COLOR    DATA
[EAV]     <1440>    Cb       3FF
[EAV]     <1441>    Y        000
[EAV]     <1442>    Cr       000
[EAV]     <1443>    Y'       2D8
    ADF   <1444>    Cb       000
    ADF   <1445>    Y        3FF
    ADF   <1446>    Cr       3FF
    DID   <1447>    Y'       2FF
    DBN   <1448>    Cb       1BA
    DC    <1449>    Y        224
    UDW   <1450>    Cr       228
    UDW   <1451>    Y'       176
    UDW   <1452>    Cb       21E
    UDW   <1453>    Y        22A
    UDW   <1454>    Cr       176
    UDW   <1455>    Y'       11E
```

HD-SDI, DISPLAY = COMPO

```
     DATA DUMP LINE No.   1
            SAMPLE      Y        Cb        Cr
 [EAV]      <1920>     3FF      3FF
 [EAV]      <1921>     000                000
 [EAV]      <1922>     000      000
 [EAV]      <1923>     2D8                2D8
            <1924>     204      204
            <1925>     200                200
            <1926>     2BB      2F7
            <1927>     23C                1E8
    ADF     <1928>     040      000
    ADF     <1929>     040                3FF
    ADF     <1930>     040      3FF
    DID     <1931>     040                2E7
    DBN     <1932>     040      152
    DC      <1933>     040                218
    UDW     <1934>     040      277
    UDW     <1935>     040                104
```

SD-SDI, DISPLAY = COMPO

```
     DATA DUMP LINE No.   4
               SAMPLE    Y      C.ADR    Cb      Cr
 [EAV]         < 720>   000     <360>    3FF     000
 [EAV]         < 721>   2D8
 ADF  ADF  ADF < 722>   3FF     <361>    000     3FF
 DID           < 723>   2FF
 DC   DBN  UDW < 724>   224     <362>    24B     228
 UDW           < 725>   195
 UDW  UDW  UDW < 726>   22A     <363>    21F     195
 UDW           < 727>   11F
 UDW  UDW  UDW < 728>   195     <364>    22C     11F
 UDW           < 729>   22E
 UDW  UDW  UDW < 730>   21F     <365>    195     1F0
 UDW           < 731>   12B
 UDW  UDW  UDW < 732>   1F2     <366>    11F     12B
 UDW           < 733>   21F
 UDW  UDW  UDW < 734>   12B     <367>    1F4     21F
 UDW           < 735>   1F6
```

HD-SDI, DISPLAY = BINARY

```
     DATA DUMP LINE No.   1
            SAMPLE      Y            Cb/Cr
 [EAV]      <1920>   1111111111   1111111111
 [EAV]      <1921>   0000000000   0000000000
 [EAV]      <1922>   0000000000   0000000000
 [EAV]      <1923>   1011011000   1011011000
            <1924>   1000000100   1000000100
            <1925>   1000000000   1000000000
            <1926>   1010111011   1011110111
            <1927>   1000111100   0111101000
    ADF     <1928>   0001000000   0000000000
    ADF     <1929>   0001000000   1111111111
    ADF     <1930>   0001000000   1111111111
    DID     <1931>   0001000000   1011100111
    DBN     <1932>   0001000000   1011110110
    DC      <1933>   0001000000   1000011000
    UDW     <1934>   0001000000   1001110111
    UDW     <1935>   0001000000   0100000100
```

SD-SDI, DISPLAY = BINARY

```
     DATA DUMP LINE No.   4
            SAMPLE     COLOR     DATA
 [EAV]      <1440>     Cb     1111111111
 [EAV]      <1441>     Y      0000000000
 [EAV]      <1442>     Cr     0000000000
 [EAV]      <1443>     Y'     1011011000
 ADF        <1444>     Cb     0000000000
 ADF        <1445>     Y      1111111111
 ADF        <1446>     Cr     1111111111
 DID        <1447>     Y'     1011111111
 DBN        <1448>     Cb     1011100001
 DC         <1449>     Y      1000100100
 UDW        <1450>     Cr     1001010000
 UDW        <1451>     Y'     0100001011
 UDW        <1452>     Cb     1000011110
 UDW        <1453>     Y      1001010010
 UDW        <1454>     Cr     0100001011
 UDW        <1455>     Y'     0100011110
```

Figure 9-7   Displaying HD-SDI and SD-SDI signals

9.6.4   Selecting the Display Start Position

To select the data dump display start position, follow the procedure shown below.
Regardless of this setting, when you press the function dial (F•D), the display starts with the EAV sample number.

• Procedure

STATUS → F•3 SDI ANALYSIS → F•1 DATA DUMP → F•3 JUMP

• Settings

EAV: The display starts with the EAV sample number. This is the default setting.
SAV: The display starts with the SAV sample number.

JUMP = EAV

```
     DATA DUMP LINE No.   50
            SAMPLE      Y        Cb/Cr
 [EAV]      <1920>     3FF       3FF
 [EAV]      <1921>     000       000
 [EAV]      <1922>     000       000
 [EAV]      <1923>     274       274
            <1924>     264       264
            <1925>     200       200
            <1926>     20C       27B
            <1927>     12C       130
            <1928>     040       200
            <1929>     040       200
            <1930>     040       200
            <1931>     040       200
            <1932>     040       200
            <1933>     040       200
            <1934>     040       200
            <1935>     040       200
```

JUMP = SAV

```
     DATA DUMP LINE No.   50
               SAMPLE     Y      Cb/Cr
 [SAV]         <2196>    3FF      3FF
 [SAV]         <2197>    000      000
 [SAV]         <2198>    000      000
 [SAV]         <2199>    200      200
 AP    AP      <   0>    040      200
 AP    AP      <   1>    040      200
 AP    AP      <   2>    040      200
 AP    AP      <   3>    041      200
 AP    AP      <   4>    0CB      200
 AP    AP      <   5>    1F6      200
 AP    AP      <   6>    321      200
 AP    AP      <   7>    3AB      200
 AP    AP      <   8>    3AC      200
 AP    AP      <   9>    3AC      200
 AP    AP      <  10>    3AC      200
 AP    AP      <  11>    3AC      200
```

Figure 9-8   Selecting the display start position

9.6.5   Selecting the Sample Number Adjustment Step Size

To select the sample number adjustment step size for when you turn the function dial (F•D),
follow the procedure shown below.
This setting is valid when $\boxed{\text{F•5}}$ F.D FUNCTION is set to SAMPLE.

• Procedure

$\boxed{\text{STATUS}}$ → $\boxed{\text{F•3}}$ SDI ANALYSIS → $\boxed{\text{F•1}}$ DATA DUMP → $\boxed{\text{F•4}}$ F.D 1CLICK

• Settings

1:	The sample number is adjusted in steps of 1. This is the default setting.
10:	The sample number is adjusted in steps of 10.
50:	The sample number is adjusted in steps of 50.

9.6.6   Selecting Lines and Samples

To select whether to set the line or sample number when you turn the function dial (F•D),
follow the procedure shown below.

• Procedure

$\boxed{\text{STATUS}}$ → $\boxed{\text{F•3}}$ SDI ANALYSIS → $\boxed{\text{F•1}}$ DATA DUMP → $\boxed{\text{F•5}}$ F.D FUNCTION

• Settings

LINE:	Turning the function dial (F•D) changes the line number. When $\boxed{\text{F•1}}$ MODE is set to FRM CAP, the display disappears momentarily whenever you change the line number.
SAMPLE:	Turning the function dial (F•D) changes the sample number. This is the default setting.

9.6.7 Saving to USB Memory

You can save the data dump to USB memory as a text file.
To do so, follow the procedure shown below.

1. **Connect a USB memory device to the USB port.**

2. **Press F·6 USB MEMORY.**

    The file list display appears.
    This menu item appears when USB memory is connected.

```
External USB DEVICE DUMP FILE LIST

        No. FileName              Date       Time      Size(Byte)
        1  dump00.txt          2009/ 9/ 8   11:15:43   30920
        2  dump01.txt          2009/ 9/ 8   11:15:45   30920
        3  dump02.txt          2009/ 9/ 8   11:15:46   30920
        4  dump03.txt          2009/ 9/ 8   11:15:48   30920




        MAX SIZE:    251906 kB
        FREE SIZE:   21082 kB

        DUMP.TXT
```

NAME INPUT	STORE		FILE DELETE	FILENAME AUTO INC OFF		up menu

Figure 9-9   File list display

3. **Press F·1 NAME INPUT.**

    The file name input display appears.

```
    0  1  2  3  4  5  6  7  8  9

    A  B  C  D  E  F  G  H  I  J

    K  L  M  N  O  P  Q  R  S  T

    U  V  W  X  Y  Z  _

    [F.D NOB] = CHAR SELECT , [F.D PUSH] = CHAR SET
    & Function Key EDIT

    DUMP    STORE FILE NAME
    DUMP                    . TXT
```

CLEAR ALL	DELETE	INSERT	<=	=>	CHAR SET	up menu

Figure 9-10   File name input display

4. **Enter a file name using up to 20 characters.**

    The key operations on the file name input display are explained below.
    Spaces are invalid. The spaces that you enter are ignored.

F•1 CLEAR ALL:	Deletes all characters.
F•2 DELETE:	Deletes the character at the cursor position.
F•3 INSERT:	Inserts an underscore (_) 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.

    You can copy the file name of an already saved file. To copy a file name, move the
    cursor to the file in the file list whose name you want to copy, and then press the
    function dial (F•D). If F•5 FILENAME AUTO INC is set to ON, a two-digit number will
    automatically be added to the end of the copied file name.

5. **Press F•7 up menu.**

6. **Press F•2 STORE.**

    When the message "Saving file - Please wait." disappears, the file has been
    successfully saved.
    If there is more than one file with the same name in the USB memory, an overwrite
    confirmation menu appears. If you want to overwrite the current file, press F•1 OVER
    WR YES. Otherwise, press F•3 OVER WR NO.

* **Deleting a Data Dump**

    To delete a data dump that has been saved to USB memory, select the dump file in the file
    list display, and then press F•4 FILE DELETE. To delete the file, press F•1 DELETE YES.
    To cancel the delete operation, press F•3 DELETE NO.

* **Setting File Numbering**

    When you set F•5 FILENAME AUTO INC in the file list display to ON, a two-digit number
    is automatically added to the entered file name (starting with 00). The default setting is
    OFF.
    This number returns to 00 if you initialize the settings or turn the power on and off.

* **USB Memory Folder Structure**

    Data dumps are saved in the DUMP folder. If there is no DUMP folder in the USB memory,
    the LV 5800 will create a folder automatically.

    🗄 USB memory
    └ 🗁 DUMP
        └ 🗋 ****.TXT

9.7 Configuring Phase Difference Measurement Settings

To display the phase difference measurement screen, follow the procedure shown below.
Use this screen to measure and display the phase difference between an SDI signal and an external sync signal or between links A and B.

• **Procedure**

STATUS → F•3 SDI ANALYSIS → F•2 EXT_REF PHASE

```
   CURRENT PHASE
 V PHASE    H PHASE
   0 Lines     0.013 us
                  1 dot                    -Advance
 TOTAL PHASE
     0.013        us

 SDI PHASE MEMORY
 SDI V PHASE  H PHASE      -Advance                        +Delay
     Lines       us
  1  ----     ----
  2  ----     ----
  3  ----     ----
  4  ----     ----
  5  ----     ----
  6  ----     ----
  7  ----     ----
  8  ----     ----              +Delay
 REF EXT HD : DEFAULT
```

| SDI NUMBER 1 | SDI MEMORY | MEMORY CLEAR | REFERENCE SELECT EXT | USER REF SET | REF DEFAULT | up menu |
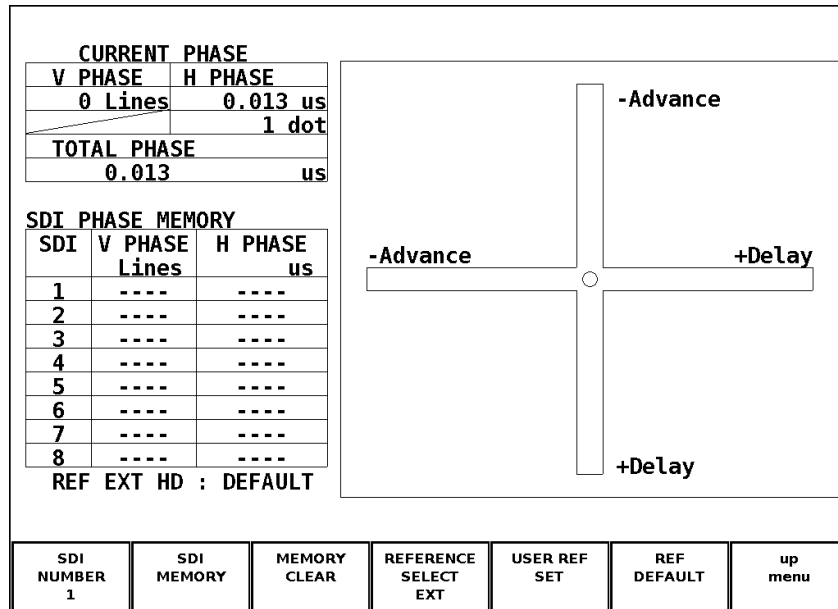
Figure 9-11   Phase difference measurement screen

• **Measuring the Phase Difference between an SDI Signal and an External Sync Signal**

Press EXT to switch the LV 5800 to external sync mode, and then apply an external sync signal. The external sync signal becomes the reference signal, and the phase difference between the external sync signal and the SDI signal is displayed.
For the supported external sync signal formats, see Table 4-3.

• **Measuring the Phase Difference between Links A and B**

Apply an HD dual link signal, and set F•4 REFERENCE SELECT to LINK A. The reference signal is set to link A, and the phase difference between link A and link B is displayed.
You cannot save the phase difference or set user-defined references.

9.7.1 Phase Difference Measurement Screen Explanation

• **CURRENT PHASE**

V PHASE: The phase difference is displayed in units of lines.

H PHASE: The phase difference is displayed in units of time and in units of pixels or dots. (When the input signal is HD dual link 1080p/60, 1080p/59.94, or 1080p/50, the unit will be dots. Pixels are in units of the video's sampling frequency. Dots are in units of the parallel video's transmission clock frequency.)

TOTAL PHASE: The total of the V PHASE and H PHASE differences is displayed here in units of time.

• **SDI PHASE MEMORY**

You can save up to 8 phase differences between the SDI signal and the external sync signal. To save a phase difference, use F•1 SDI NUMBER to select a number from 1 to 8, and then press F•2 SDI MEMORY. You can also delete a saved phase difference by selecting a number, and then pressing F•3 MEMORY CLEAR.

When F•4 REFERENCE SELECT is set to LINK A, SDI PHASE MEMORY is not displayed.

• **REF**

This displays the reference signal as shown below.

Table 9-4   Reference signal display indications

Input Signal	F•4 REFERENCE SELECT	Display Indication	Description
Signals other than HD dual link signals	- (Cannot be selected)	INT	Indicates that the internal sync mode is in use.
		EXT BB : DEFAULT	Indicates that the external sync signal is BB and the phase difference is the default value.
HD Dual Link	EXT	EXT BB : USER REF	Indicates that the external sync signal is BB and a user-defined reference is being used.
		EXT HD : DEFAULT	Indicates that the external sync signal is an HD tri-level sync signal and the phase difference is the default value.
		EXT HD : USER REF	Indicates that the external sync signal is an HD tri-level sync signal and a user-defined reference is being used.
		NO SIGNAL	Indicates that no external sync signal is being applied.
	LINK A	DUAL : DEFAULT	Indicates that the phase difference between links A and B is being measured.
		ACH NO SIGNAL	Indicates that link A is not being applied.
		BCH NO SIGNAL	Indicates that link B is not being applied.
		A,BCH NO SIGNAL	Indicates that links A and B are not being applied.

Setting the User Reference of the Phase Difference

By pressing F•5 USER REF SET, you can set the current phase difference to zero. You can change the reference to match the system that you are using.

To reset the phase difference to its default value, press F•6 REF DEFAULT. The default value is the value that makes the phase difference 0 between a LEADER signal generator's SDI output signal and BB signal without timing offsets when both signals are connected through cables of equal length.

• **Graphical Display**

The vertical axis indicates the V phase difference in lines. The horizontal axis indicates the H phase time difference. When the circles that represent V and H overlap with each other in the center, there is no phase difference.

The circles are normally displayed in white, but they will be displayed in green under the following circumstances.

H Direction:	When the circle is within ±3 clocks of the center.
V Direction:	When the circle is at the center.

Circles do not appear when the LV 5800 uses internal synchronization.

When the signal is behind the reference signal, the circle is displayed on the Delay (+) side. When the signal is ahead of the reference signal, the circle is displayed on the Advance (–) side. For both the V and H axes, differences of up to approximately +1/2 frames from the center are displayed on the Delay axis and differences of up to approximately -1/2 frames from the center are displayed on the Advance axis. See the following table for details.

The H axis phase difference may fluctuate within the following ranges in cases such as when the signal is switched.

±3 clocks (when the input signal is 3G-SDI level A, HD-SDI, SD-SDI, or HD dual link.)
±6 clocks (when the input signal is 3G-SDI level B.)

Table 9-5   Delay and Advance axis display ranges

Format	Displayed with an Advance axis							
				Displayed with a Delay axis				
	V PHASE	H PHASE		V PHASE	H PHASE		V PHASE	H PHASE
	[Lines]	[us]		[Lines]	[us]		[Lines]	[us]
1080p/59.94	-562	-14.829	to	0	0	to	562	0
1080p/60	-562	-14.814	to	0	0	to	562	0
1080p/50	-532	-17.777	to	0	0	to	562	0
1080i/59.94, 1080p/29.97, 1080PsF/29.97	-562	-29.645	to	0	0	to	562	0
1080i/60, 1080p/30, 1080PsF/30	-562	-29.616	to	0	0	to	562	0
1080i/50, 1080p/25, 1080PsF/25	-562	-35.542	to	0	0	to	562	0
1080p/23.98, 1080PsF/23.98	-562	-37.060	to	0	0	to	562	0
1080p/24, 1080PsF/24	-562	-37.023	to	0	0	to	562	0
720p/59.94	-375	0	to	0	0	to	374	22.230
720p/60	-375	0	to	0	0	to	374	22.208
720p/50	-375	0	to	0	0	to	374	26.653
720p/29.97	-375	0	to	0	0	to	374	44.475
720p/30	-375	0	to	0	0	to	374	44.430
720p/25	-375	0	to	0	0	to	374	53.319
720p/23.98	-375	0	to	0	0	to	374	55.597
720p/24	-375	0	to	0	0	to	374	55.542
525i/59.94	-262	-63.518	to	0	0	to	262	0
625i/50	-312	-63.962	to	0	0	to	312	0

9.8 Displaying the List of Ancillary Data

To display a list of ancillary data, follow the procedure shown below.
This is not supported when the input signal is 3G-SDI or HD dual link, so F•4 ANC DATA VIEWER is not displayed.

• **Procedure**

STATUS → F•4 ANC DATA VIEWER

```
ANC DATA VIEWER
                                             1/5
  STANDARD          DID/SDID  STATUS   LINE No.   PACKET

  S291M MARK DEL     80 /--   MISSING
  S291M END PKT      84 /--   MISSING
  S291M START PKT    88 /--   MISSING
  ARIB B.27 CC       CF /--   MISSING
  S299M ctrl G4      E0 /--   MISSING
  S299M ctrl G3      E1 /--   MISSING
  S299M ctrl G2      E2 /--   DETECT    571 /F2       2 /FRAME
  S299M ctrl G1      E3 /--   DETECT    571 /F2       2 /FRAME
  S299M aud G4       E4 /--   MISSING
  S299M aud G3       E5 /--   MISSING
  S299M aud G2       E6 /--   DETECT   1125 /F2    1602 /FRAME
  S299M aud G1       E7 /--   DETECT   1125 /F2    1602 /FRAME
  S272M ctrl G4      EC /--   MISSING
  S272M ctrl G3      ED /--   MISSING
  S272M ctrl G2      EE /--   MISSING



  ANC DUMP                          PAGE     PAGE        up
                                    UP       DOWN       menu
```

Figure 9-12   Ancillary data display

9.8.1 Ancillary Data Display Explanation

On the ancillary data screen, data is displayed as a list for each standard. If data is detected, "DETECT" is displayed in the STATUS column. If data is not detected, "MISSING" is displayed in the STATUS column.

By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. You can also press F•5 PAGE UP and F•6 PAGE DOWN to move between pages. In the upper right of the screen, the "page number/total number of pages" is displayed.
If you press the function dial (F•D), the cursor returns to the first data entry.

9.8.2   Displaying the Ancillary Data Dump

To display a dump of the data that you have selected on the ancillary data screen, follow the procedure below.
By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

• **Procedure**

STATUS → F•4 ANC DATA VIEWER → F•1 ANC DUMP

```
ANC DUMP

   STANDARD            S299M ctrl G2
   TYPE                1
   STREAM              Y

  LINE No.                 9

         DID              2E2
         DBN              200
         DC               10B
       1                  201
       2                  200
       3                  20F
       4                  201
       5                  200
       6                  200
       7                  201
       8                  200
       9                  200
```

	HOLD TIME 3s	DUMP MODE HEX				up menu

Figure 9-13   Ancillary dump display

9.8.3   Updating the Data Dump

When the selected data is embedded in multiple lines, the line number that is displayed on the ANC dump screen is switched at a regular interval. (However, the order in which the line numbers are switched is irregular.)
To select the dump display update time, follow the procedure shown below.

• **Procedure**

STATUS → F•4 ANC DATA VIEWER → F•1 ANC DUMP → F•2 HOLD TIME

• **Settings**

HOLD: The screen is not updated.

1 s: The screen is updated once per second.

3 s: The screen is updated once every 3 seconds. This is the default setting.

9.8.4 Selecting the Dump Mode

To select the dump mode, follow the procedure shown below.

• Procedure

STATUS → F•4 ANC DATA VIEWER → F•1 ANC DUMP → F•3 DUMP MODE

• Settings

HEX: Data is displayed in hexadecimal format. This is the default setting.
BINARY: Data is displayed in binary format.

DUMP MODE = HEX

```
ANC DUMP

   STANDARD          S2016-3 AFD
   TYPE              2
   STREAM            Y

   LINE No.          20

        DID          241
        SDID         205
        DC           108
     1               104
     2               200
     3               200
     4               2A0
     5               200
     6               23C
     7               203
     8               130
        CHECKSUM     261
```

DUMP MODE = BINARY

```
ANC DUMP

   STANDARD          S2016-3 AFD
   TYPE              2
   STREAM            Y

   LINE No.          20

        DID          1001000001
        SDID         1000000101
        DC           0100001000
     1               0100000100
     2               1000000000
     3               1000000000
     4               1010100000
     5               1000000000
     6               1000111100
     7               1000000011
     8               0100110000
        CHECKSUM     1001100001
```

Figure 9-14   Selecting the dump mode

9.9 Detecting Ancillary Packets

To display ancillary packets, follow the procedure shown below.
If an ancillary packet is detected, "DETECT" appears next to it. Otherwise, "MISSING" appears next to it.

• Procedure

STATUS → F•5 ANC PACKET

3G-SDI

```
ANC PACKET SUMMARY
 AUDIO CONTROL PACKET  MISSING

 LTC                   MISSING
 VITC                  MISSING
 FORMAT ID (STREAM 1)  DETECT
 FORMAT ID (STREAM 2)  DETECT
```

HD dual link

```
ANC PACKET SUMMARY
 AUDIO CONTROL PACKET  DETECT

 LTC                   MISSING
 VITC                  MISSING
 FORMAT ID (LINK A)    MISSING
 FORMAT ID (LINK B)    MISSING
```

SD-SDI

```
ANC PACKET SUMMARY
 AUDIO CONTROL PACKET  DETECT
 EDH                   DETECT
 LTC                   MISSING
 VITC                  MISSING
 FORMAT ID             MISSING
 V-ANC SMPTE EIA-708          MISSING
             EIA-608          MISSING
             PROGRAM          MISSING
             DATA BROADCAST   MISSING
             VBI              MISSING
             AFD              MISSING
 V-ANC ARIB  CLOSED CAPTION 1 MISSING
             CLOSED CAPTION 2 MISSING
             CLOSED CAPTION 3 MISSING
             NET-Q            MISSING
             TRIGGER PACKET   MISSING
             USER DATA 1      MISSING
             USER DATA 2      MISSING
```

EDH	FORMAT ID	CONTROL PACKET	V-ANC ARIB	V-ANC SMPTE	CUSTOM SEARCH	up menu

Figure 9-15   Ancillary packet display

9.9.1   Ancillary Packet Display Explanation

• **AUDIO CONTROL PACKET**

The embedded audio consists of 4 groups that each contain 4 channels. This makes for a total of 16 channels. A single audio control packet is embedded in each group.
When the input signal is 3G-SDI level B, only stream 1 data is detected. When the input signal is HD dual link, only link A data is detected.
Reference: Section 9.12, "Displaying Audio Control Packets"

• **EDH (Error Detection and Handling) (When the input signal is SD-SDI)**

This packet is used for detecting transmission errors. When multiple devices are connected, this packet can be used to determine which device caused an error. Both full-field and active picture errors are detected.
Reference: Section 9.10, "Displaying the EDH Packet"

• **LTC (Linear/longitudinal time code)**

This is a type of time code. One is embedded per frame.
When the input signal is 3G-SDI level B, only stream 1 data is detected. When the input signal is HD dual link, only link A data is detected.

• **VITC (Vertical interval time code)**

This is a type of time code. One is embedded per field.
When the input signal is 3G-SDI level B, only stream 1 data is detected. When the input signal is HD dual link, only link A data is detected.

- **FORMAT ID**

  This is a packet that is used to identify the video format. It conforms to SMPTE 352M-2002.
  When the input signal is 3G-SDI, stream 1 and stream 2 data is detected. When the input signal is HD dual link, link A and link B data is detected.
  Reference:　Section 9.11, "Displaying the Format ID"

- **EIA-708 (When the input signal is HD-SDI or SD-SDI)**

  This is one of the closed caption specifications. This packet is embedded in the V-ANC area.
  This is used for digital video closed caption data. It only supports alphanumeric characters.
  Reference:　Section 9.19, "Displaying EIA-708 Data"

- **EIA-608 (When the input signal is HD-SDI or SD-SDI)**

  This is one of the closed caption specifications. This packet is embedded in the V-ANC area.
  This was previously used for analog composite (embedded in line number 21) closed caption data. It only supports alphanumeric characters.
  Reference:　Section 9.20, "Displaying EIA-608 Data"

- **PROGRAM (Program Description; when the input signal is HD-SDI or SD-SDI)**

  A packet embedded in the V-ANC area.
  Reference:　Section 9.21, "Displaying Program Data"

- **DATA BROADCAST (When the input signal is HD-SDI or SD-SDI)**

  A packet embedded in the V-ANC area.

- **VBI (When the input signal is HD-SDI or SD-SDI)**

  A packet embedded in the V-ANC area.
  Reference:　Section 9.22, "Displaying VBI Data"

- **AFD (When the input signal is HD-SDI or SD-SDI)**

  A packet embedded in the V-ANC area.
  Reference:　Section 9.23, "Displaying AFD Packets"

- **CLOSED CAPTION 1, 2, 3 (When the input signal is HD-SDI or SD-SDI)**

  This is a closed caption information packet that is embedded in the V-ANC area. Up to three closed caption data entries can be embedded.
  Reference:　Section 9.14, "Displaying Closed Caption Packets"

- **NET-Q (When the input signal is HD-SDI or SD-SDI)**

  This is an inter-stationary control signal
  Reference:　Section 9.15, "Displaying the Inter-Stationary Control Data"

- **TRIGGER PACKET (When the input signal is HD-SDI or SD-SDI)**

  This is the data transmission trigger signal.
  Reference:　Section 9.16, "Displaying the Data Broadcast Trigger Signal"

• **USER DATA 1, 2 (When the input signal is HD-SDI or SD-SDI)**

Up to two packets of user-defined data.

Reference: Section 9.17, "Displaying the User Data"

9.10   Displaying EDH Packets

To display EDH packets, follow the procedure shown below.
This screen is displayed when the input signal is SD-SDI. If the input signal is not SD-SDI, $\boxed{\text{F•1}}$ EDH is not displayed.

• **Procedure**

$\boxed{\text{STATUS}}$ → $\boxed{\text{F•5}}$ ANC PACKET → $\boxed{\text{F•1}}$ EDH

```
 EDH MONITOR     SMPTE RP165
  INTERFACE LINE No.    9, 272

   EDH PACKET    NORMAL

             UES  IDA  IDH  EDA  EDH
       FF   :   0    0    0    0    0
       AP   :   0    0    0    0    0
       ANC  :   0    0    0    0    0

   RECEIVED CRC     FF   NORMAL
                    AP   NORMAL
```

DISPLAY TEXT						up menu

Figure 9-16   EDH packet display

9.10.1   EDH Packet Display Explanation

The EDH packet screen is divided into a flag display (UES, IDA, IDH, EDA, and EDH) and a CRC display (RECEIVED CRC). The flag display shows the contents of the EDH packets that are embedded in the SDI input signal. The CRC display shows the results of comparing the CRCs in the EDH packets to the CRCs computed by the LV 5800 from the received data.

Because SDI output is only transmitted through the serial reclock circuit, packets are not rewritten even if an error occurs in RECEIVED CRC.

Table 9-6 EDH packet display explanation

Item	Display	Description
INTERFACE LINE No.	-	Displays the numbers of the lines in which EDH packets are embedded.
EDH FLAGS	-	Indicates the results of EDH packet error detection.
	NORMAL	This indication appears when all of the flags (UES, IDA, IDH, EDA, and EDH) are zeros and the CRC indications (RECEIVED CRC) are all NORMAL.
	ERROR	This indication appears when any of the flags (UES, IDA, IDH, EDA, and EDH) is 1 or when one of the CRC indications (RECEIVED CRC) is ERROR.
FF	-	Indicates the result of creating a CRC for an entire field and checking it for errors.
AP	-	Indicates the result of creating a CRC for the active video area and checking it for errors.
ANC	-	Indicates the result of creating a parity bit and checksum for the ancillary data and checking them for errors.
UES	-	Indicates whether or not the connected device supports EDH packets.
	0	The connected device supports EDH packets.
	1	The connected device does not support EDH packets.
IDA	-	Indicates internal data transmission errors in the devices before the LV 58SER06.
	0	No errors have been detected.
	1	An error has been detected.
IDH	-	IDH Indicates internal data transmission errors in the device immediately before the LV 58SER06.
	0	No errors have been detected.
	1	An error has been detected.
EDA	-	Indicates data transmission errors from the devices before the LV 58SER06.
	0	No errors have been detected.
	1	An error has been detected.
EDH	-	Indicates data transmission errors from the device immediately before the LV 58SER06.
	0	No errors have been detected.
	1	An error has been detected.
RECEIVED CRC FF	-	Indicates full-field CRC errors.
	NORMAL	The full-field CRC embedded in the EDH packets and the full-field CRC computed by the LV 58SER06 match.
	ERROR	The full-field CRC embedded in the EDH packets and the full-field CRC computed by the LV 58SER06 do not match.
RECEIVED CRC AP	-	Indicates active picture CRC errors.
	NORMAL	The active picture CRC embedded in the EDH packets and the active picture CRC computed by the LV 58SER06 match.
	ERROR	The active picture CRC embedded in the EDH packets and the active picture CRC computed by the LV 58SER06 do not match.

9.10.2 Selecting the Display Format

To select the display format, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•1 EDH → F•1 DISPLAY

• Settings

TEXT: The EDH packet is displayed in text format. This is the default setting.

DUMP: The EDH packet is displayed in dump format. By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

9.10.3 Selecting the Dump Mode

To select the dump mode when F•1 DISPLAY is set to DUMP, follow the procedure shown below. When F•1 DISPLAY is set to TEXT, this menu item does not appear.

• Procedure

STATUS → F•5 ANC PACKET → F•1 EDH → F•2 DUMP MODE

• Settings

HEX: Data is displayed in hexadecimal format. This is the default setting.

BINARY: Data is displayed in binary format.

DUMP MODE = HEX

```
EDH MONITOR    SMPTE RP165
 INTERFACE LINE No.    9, 272


        DID              1F4
        DBN              200
        DC               110
  1 AP WORK0             1F4
  2 AP WORK1             2B8
  3 AP WORK2             29C
  4 FF WORK0             25C
  5 FF WORK1             170
  6 FF WORK2             1B0
  7 ANC FLAG             200
  8 AP FLAG              200
  9 FF FLAG              200
 10 RESERVED0            200
 11 RESERVED1            200
 12 RESERVED2            200

```

DUMP MODE = BINARY

```
EDH MONITOR    SMPTE RP165
 INTERFACE LINE No.    9, 272


        DID              0111110100
        DBN              1000000000
        DC               0100010000
  1 AP WORK0             1011000000
  2 AP WORK1             1010100000
  3 AP WORK2             1010100000
  4 FF WORK0             0110011000
  5 FF WORK1             1010000100
  6 FF WORK2             1010001000
  7 ANC FLAG             1000000000
  8 AP FLAG              1000000000
  9 FF FLAG              1000000000
 10 RESERVED0            1000000000
 11 RESERVED1            1000000000
 12 RESERVED2            1000000000

```

Figure 9-17   Selecting the dump mode

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9.11　Displaying the Format ID

To show the format ID display, follow the procedure shown below.
In the format ID display, the information from the packet for identifying the video format is displayed.

• **Procedure**

STATUS → F•5 ANC PACKET → F•2 FORMAT ID

```
FORMAT ID DISPLAY        SMPTE 352M
  INTERFACE LINE No.      10, 572
BYTE1       10001010
  VERSION ID             SMPTE 352M-2002
  FORMAT ID              1125(1080) LINE
  DIGITAL INTERFACE      3Gb/s LEVEL-B DUAL LINK
BYTE2       01001010
  TRANSPORT STRUCTURE    INTERLACED
  PICTURE STRUCTURE      PROGRESSIVE
  PICTURE RATE           60/1.001
BYTE3       00000000
  ASPECT RATIO           RESERVED
  H SAMPLING             1920

  SAMPLING STRUCTURE     4:2:2 YCbCr
BYTE4       00000001
  CHANNEL ASSIGNMENT     DUAL LINK A
  DYNAMIC RANGE          NOT USED
  ASPECT RATIO           NOT USED
  MAPPING MODE           NOT USED
  BIT DEPTH              10BIT
```

	DS SELECT DS 1					up menu

Figure 9-18　Format ID display

9.11.1　Format ID Display Explanation

Table 9-7　Format ID display explanation

Item	Description
INTERFACE LINE No.	The numbers of the lines in which the format ID is embedded are displayed here. Reference Section 9.4, "3G-SDI Line Numbers"
BYTE1 to 4	The format ID is displayed here in binary.
VERSION ID	The format ID version is displayed here.
FORMAT ID	The video format is displayed here.
DIGITAL INTERFACE	The input signal bitrate is displayed here.
TRANSPORT STRUCTURE	The transmission scan mode is displayed here.
PICTURE STRUCTURE	The picture scan mode is displayed here.
PICTURE RATE	The frame rate is displayed here.
ASPECT RATIO	The aspect ratio is displayed here.
H SAMPLING	The number of horizontal samples is displayed here.
DISP ASPECT RATIO	The aspect ratio is displayed here. This is displayed when F•1 STANDARD is set to ARIB.
SAMPLING STRUCTURE	The sampling structure is displayed here.
CHANNEL ASSIGNMENT	The link is displayed here.
DYNAMIC RANGE	The dynamic range of a single pixel is displayed here. This is not displayed when F•1 STANDARD is set to ARIB.

Item	Description
ASPECT RATIO	The aspect ratio is displayed here.
	This is not displayed when F•1 STANDARD is set to ARIB.
MAPPING MODE	The mapping mode is displayed here.
	This is not displayed when F•1 STANDARD is set to ARIB.
BIT DEPTH	The bit depth of a single pixel is displayed here.

9.11.2 Selecting the Display Format

You can use the SMPTE and ARIB packets to distinguish video signal formats from each other. To select the display format, follow the procedure shown below.
Only SMPTE is supported when the input signal is 3G-SDI or HD dual link, so this menu item is not displayed.

• Procedure

STATUS → F•5 ANC PACKET → F•2 FORMAT ID → F•1 STANDARD

• Settings

SMPTE: The format ID packet specified by SMPTE 352M is displayed. This is the default setting.
ARIB: The format ID packet specified by ARIB STD-B39 is displayed.

9.11.3 Selecting the Content to Display

When the input signal is HD dual link or 3G-SDI, follow the procedure shown below to select which piece of data's format ID will be displayed.

• Procedure (When the input signal is HD dual link)

STATUS → F•5 ANC PACKET → F•2 FORMAT ID → F•2 LINK SELECT

• Settings (When the input signal is HD dual link)

LINK A: The Link A format ID is displayed. This is the default setting.
LINK B: The Link B format ID is displayed.

• Procedure (When the input signal is 3G-SDI)

STATUS → F•5 ANC PACKET → F•2 FORMAT ID → F•2 STREAM SELECT

• Settings (When the input signal is 3G-SDI)

STREAM 1: The stream 1 format ID is displayed. This is the default setting.
STREAM 2: The stream 2 format ID is displayed.

9.12 Displaying Audio Control Packets

To display audio control packets, follow the procedure shown below.
When the input signal is 3G-SDI level B, only stream 1 data is displayed. When the input signal is HD dual link, only link A data is displayed.

Reference: Section 9.4, "3G-SDI Line Numbers"

• **Procedure**

STATUS → F•5 ANC PACKET → F•3 CONTROL PACKET

```
AUDIO CONTROL PACKET MONITOR  SMPTE 299M
 INTERFACE LINE No.    9, 571

CONTROL PACKET
  GROUP          :         1,
  FRAME No.      :         0,
  SAMPLE RATE    :      48kHz,
  SYNC MODE      :     SYNCHRONOUS
  ACTIVE CH      :    1 , 2 , 3 , 4
  DELAY1-2       :    INVALID  +0000000
  DELAY3-4       :    INVALID  +0000000
```

DISPLAY		GROUP				up
TEXT		1				menu

Figure 9-19   Audio control packet display

9.12.1 Selecting the Group to Display

A single group in the embedded audio consists of four channels.
To select the group whose audio control packet you want to display, follow the procedure shown below.

• **Procedure**

STATUS → F•5 ANC PACKET → F•3 CONTROL PACKET → F•3 GROUP

• **Settings**

1:	The audio control packet of group 1 is displayed. This is the default setting.
2:	The audio control packet of group 2 is displayed.
3:	The audio control packet of group 3 is displayed.
4:	The audio control packet of group 4 is displayed.

9.12.2 Selecting the Display Format

To select the display format, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•3 CONTROL PACKET → F•1 DISPLAY

• Settings

TEXT: The audio control packet is displayed in text format. This is the default setting.

DUMP: The audio control packet is displayed in dump format. By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

9.12.3 Selecting the Dump Mode

To select the dump mode when F•1 DISPLAY is set to DUMP, follow the procedure shown below. When F•1 DISPLAY is set to TEXT, this menu item does not appear.

• Procedure

STATUS → F•5 ANC PACKET → F•3 CONTROL PACKET → F•2 DUMP MODE

• Settings

HEX: Data is displayed in hexadecimal format. This is the default setting.

BINARY: Data is displayed in binary format.

DUMP MODE = HEX

```
AUDIO CONTROL PACKET MONITOR   SMPTE 299M
  INTERFACE LINE No.    9, 571

        DID          1E3
        DBN          200
        DC           10B
    1 AF             200
    2 RATE           200
    3 ACT            20F
    4 DEL1-2         200
    5 DEL1-2         200
    6 DEL1-2         200
    7 DEL3-4         200
    8 DEL3-4         200
    9 DEL3-4         200
   10 RESERVED       200
   11 RESERVED       200
        CHECKSUM     2FD
```

DUMP MODE = BINARY

```
AUDIO CONTROL PACKET MONITOR   SMPTE 299M
  INTERFACE LINE No.    9, 571

        DID          0111100011
        DBN          1000000000
        DC           0100001011
    1 AF             1000000000
    2 RATE           1000000000
    3 ACT            1000001111
    4 DEL1-2         1000000000
    5 DEL1-2         1000000000
    6 DEL1-2         1000000000
    7 DEL3-4         1000000000
    8 DEL3-4         1000000000
    9 DEL3-4         1000000000
   10 RESERVED       1000000000
   11 RESERVED       1000000000
        CHECKSUM     1011111101
```

Figure 9-20   Selecting the dump mode

9.13 V-ANC ARIB Display

To analyze and display the vertical blanking ancillary packets that are specified by the ARIB standard, press F•4 V-ANC ARIB on the status menu.
This is not supported when the input signal is 3G-SDI or HD dual link, so this menu item is not displayed.

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB →

CLOSED CAPTION	NET-Q	DATA TRIGGER	USER DATA1	USER DATA2		up menu
F·1	F·2	F·3	F·4	F·5	F·6	F·7
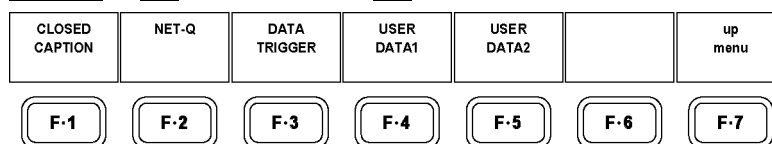
Figure 9-21   V-ANC ARIB Menu

9.14　Displaying Closed Caption Packets

To display closed caption packets, follow the procedure shown below.
The contents of the ARIB-specified closed caption packets are grouped by closed caption type and displayed on the closed caption packets screen.

• **Procedure**

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB → F•1 CLOSED CAPTION

```
CLOSED CAPTION DISPLAY  ARIB STD-B37
  INTERFACE LINE No.  19, 582
  CLOSED CAPTION TYPE      CELLULAR

 HEADER WORD1:  0100010011
  ERROR CORRECTION        NO
  CONTINUITY INDEX         3

 HEADER WORD2:  1000000000

 HEADER WORD3:  1000000011
  START PACKET FLAG       0
  END PACKET FLAG         0
  TRANSMISSION MODE       STORAGE
  FORMAT ID               RESERVED

 HEADER WORD4:  0100000100
  C.C. DATA ID            EXCHANGE FORMAT
  LANGUAGE ID             LANGUAGE 5
```

| DISPLAY | TYPE | | | | | up |
| TEXT | CELLULAR | | | | | menu |

Figure 9-22　Closed caption packet display

9.14.1　Closed Caption Packet Display Explanation

Table 9-8　Closed caption packet display explanation

Item	Description
HEADER WORD1 to 4	Display the headers using binary values.
INTERFACE LINE No.	Displays the numbers of the lines in which closed caption information is embedded.
CLOSED CAPTION TYPE	Displays the closed caption packet type.
ERROR CORRECTION	Indicates whether or not error correction has taken place.
CONTINUITY INDEX	Displays a counter that indicates packet continuity.
START PACKET FLAG	Displays the starting packet in the ancillary packets that compose the closed caption data group.
END PACKET FLAG	When packets are divided in MPEG-2 TS, this item indicates whether or not the end packet is included.
TRANSMISSION MODE	Displays the transmission mode.
FORMAT ID	Displays the closed caption packet type.
C.C. DATA ID	Displays the closed caption data identifier.
LANGUAGE ID	Displays the language identifier that is used when transmitting closed caption in multiple languages.

9.14.2 Selecting the Closed Caption Type

To select the type of closed captions that are displayed, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB → F•1 CLOSED CAPTION → F•2 TYPE

• Settings

HD:	Display the HD closed caption. This is the default setting.
SD:	Display the SD closed caption.
ANALOG:	Display the analog closed caption.
CELLULAR:	Display the cellular closed caption.

9.14.3 Selecting the Display Format

To select the display format, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB → F•1 CLOSED CAPTION → F•1 DISPLAY

• Settings

TEXT:	The closed caption packet is displayed in text format. This is the default setting.
DUMP:	The closed caption packet is displayed in dump format. By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

9.14.4 Selecting the Dump Mode

To select the dump mode when F•1 DISPLAY is set to DUMP, follow the procedure shown below. When F•1 DISPLAY is set to TEXT, this menu item does not appear.

• Procedure

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB → F•1 CLOSED CAPTION → F•3 DUMP MODE

• Settings

HEX:	Data is displayed in hexadecimal format. This is the default setting.
BINARY:	Data is displayed in binary format.

DUMP MODE = HEX

```
CLOSED CAPTION DISPLAY  ARIB STD-B37
  INTERFACE LINE No.  19, 582


        DID           25F
        SDID          1DC
        DC            2FF
     1 HEADER1        113
     2 HEADER2        200
     3 HEADER3        203
     4 HEADER4        104
     5 DATA1          205
     6 DATA2          206
     7 DATA3          107
     8 DATA4          108
     9 DATA5          209
    10 DATA6          20A
    11 DATA7          10B
    12 DATA8          20C
```

DUMP MODE = BINARY

```
CLOSED CAPTION DISPLAY  ARIB STD-B37
  INTERFACE LINE No.  19, 582


        DID           1001011111
        SDID          0111011100
        DC            1011111111
     1 HEADER1        0101000110
     2 HEADER2        0100000100
     3 HEADER3        1000000011
     4 HEADER4        0100000100
     5 DATA1          1000000101
     6 DATA2          1000000110
     7 DATA3          0100000111
     8 DATA4          0100001000
     9 DATA5          1000001001
    10 DATA6          1000001010
    11 DATA7          0100001011
    12 DATA8          1000001100
```

Figure 9-23   Selecting the dump mode

9.15   Displaying the Inter-Stationary Control Data

To display the screen for the inter-stationary control signal specified by the ARIB standard, follow the procedure shown below.

• **Procedure**

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB → F•2 NET-Q

```
INTER-STATIONARY CONTROL DATA  ARIB STD-B39
 INTERFACE LINE No.        20, 583
ERROR CORRECTION                  NO
CONTINUITY INDEX                   4
STATION CODE             L E A D E R
DATE & TIME       2003/:2/01 00:00:00
VIDEO CURRENT :1080i  /29.97 NEXT:1080i  /29.97 COUNTDOWN:255
AUDIO CURRENT :S            NEXT:S            COUNTDOWN:255
DOWN MIX CURRENT:NOT USED     NEXT:NOT USED


TRIGGER SIGNAL
   Q1:0   Q2:0   Q3:0   Q4:0   Q5:0   Q6:0   Q7:0   Q8:0
   Q9:0  Q10:0  Q11:0  Q12:0  Q13:0  Q14:0  Q15:0  Q16:0
  Q17:0  Q18:0  Q19:0  Q20:0  Q21:0  Q22:0  Q23:0  Q24:0
  Q25:0  Q26:0  Q27:0  Q28:0  Q29:0  Q30:0  Q31:0  Q32:0
COUNTER     Q1:  0    Q2:  0    Q3:  0    Q4:  0
COUNTDOWN   Q1:255    Q2:255    Q3:255    Q4:255
STATUS SIGNAL
   S1:0   S2:0   S3:0   S4:0   S5:0   S6:0   S7:0   S8:0
   S9:0  S10:0  S11:0  S12:0  S13:0  S14:0  S15:0  S16:0
```

DISPLAY TEXT		Q LOG CLEAR	BIT MASK			up menu

Figure 9-24   Inter-stationary control data display

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9.15.1   Inter-Stationary Control Data Display Explanation

Table 9-9   Inter-stationary control data display explanation

Item	Description
INTERFACE LINE No.	Displays the numbers of the lines in which the inter-stationary control signal is embedded.
ERROR CORRECTION	Indicates whether or not error correction has taken place.
CONTINUITY INDEX	Displays a counter that indicates packet continuity.
STATION CODE	Uses letters to display the code of the station that produced the signal.
DATE & TIME	Displays the date and time when the signal was produced.
VIDEO CURRENT	Displays the current video mode.
AUDIO CURRENT	Displays the current audio mode.
DOWN MIX CURRENT	Displays the audio down-mix specification.
NEXT	Displays the next video mode, audio mode, or audio down-mix specification.
COUNTDOWN	Displays the countdown until the next video or audio signal mode switch.
TRIGGER SIGNAL	Displays the trigger signal, which indicates the signal timing.
COUNTER	Displays the counter for TRIGGER SIGNAL Q1 to Q4.
COUNTDOWN	Displays timing information for TRIGGER SIGNAL Q1 to Q4.
STATUS SIGNAL	Displays the status signal.

9.15.2   Selecting the Display Format

To select the display format, follow the procedure shown below.

• **Procedure**

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB → F•2 NET-Q → F•1 DISPLAY

• **Settings**

TEXT: The inter-stationary control data is displayed in text format. This is the default setting.

DUMP: The inter-stationary control data is displayed in dump format. By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

Q LOG: The Q signal log is displayed. By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

9.15.3 Setting the Bit Mask

When $\boxed{F \cdot 1}$ DISPLAY is set to TEXT, follow the procedure shown below to mask the Q signal and status signal separately. Press $\boxed{F \cdot 4}$ ALL ON to select all the check boxes. Press $\boxed{F \cdot 5}$ ALL OFF to clear all the check boxes. By default, all the check boxes are selected.

Reference:　Section 5.1, "Tab Menu Operations"

• Procedure

$\boxed{\text{STATUS}}$ → $\boxed{F \cdot 5}$ ANC PACKET → $\boxed{F \cdot 4}$ V-ANC ARIB → $\boxed{F \cdot 2}$ NET-Q → $\boxed{F \cdot 4}$ BIT MASK

```
NET-Q Bit Mask

      Q1   ☑ ON □ OFF   Q17  ☑ ON □ OFF   S1   ☑ ON □ OFF
      Q2   ☑ ON □ OFF   Q18  ☑ ON □ OFF   S2   ☑ ON □ OFF
      Q3   ☑ ON □ OFF   Q19  ☑ ON □ OFF   S3   ☑ ON □ OFF
      Q4   ☑ ON □ OFF   Q20  ☑ ON □ OFF   S4   ☑ ON □ OFF
      Q5   ☑ ON □ OFF   Q21  ☑ ON □ OFF   S5   ☑ ON □ OFF
      Q6   ☑ ON □ OFF   Q22  ☑ ON □ OFF   S6   ☑ ON □ OFF
      Q7   ☑ ON □ OFF   Q23  ☑ ON □ OFF   S7   ☑ ON □ OFF
      Q8   ☑ ON □ OFF   Q24  ☑ ON □ OFF   S8   ☑ ON □ OFF
      Q9   ☑ ON □ OFF   Q25  ☑ ON □ OFF   S9   ☑ ON □ OFF
      Q10  ☑ ON □ OFF   Q26  ☑ ON □ OFF   S10  ☑ ON □ OFF
      Q11  ☑ ON □ OFF   Q27  ☑ ON □ OFF   S11  ☑ ON □ OFF
      Q12  ☑ ON □ OFF   Q28  ☑ ON □ OFF   S12  ☑ ON □ OFF
      Q13  ☑ ON □ OFF   Q29  ☑ ON □ OFF   S13  ☑ ON □ OFF
      Q14  ☑ ON □ OFF   Q30  ☑ ON □ OFF   S14  ☑ ON □ OFF
      Q15  ☑ ON □ OFF   Q31  ☑ ON □ OFF   S15  ☑ ON □ OFF
      Q16  ☑ ON □ OFF   Q32  ☑ ON □ OFF   S16  ☑ ON □ OFF

  COMPLETE                    ALL ON     ALL OFF            CANCEL
```

Figure 9-25　Setting the bit mask

9.15.4 Selecting the Dump Mode

To select the dump mode when $\boxed{F \cdot 1}$ DISPLAY is set to DUMP, follow the procedure shown below. When $\boxed{F \cdot 1}$ DISPLAY is set to TEXT or Q LOG, this menu item does not appear.

• Procedure

$\boxed{\text{STATUS}}$ → $\boxed{F \cdot 5}$ ANC PACKET → $\boxed{F \cdot 4}$ V-ANC ARIB → $\boxed{F \cdot 2}$ NET-Q → $\boxed{F \cdot 2}$ DUMP MODE

• Settings

HEX:　　　Data is displayed in hexadecimal format. This is the default setting.
BINARY:　Data is displayed in binary format.

DUMP MODE = HEX

```
INTER-STATIONARY CONTROL DATA  ARIB STD-B39
 INTERFACE LINE No.  20, 583


        DID              25F
        SDID             1FE
        DC               2FF
  1 HEADER              214
  2 STATION CODE1       14C
  3 STATION CODE2       145
  4 STATION CODE3       241
  5 STATION CODE4       244
  6 STATION CODE5       145
  7 STATION CODE6       152
  8 STATION CODE7       120
  9 STATION CODE8       120
 10 YEAR                203
 11 MONTH               1A2
 12 DAY                 101
```

DUMP MODE = BINARY

```
INTER-STATIONARY CONTROL DATA  ARIB STD-B39
 INTERFACE LINE No.  20, 583


        DID              1001011111
        SDID             0111111110
        DC               1011111111
  1 HEADER              1001000111
  2 STATION CODE1       0101001100
  3 STATION CODE2       0101000101
  4 STATION CODE3       1001000001
  5 STATION CODE4       1001000100
  6 STATION CODE5       0101000101
  7 STATION CODE6       0101010010
  8 STATION CODE7       0100100000
  9 STATION CODE8       0100100000
 10 YEAR                1000000011
 11 MONTH               0110100010
 12 DAY                 0100000001
```

Figure 9-26   Selecting the dump mode

9.15.5   Displaying the Q Signal Log

To display the Q signal log, set F•1 DISPLAY to Q LOG.
To clear the log, press F•3 Q LOG CLEAR.

```
INTER-STATIONARY CONTROL DATA  ARIB STD-B39
 NETQ LOG LIST  SAMPLE No.=   40   << NOW LOGGING >>
                          Q32----------------------------Q1
    15: 16:44:29      1,A -------- -------- ------1- --------
    14: 16:44:29      1,A -------- -------- -------1 --------
    13: 16:44:29      1,A -------- -------- -------- --------
    12: 16:44:29      1,A -------- -------- -------- 1-------
    11: 16:44:29      1,A -------- -------- -------- -1------
    10: 16:44:29      1,A -------- -------- -------- --1-----
     9: 16:44:29      1,A -------- -------- -------- ---1----
     8: 16:44:29      1,A -------- -------- -------- ----1---
     7: 16:44:29      1,A -------- -------- -------- -----1--
     6: 16:44:29      1,A -------- -------- -------- ------1-
     5: 16:44:29      1,A -------- -------- -------- -------1
     4: 16:44:29      1,A -------- -------- -------- --------
     3: 16:44:29      1,A -1-1-1-1 -------- -------- --------
     2: 16:44:28      1,A -1-1-1-1 1-1-1-1- -1-1-1-1 --------
     1: 16:44:22      1,A -1-1-1-1 1-1-1-1- -1-1-1-1 -1-1-1-1
```

DISPLAY		Q LOG	BIT			up
Q LOG		CLEAR	MASK			menu

Figure 9-27   Q signal log display

• **Precautions**

•   If Input Mode is set to Single Input in the unit setup, only the log of the currently selected channel is displayed. You cannot log the events of channels A and B simultaneously.

•   Even if multiple units are installed on the LV 5800, there is only one log file. For example, if both an LV 58SER06 and an LV 58SER01A are installed, the log from up to four channels is displayed as one file.

•   The log display is cleared when you initialize the system settings or turn the power on and off.

•   The log can display up to 5000 entries. If any additional log entries occur, the log entries are overwritten, starting with the oldest entry.

9.16   Displaying the Data Broadcast Trigger Signal

To display the data transmission trigger signal specified by the ARIB standard, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB → F•3 DATA TRIGGER

```
DATA BROADCAST TRIGGER  ARIB STD-B35
  INTERFACE LINE No.  20, 583

HEADER WORD1: 00010100
  ERROR CORRECTION       NO
  CONTINUITY INDEX       4

HEADER WORD2: 00000000
  PACKET NUMBER          0

HEADER WORD3: 00000011
  LAST PACKET NUMBER     3

HEADER WORD4: 00000100
  TRIGGER ID             4




  DISPLAY                                              up
                                                     menu
   TEXT
```

Figure 9-28   Data broadcast trigger signal display

9.16.1   Selecting the Display Format

To select the display format, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB → F•3 DATA TRIGGER → F•1 DISPLAY

• Settings

TEXT: The data broadcast trigger signal is displayed in text format. This is the default setting.

DUMP: The data broadcast trigger signal is displayed in dump format. By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

9.16.2 Selecting the Dump Mode

To select the dump mode when $\boxed{\text{F•1}}$ DISPLAY is set to DUMP, follow the procedure shown below. When $\boxed{\text{F•1}}$ DISPLAY is set to TEXT, this menu item does not appear.

• Procedure

$\boxed{\text{STATUS}} \rightarrow \boxed{\text{F•1}}$ ANC PACKET $\rightarrow \boxed{\text{F•4}}$ V-ANC ARIB $\rightarrow \boxed{\text{F•3}}$ DATA TRIGGER $\rightarrow \boxed{\text{F•2}}$ DUMP MODE

• Settings

HEX: Data is displayed in hexadecimal format. This is the default setting.
BINARY: Data is displayed in binary format.

DUMP MODE = HEX

```
DATA BROADCAST TRIGGER  ARIB STD-B35
  INTERFACE LINE No.  20, 583

       DID          25F
       SDID         1FD
       DC           2FF
    1 HEADER1        214
    2 HEADER2        200
    3 HEADER3        203
    4 HEADER4        104
    5 DATA1          205
    6 DATA2          206
    7 DATA3          107
    8 DATA4          108
    9 DATA5          209
   10 DATA6          20A
   11 DATA7          10B
   12 DATA8          20C
```

DUMP MODE = BINARY

```
DATA BROADCAST TRIGGER  ARIB STD-B35
  INTERFACE LINE No.  20, 583

       DID          1001011111
       SDID         0111111101
       DC           1011111111
    1 HEADER1        1001000111
    2 HEADER2        0100000100
    3 HEADER3        1000000011
    4 HEADER4        0100000100
    5 DATA1          1000000101
    6 DATA2          1000000110
    7 DATA3          0100000111
    8 DATA4          0100001000
    9 DATA5          1000001001
   10 DATA6          1000001010
   11 DATA7          0100001011
   12 DATA8          1000001100
```

Figure 9-29   Selecting the dump mode

9.17 Displaying the User Data

To display user data entries 1 and 2 that are specified by the ARIB standard, follow the procedure shown below.
User data is displayed as a data dump. By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

• Procedure

$\boxed{\text{STATUS}} \rightarrow \boxed{\text{F•5}}$ ANC PACKET $\rightarrow \boxed{\text{F•4}}$ V-ANC ARIB $\rightarrow \boxed{\text{F•4}}$ USER DATA1
$\rightarrow \boxed{\text{F•5}}$ USER DATA2

9.17.1 Selecting the Dump Mode

To select the dump mode, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•4 V-ANC ARIB
→ F•4 USER DATA1 → F•2 DUMP MODE
→ F•5 USER DATA2 → F•2 DUMP MODE

• Settings

HEX: Data is displayed in hexadecimal format. This is the default setting.
BINARY: Data is displayed in binary format.

DUMP MODE = HEX   DUMP MODE = BINARY

```
V-ANC USER DATA  ARIB TR-B23
   INTERFACE LINE No. 20, 583


     DID            25F
     SDID           2FC
     DC             2FF
   1                214
   2                200
   3                203
   4                104
   5                205
   6                206
   7                107
   8                108
   9                209
  10                20A
  11                10B
  12                20C
```

```
V-ANC USER DATA  ARIB TR-B23
   INTERFACE LINE No. 20, 583


     DID            1001011111
     SDID           1011111100
     DC             1011111111
   1                1001000111
   2                0100000100
   3                1000000011
   4                0100000100
   5                1000000101
   6                1000000110
   7                0100000111
   8                0100001000
   9                1000001001
  10                1000001010
  11                0100001011
  12                1000001100
```

Figure 9-30   Selecting the dump mode

9.18 V-ANC SMPTE Display

To analyze and display the vertical blanking ancillary packets that are specified by the SMPTE standard, press F•5 V-ANC SMPTE on the status menu.
This is not supported when the input signal is 3G-SDI or HD dual link, so this menu item is not displayed.

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE →

EIA-708	EIA-608	PROGRAM	VBI	AFD		up menu
F·1	F·2	F·3	F·4	F·5	F·6	F·7

Figure 9-31   V-ANC SMPTE menu

9.19 Displaying EIA-708 Data

To display data that is specified by the EIA-708 standard, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•1 EIA-708

```
EIA-708 CDP PACKET

  FRAME RATE          29.97
  TIMECODE            DETECT
                      03:29:28:16
  CC                  DETECT
  SVCINFO             DETECT




              CC1 CC2 CC3 CC4 TT1 TT2 TT3 TT4 XDS
  Caption Data ch

  XDS CHECKSUM        DETECT
  CONTENT ADVISORY
  COPY MANAGEMENT




  DISPLAY                                            up
                                                     menu
  TEXT
```

Figure 9-32   EIA-708 data display

9.19.1 EIA-708 Data Display Explanation

Table 9-10   EIA-708 data display explanation

Item	Description
FRAME RATE	Displays the information from the frame_rate field in the header of EIA-708 CDP packets.
TIME CODE	Displays whether the EIA-708 time_code_section is present or not. The LV 58SER06 checks whether the time_code_section is present or not by examining the time_code_present field in the header of CDP packets. If the time code is present, its value is also displayed.
CC	Displays whether the EIA-708 ccdata_section is present or not. The LV 58SER06 checks whether the ccdata_section is present or not by examining the ccdata_present field in the header of CDP packets.
SVCINFO	Displays whether the EIA-708 ccsvcinfo_section is present or not. The LV 58SER06 checks whether the ccsvcinfo_section is present or not by examining the ccsvcinfo_present field in the header of CDP packets.
Caption Data ch	Displays the type of the CC packet that was received.
XDS CHECKSUM	Displays the result of a comparison of a checksum computed on the XDS data that was received and the checksum field in the XDS packet.
CONTENT ADVISORY	Displays the content advisory information of the XDS data that was received.
COPY MANAGEMENT	Displays the copy management information of the XDS data that was received.

9.19.2　Selecting the Display Format

To select the display format, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•1 EIA-708 → F•1 DISPLAY

• Settings

TEXT:	The EIA-708 data is displayed in text format. This is the default setting.
DUMP:	The EIA-708 data is displayed in dump format. By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

9.19.3　Selecting the Dump Mode

To select the dump mode when F•1 DISPLAY is set to DUMP, follow the procedure shown below. When F•1 DISPLAY is set to TEXT, this menu item does not appear.

• Procedure

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•1 EIA-708 → F•2 DUMP MODE

• Settings

HEX:	Data is displayed in hexadecimal format. This is the default setting.
BINARY:	Data is displayed in binary format.

DUMP MODE = HEX

```
EIA-708 CDP PACKET

        DID                 161
        SDID                101
        DC                  1AB
          CDP_ID1           296
          CDP_ID2           269
          CDP_LENGTH        1AB
          CDP_FRAME_RATE    14F
          CDP_STATUS        2FF
          SEQ_CNT1          1C1
          SEQ_CNT2          253
                            271
                            2C3
                            2A9
                            1C4
                            1A8
```

DUMP MODE = BINARY

```
EIA-708 CDP PACKET

        DID                 0101100001
        SDID                0100000001
        DC                  0110101011
          CDP_ID1           1010010110
          CDP_ID2           1001101001
          CDP_LENGTH        0110101011
          CDP_FRAME_RATE    0101001111
          CDP_STATUS        1011111111
          SEQ_CNT1          0111111101
          SEQ_CNT2          1011100010
                            1001110001
                            1011000011
                            1010111000
                            0110100010
                            1010000111
```

Figure 9-33　Selecting the dump mode

9.20　Displaying EIA-608 Data

To display data that is specified by the EIA-608 standard, follow the procedure shown below.
For an explanation of the screen, see section 9.19, "Displaying EIA-708 Data." FRAME RATE,
TIME CODE, CC, and SVCINFO are all blank.

• Procedure

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•2 EIA-608

```
EIA/CEA-608

  FRAME RATE
  TIMECODE

  CC
  SVCINFO



                CC1 CC2 CC3 CC4 TT1 TT2 TT3 TT4 XDS
  Caption Data ch

  XDS CHECKSUM        DETECT
  CONTENT ADVISORY
  COPY MANAGEMENT




  DISPLAY                                              up
                                                     menu
   TEXT
```

Figure 9-34　EIA-608 data display

9.20.1　Selecting the Display Format

To select the display format, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•2 EIA-608 → F•1 DISPLAY

• Settings

TEXT:　　　The EIA-608 data is displayed in text format. This is the default setting.

DUMP:　　　The EIA-608 data is displayed in dump format. By turning the function dial
(F•D) to the right, you can scroll the screen to view all the data. If you press the
function dial (F•D), the cursor returns to the first data entry.

9.20.2　Selecting the Dump Mode

To select the dump mode when F•1 DISPLAY is set to DUMP, follow the procedure shown
below. When F•1 DISPLAY is set to TEXT, this menu item does not appear.

• Procedure

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•2 EIA-608 → F•2 DUMP MODE

• Settings

HEX: Data is displayed in hexadecimal format. This is the default setting.

BINARY: Data is displayed in binary format.

DUMP MODE = HEX

```
EIA/CEA-608

        DID            000
        SDID           000
        DC             000
        LINE           000
          SEQ_CNT1     000
          SEQ_CNT2     000
                       000
                       000
                       000
                       000
                       000
                       000
                       000
                       000
```

DUMP MODE = BINARY

```
EIA/CEA-608

        DID            0000000000
        SDID           0000000000
        DC             0000000000
        LINE           0000000000
          SEQ_CNT1     0000000000
          SEQ_CNT2     0000000000
                       0000000000
                       0000000000
                       0000000000
                       0000000000
                       0000000000
                       0000000000
                       0000000000
                       0000000000
```

Figure 9-35   Selecting the dump mode

9.21 Displaying Program Data

To display whether ATSC A/65 program description packets are present or not, follow the procedure shown below. For each descriptor, if its ID is present, "DETECT" is displayed; if its ID is not present, "MISSING" is displayed.

• Procedure

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•3 PROGRAM

```
PROGRAM DESCRIPTION

  Stuffing Descriptor                  MISSING
  AC3 Audio Descriptor                 MISSING
  Caption Service Descriptor           MISSING
  Content Advisory Descriptor          MISSING
  Extended Channel Name Descriptor     MISSING
  Service Location Descriptor          MISSING
  Time-Shifted Service Descriptor      MISSING
  Component Name Descriptor            MISSING
  DCC Departing Request Descriptor     MISSING
  DCC Arriving Request Descriptor      MISSING
  Redistribution Control Descriptor    MISSING




                                                    up
                                                    menu
```

Figure 9-36   Program data display

9.22   Displaying VBI Data

To display VBI data, follow the procedure shown below.
For an explanation of the screen, see section 9.19, "Displaying EIA-708 Data." FRAME RATE, TIME CODE, CC, and SVCINFO are all blank.

• **Procedure**

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•4 VBI

```
EIA/CEA-608

  FRAME RATE
  TIMECODE

  CC
  SVCINFO




                  CC1 CC2 CC3 CC4 TT1 TT2 TT3 TT4 XDS
  Caption Data ch

  XDS CHECKSUM        DETECT
  CONTENT ADVISORY
  COPY MANAGEMENT




 DISPLAY                                          up
                                                 menu
   TEXT
```

Figure 9-37   VBI data display

9.23 Displaying AFD Packets

To display AFD packets, follow the procedure shown below.

• **Procedure**

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•5 AFD

```
AFD DISPLAY SMPTE 2016-3
 INTERFACE LINE No.      20, 583


  AFD CODE              0000w UNDEFINED
  CODED FRAME           16:9
  BAR DATA FLAGS         TOP : ---- : LEFT : ----
  BAR DATA VALUE1        3Ch ( 60 )
  BAR DATA VALUE2        330h ( 816 )
```

DISPLAY TEXT						up menu

Figure 9-38   AFD packet display

9.23.1 AFD Packet Display Explanation

Table 9-11   AFD packet display explanation

Item	Description
INTERFACE LINE No.	Displays the numbers of the lines in which AFD packets are embedded. When the line numbers are outside of the standard, they are displayed in red.
AFD CODE	Displays the AFD code name.
CODED FRAME	Displays the coded frame aspect ratio.
BAR DATA FLAGS	BAR DATA FLAGS displays the four bits of position information. "TOP," "BOT" (bottom), "LEFT," and "RIGHT" are displayed if the corresponding bits are 1. If a position information bit is 0, "----" is displayed. Up to two of these items are displayed.
BAR DATA VALUE1	The position of the bar of the first BAR DATA FLAGS item is displayed in hexadecimal and in decimal in parentheses. For TOP and BOT, the value is the number of lines from the edge of the screen. For LEFT and RIGHT, the value is the number of pixels from the edge of the screen.
BAR DATA VALUE2	The position of the bar of the first BAR DATA FLAGS item is displayed in hexadecimal and in decimal in parentheses. For TOP and BOT, the value is the number of lines from the edge of the screen. For LEFT and RIGHT, the value is the number of pixels from the edge of the screen.

9.23.2   Selecting the Display Format

To select the display format, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•5 AFD → F•1 DISPLAY

• Settings

TEXT: The AFD packet is displayed in text format. This is the default setting.

DUMP: The AFD packet is displayed in dump format. By turning the function dial (F•D) to the right, you can scroll the screen to view all the data. If you press the function dial (F•D), the cursor returns to the first data entry.

9.23.3   Selecting the Dump Mode

To select the dump mode when F•1 DISPLAY is set to DUMP, follow the procedure shown below. When F•1 DISPLAY is set to TEXT, this menu item does not appear.

• Procedure

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•5 AFD → F•2 DUMP MODE

• Settings

HEX: Data is displayed in hexadecimal format. This is the default setting.

BINARY: Data is displayed in binary format.

DUMP MODE = HEX

```
AFD DISPLAY SMPTE 2016-3
 INTERFACE LINE No.      20, 583


    DID               241
    SDID              205
    DC                108
 1 AFD               104
 2 RESERVED          200
 3 RESERVED          200
 4 BAR DATA FLAGS    2A0
 5 BAR DATA VALUE1   200
 6 BAR DATA VALUE1   23C
 7 BAR DATA VALUE2   203
 8 BAR DATA VALUE2   130
 9 CHECKSUM          261
```

DUMP MODE = BINARY

```
AFD DISPLAY SMPTE 2016-3
 INTERFACE LINE No.      20, 583


    DID               1001000001
    SDID              1000000101
    DC                0100001000
 1 AFD               0100000100
 2 RESERVED          1000000000
 3 RESERVED          1000000000
 4 BAR DATA FLAGS    1010100000
 5 BAR DATA VALUE1   1000000000
 6 BAR DATA VALUE1   1000111100
 7 BAR DATA VALUE2   1000000011
 8 BAR DATA VALUE2   0100110000
 9 CHECKSUM          1001100001
```

Figure 9-39   Selecting the dump mode

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9.24   Performing Custom Searches

To view the custom search display, follow the procedure shown below.
In the custom search display, ancillary data packets with the specified DID and SDID are shown in a dump display.
When the input signal is 3G-SDI, the ancillary packets are embedded in stream 1's Y data.
When the input signal is HD dual link, the ancillary packets are embedded in link A's Y data.
Reference: Section 9.4, "3G-SDI Line Numbers"

• Procedure

STATUS → F•5 ANC PACKET → F•6 CUSTOM SEARCH

```
CUSTOM SELECTED ANC PACKET
   INTERFACE LINE No.        571


        DID              1E3
        DBN              200
        DC               10B
    1                    200
    2                    200
    3                    20F
    4                    200
    5                    200
    6                    200
    7                    200
    8                    200
    9                    200
   10                    200
   11                    200
        CHECKSUM         2FD
```

DID	SDID	SET	DUMP MODE			up menu
E3	--		HEX			

Figure 9-40   Custom search display

9.24.1   Detecting Data

To search for ancillary packets, follow the procedure shown below.
You can scroll through the ancillary data packets by turning the function dial (F•D) in the custom search display. However, you cannot scroll if you press F•1 DID or F•2 SDID. To scroll, press F•3 SET.

1.   **Press F•1 DID, and then set the DID with the function dial (F•D).**

If ancillary packets with the specified DID are embedded in the video data, they will appear. If F•2 SDID is also set, packets will appear if they have the specified DID and SDID.
You can specify a value in the range of 00 to FF. Press the function dial (F•D) to return the setting to its default value (00).

2.   **To specify the SDID, press F•2 SDID, and then set the SDID with the function dial (F•D).**

If ancillary packets with the specified DID and SDID are embedded in the video data, they will appear.
You can specify a value in the range of 00 to FF or select "--" to not specify a value.
Press the function dial (F•D) to return the setting to its default value (--).

9.24.2   Selecting the Dump Mode

To select the dump mode, follow the procedure shown below.

• Procedure

STATUS → F•5 ANC PACKET → F•6 CUSTOM SEARCH → F•4 DUMP MODE

• Settings

HEX: Data is displayed in hexadecimal format. This is the default setting.
BINARY: Data is displayed in binary format.

DUMP MODE = HEX

```
CUSTOM SELECTED ANC PACKET
  INTERFACE LINE No.     571


      DID           1E3
      DBN           200
      DC            10B
  1               200
  2               200
  3               20F
  4               200
  5               200
  6               200
  7               200
  8               200
  9               200
 10               200
 11               200
     CHECKSUM      2FD

```

DUMP MODE = BINARY

```
CUSTOM SELECTED ANC PACKET
  INTERFACE LINE No.     571


      DID           0111100011
      DBN           1000000000
      DC            0100001011
  1               1000000000
  2               1000000000
  3               1000001111
  4               1000000000
  5               1000000000
  6               1000000000
  7               1000000000
  8               1000000000
  9               1000000000
 10               1000000000
 11               1000000000
     CHECKSUM      1011111101

```

Figure 9-41   Selecting the dump mode

10. FRAME CAPTURE

You can use the LV 58SER06 to acquire one frame of data on the LV 5800. You can save the acquired data to USB memory or overlay it on the input signal and display it.

You can change the display mode while you are displaying the frame capture data on the LV 5800. The supported display modes are the video signal waveform, vector waveform, picture, and status (data dump) displays.

For 3G-SDI input signals, only 1080p/60, 1080p/59.94, and 1080p/50 are supported.

10.1 Selecting the Capture Mode

To use the frame capture feature, you must first set the capture mode to frame capture. To select the capture mode, follow the procedure shown below.

1. **Press SYS.**

2. **Press F•2 PLATFORM SETUP.**

   The GENERAL SETUP display appears.

```
┌────────────────────────────────────────────────────────┐
│ GENERAL SETUP │ ETHERNET │ REMOTE │                     │
│                                                          │
│        LV5800 GENERAL SETUP                              │
│        Source Mode      □ Single Input ☑ Multi Input □  Multi Input and │
│        Multi Display    □ 2Multi  ☑ 4Multi                 Line Number  │
│        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                      │
│                                                          │
│        LCD Setup                                         │
│           Backlight      ☑ High □ Low                    │
│           Auto Off       ☑ OFF □ 5min □ 30min □ 60min    │
│                                                          │
│ ┌──────────┬────────┬────────┬──────┬──────┬──────┬──────────┐ │
│ │ COMPLETE │  PREV  │  NEXT  │      │      │      │ CANCEL   │ │
│ └──────────┴────────┴────────┴──────┴──────┴──────┴──────────┘ │
└────────────────────────────────────────────────────────┘
```

Figure 10-1   GENERAL SETUP display

3. **Turn the function dial (F•D), and press it at "Video Frame (SDI Only)" under "Capture Mode."**

4. **Press F•1 COMPLETE.**

*   When frame capture mode is enabled, the video signal waveform, vector, and picture displays may disappear momentarily after key operations.

10.2 Acquiring Frame Capture Data

The two methods for acquiring frame capture data are listed below.
• Manual: Manual data acquisition.
• Automatic: The data is acquired automatically when an error occurs (referred to as "error capturing").

10.2.1 Acquiring Data Manually

To acquire frame capture data with the LV 5800, follow the procedure shown below.

1. **Press WFM, VECT, or PIC.**

2. **Press CAP.**

   The frame capture menu appears. When you are not in the video signal waveform, vector, or picture display, an error message appears instead of the capture menu.
   As opposed to screen capturing, data is not acquired immediately when you press the CAP key.

TRIGGER MANUAL		REFRESH	DISPLAY REAL	FILE SELECT	USB MEM STORE	USB MEM RECALL
F·1	F·2	F·3	F·4	F·5	F·6	F·7
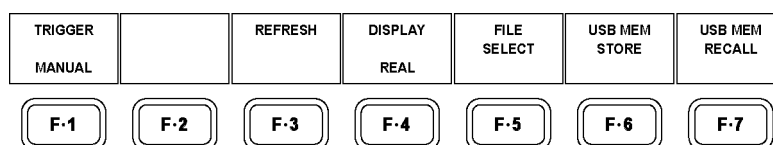
   Figure 10-2   Frame capture menu

3. **Set F•1 TRIGGER to MANUAL.**

4. **Press F•3 REFRESH.**

   When you press F•3 REFRESH, the unit captures the data at that point in time and stores it to the LV 5800. This menu item does not appear when there is no input signal.

10.2.2 Acquiring Data Automatically (Error Capture)

You can use the error capture feature to automatically acquire frame capture data with the LV 5800 when an error occurs.
Out of the errors listed below, only the errors that have been set to ON in the 5 unit setup are used for error capturing.

TRS Error, Line Number Error, Illegal Code Error, Parity Error (ANC Data), Checksum Error (ANC Data), Gamut Error, Composite Gamut Error, Level Error, BCH Error, DBN Error, Parity Error (Audio), and Inhibit Line Error

To acquire frame capture data with the LV 5800 when an error occurs, follow the procedure shown below.

1. **Press WFM, VECT, or PIC.**

2. **Press CAP.**

   The frame capture menu appears.

3. **Set F•1 TRIGGER to ERROR.**

   The default setting is MANUAL. This setting is not saved to presets or retained when you restart the LV 5800. Even if you select ERROR, if you then load a preset or restart the LV 5800, this setting will be set to MANUAL.

4. Press F•3 REFRESH.

Press F•3 REFRESH to switch the unit into error standby mode. The message "ERR CAP" blinks in the upper right of the screen.
If an error occurs while "ERR CAP" is blinking, the LV 5800 captures the frame capture data at that moment.
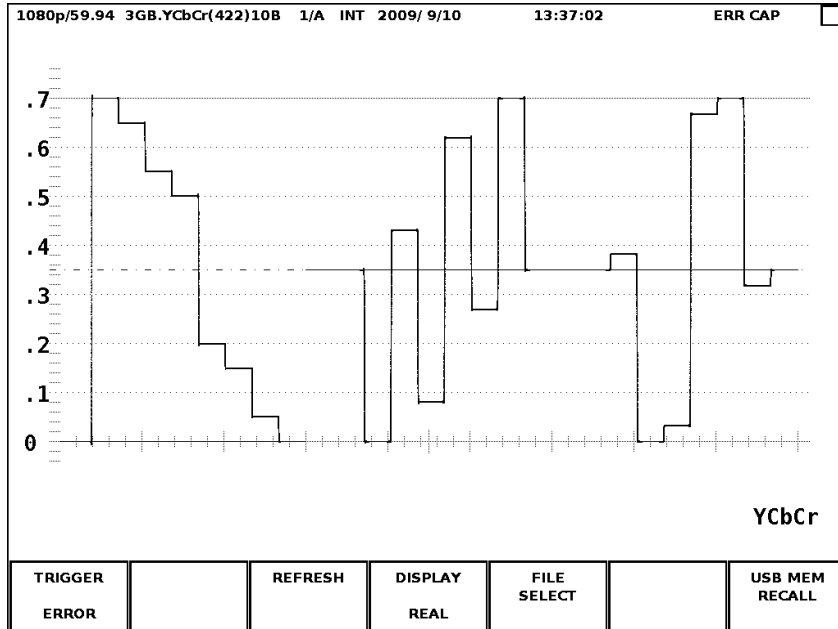
Figure 10-3　Error standby mode

5. If a message appears in the center of the screen, press any key.
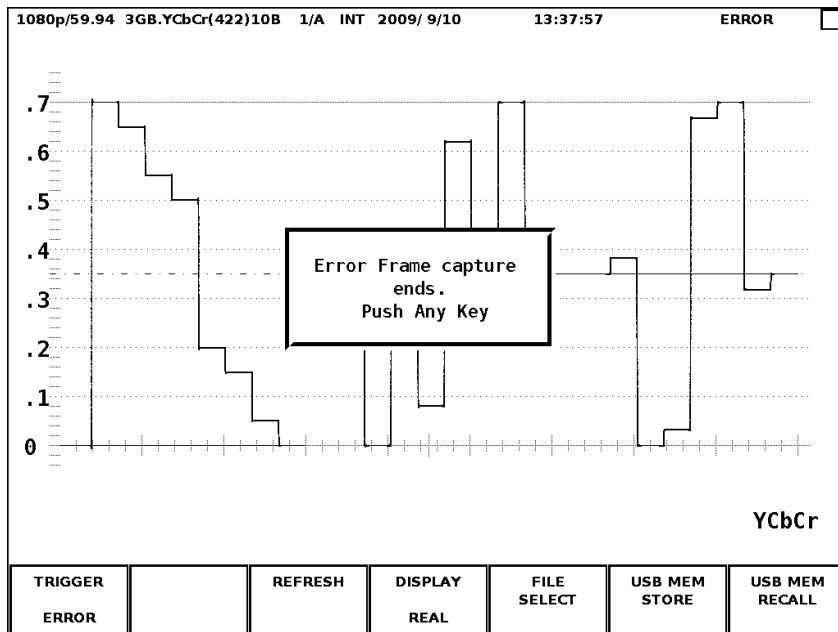
Figure 10-4　Error capture completion

* While "ERR CAP" is blinking, the error standby mode will be cancelled if you change a setting such as the unit or channel.

10.3   Displaying Frame Capture Data

To display the acquired frame capture data on the LV 5800 or overlay it on the current input signal, follow the procedure shown below. You can also switch the display mode while displaying the frame capture data. The supported display modes are the video signal waveform, vector waveform, picture, and status (data dump) displays.

You can only display frame capture data if the format of the acquired data is the same as the format of the input signal.

Reference: Section 9.6.2, "Selecting the Display Mode"

• Procedure

CAP → F•3 DISPLAY

• Settings

REAL: The current input signal is displayed. This is the default setting.

HOLD: The frame capture data is displayed. The waveform is displayed in cyan.

                 The display blinks when you use V POS, H POS, or the function dial (F•D).

BOTH: The current input signal and the frame capture data are displayed on top of each other with their intensities halved.

                 The display blinks when you use V POS, H POS, or the function dial (F•D).

10.4   Saving to USB Memory

The frame capture data saved on the LV 5800 is lost when you turn off the power, but even if you turn off the power, you can load the data any time if you save it to USB memory (in FRM format). You can also view the data on a PC.

To save the frame capture data to USB memory, follow the procedure shown below.

1. **Connect a USB memory device to the USB port.**

2. **Press WFM, VECT, or PIC.**

3. **Press CAP.**

    The frame capture menu appears.

4. **Press F•5 FILE SELECT to select the file format that you want to save the data in.**

    To save to a file format, set it to ON. All of the file formats are set to ON by default.

    F•3 DPX FILE: The picture portion of the data is saved in DPX format.

    F•4 TIF FILE: The picture portion of the data is saved in TIFF format.

    F•5 FRM FILE: One frame of data is saved.

    F•5 FILE SELECT only appears when USB memory is connected to the LV 5800.

5. **Press F•7 up menu.**

6. **Press** F•6 **USB MEM STORE.**

The message "Saving file-Please Wait" appears while the data is being saved, and the USB mark in the upper right of the screen changes color from green to red. The data is saved when the message disappears and the USB mark changes color back to green. Do not remove the USB memory or turn off the power while data is being saved. It takes approximately 30 seconds to save a file.

Frame capture data is saved in the BMP folder. If there is no BMP folder in the USB memory, the LV 5800 will create a folder automatically.
The file name is created automatically from the combination of the year, month, day, hour, minute, and second, in that order.
The file sizes are for when the input format is 1080p/59.94.

  🗗 USB memory
  └ 🗁 BMP
      ├ ▯ yyyymmddhhmmss.dpx (approx. 8.3 MB)
      ├ ▯ yyyymmddhhmmss.tif (approx. 12.5 MB)
      └ ▯ yyyymmddhhmmss.frm (approx. 19.8 MB)

F•6 USB MEM STORE does not appear when USB memory is not connected to the LV 5800, when all of the file formats that you can select with F•5 FILE SELECT are set to OFF, or when there is no frame capture data stored on the LV 5800.

10.5 Loading Frame Capture Data

To load frame capture data in FRM format from USB memory to the LV 5800, follow the procedure shown below.

1. **Connect a USB memory device to the USB port.**

2. **Press** WFM, VECT, **or** PIC.

3. **Press** CAP.

The frame capture menu appears.

4. **Press** F•7 **USB MEM RECALL.**

The file list display appears.
This menu item appears when the LV 5800 has USB memory connected to it.

```
External USB DEVICE FRAME FILE LIST

        No. FileName            Date       Time      Size(Byte)
         1  20090911131902.frm  2009/ 9/11  13:19:02  19800064
         2  20090911131910.dpx  2009/ 9/11  13:19:10   8296480
         3  20090911131913.tif  2009/ 9/11  13:19:13  12450556




        MAX SIZE:   251906 kB      RECALL OK
        FREE SIZE:  54826 kB       3GB 422 10BIT 1080P/59.94


  RECALL              FILE                                        up
                      DELETE                                      menu
```

Figure 10-5   File list display

5. **Turn the function dial (F•D) to select the file (.frm) that you want to load.**

You can only load frame capture data when its format is the same as the format of the current input signal. The format of the selected frame capture data file appears in the bottom right of the screen, and if it matches the format of the current input signal, "RECALL OK" appears. Otherwise, an error message appears.

6. **Press** F•1 **RECALL.**

The frame capture data is loaded.
This menu item only appears when RECALL OK is displayed in the bottom right of the screen.

Reference: Section 10.3, "Displaying Frame Capture Data"

10.6   Deleting Frame Capture Data

To delete frame capture data that has been saved to USB memory, follow the procedure shown below.

1. **Connect a USB memory device to the USB port.**

2. **Press** WFM, VECT, **or** PIC.

3. **Press** CAP.

4. **Press** F•7 **USB MEM RECALL.**

5. **Turn the function dial (F•D) to select the file that you want to delete.**

6. **Press** F•3 **FILE DELETE.**

7. **Press** F•1 **DELETE YES.**

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

10.7 Frame Data File Format

This section explains the FRM frame capture data format that you can use to save files to USB memory. Frame data is saved to binary files with .frm extensions.

10.7.1 3G-SDI Frame Data Structure

• **When the Input Signal Is Level A**

Stream 1 and stream 2 are ordered to conform with the SMPTE 372M link A and B Original Picture source raster Line Numbers. The line orders after conversion are referred to as "Link A Equivalent" and "Link B Equivalent." These line orders are listed below.
The frame data contains the Link A Equivalent data and then the Link B Equivalent data.

Table 10-1   Level A data structure

Link A Equivalent	Link B Equivalent
2	3
⋮	⋮
40	41
42	43
⋮	⋮
1120	1121
1122	1123
1124	1125
1	2
3	4
⋮	⋮
41	42
43	44
⋮	⋮
1121	1122
1123	1124
1125	1

• **When the Input Signal Is Level B**

The stream 1 data is listed first before the stream 2 data.
Stream 1 contains SMPTE 372M compliant link A data.
Stream 2 contains SMPTE 372M compliant link B data.

10.7.2   Header Information Explanation

The frame data header is shown below. It contains information such as the data size and the format.

The frame data is little endian. The least significant byte is at the beginning, and the most significant byte is at the end.

Figure 10-6   Header data

The various items are explained below. Please see the next section for an explanation of the capture data.

1.   Reserved (address 00 to 01h)

This area is reserved.

2.   Data size (address 02 to 05h)

The frame data size is indicated here. The size indicated here is for a single link (equivalent), and is thus half of the total size.
In the above example, the size is 00970FE0h, or 9900000 bytes.

3.   Format (address 06 to 07h)

The video format is indicated using the format codes explained below.
In the above example, the format is 4A07h, so 3G-SDI level A, 1080p/59.94 is displayed.

Table 10-2   Format codes

Link Format	Color System	Pixel Depth	Scanning / Frame Rate	Format Code
3G-A	YCbCr(4:2:2)	10 bits	1080p/60	4A06
	YCbCr(4:2:2)	10 bits	1080p/59.94	4A07
	YCbCr(4:2:2)	10 bits	1080p/50	4A08
3G-B	YCbCr(4:2:2)	10 bits	1080p/60	8A06
	YCbCr(4:2:2)	10 bits	1080p/59.94	8A07
	YCbCr(4:2:2)	10 bits	1080p/50	8A08

Link Format	Color System	Pixel Depth	Scanning / Frame Rate	Format Code
HD-DualLink	GBR(4:4:4)	10 bits	1080i/60	0800
	GBR(4:4:4)	10 bits	1080PsF/30	1800
	GBR(4:4:4)	10 bits	1080i/59.94	0801
	GBR(4:4:4)	10 bits	1080PsF/29.97	1801
	GBR(4:4:4)	10 bits	1080i/50	0802
	GBR(4:4:4)	10 bits	1080PsF/25	1802
	GBR(4:4:4)	10 bits	1080PsF/24	0804
	GBR(4:4:4)	10 bits	1080PsF/23.98	0805
	GBR(4:4:4)	10 bits	1080p/30	080A
	GBR(4:4:4)	10 bits	1080p/29.97	080B
	GBR(4:4:4)	10 bits	1080p/25	080C
	GBR(4:4:4)	10 bits	1080p/24	080E
	GBR(4:4:4)	10 bits	1080p/23.98	080F
	GBR(4:4:4)	12 bits	1080i/60	0900
	GBR(4:4:4)	12 bits	1080PsF/30	1900
	GBR(4:4:4)	12 bits	1080i/59.94	0901
	GBR(4:4:4)	12 bits	1080PsF/29.97	1901
	GBR(4:4:4)	12 bits	1080i/50	0902
	GBR(4:4:4)	12 bits	1080PsF/25	1902
	GBR(4:4:4)	12 bits	1080PsF/24	0904
	GBR(4:4:4)	12 bits	1080PsF/23.98	0905
	GBR(4:4:4)	12 bits	1080p/30	090A
	GBR(4:4:4)	12 bits	1080p/29.97	090B
	GBR(4:4:4)	12 bits	1080p/25	090C
	GBR(4:4:4)	12 bits	1080p/24	090E
	GBR(4:4:4)	12 bits	1080p/23.98	090F
	YCbCr(4:2:2)	10 bits	1080p/60	0A06
	YCbCr(4:2:2)	10 bits	1080p/59.94	0A07
	YCbCr(4:2:2)	10 bits	1080p/50	0A08
	YCbCr(4:2:2)	12 bits	1080p/30	0B0A
	YCbCr(4:2:2)	12 bits	1080p/29.97	0B0B
	YCbCr(4:2:2)	12 bits	1080p/25	0B0C
	YCbCr(4:2:2)	12 bits	1080p/24	0B0E
	YCbCr(4:2:2)	12 bits	1080p/23.98	0B0F
	YCbCr(4:2:2)	12 bits	1080i/60	0B00
	YCbCr(4:2:2)	12 bits	1080PsF/30	1B00
	YCbCr(4:2:2)	12 bits	1080i/59.94	0B01
	YCbCr(4:2:2)	12 bits	1080PsF/29.97	1B01
	YCbCr(4:2:2)	12 bits	1080i/50	0B02
	YCbCr(4:2:2)	12 bits	1080PsF/25	1B02
	YCbCr(4:2:2)	12 bits	1080PsF/24	0B04
	YCbCr(4:2:2)	12 bits	1080PsF/23.98	0B05

Link Format	Color System	Pixel Depth	Scanning / Frame Rate	Format Code
HD-DualLink (2k)	GBR(4:4:4)	12 bits	1080PsF/24	0984
	GBR(4:4:4)	12 bits	1080PsF/23.98	0985
	GBR(4:4:4)	12 bits	1080p/24	098E
	GBR(4:4:4)	12 bits	1080p/23.98	098F
HD	YCbCr(4:2:2)	10 bits	1080i/60	0000
	YCbCr(4:2:2)	10 bits	1080PsF/30	1000
	YCbCr(4:2:2)	10 bits	1080i/59.94	0001
	YCbCr(4:2:2)	10 bits	1080PsF/29.97	1001
	YCbCr(4:2:2)	10 bits	1080i/50	0002
	YCbCr(4:2:2)	10 bits	1080PsF/25	1002
	YCbCr(4:2:2)	10 bits	1080PsF/24	0004
	YCbCr(4:2:2)	10 bits	1080PsF/23.98	0005
	YCbCr(4:2:2)	10 bits	1080p/30	000A
	YCbCr(4:2:2)	10 bits	1080p/29.97	000B
	YCbCr(4:2:2)	10 bits	1080p/25	000C
	YCbCr(4:2:2)	10 bits	1080p/24	000E
	YCbCr(4:2:2)	10 bits	1080p/23.98	000F
	YCbCr(4:2:2)	10 bits	720p/60	0106
	YCbCr(4:2:2)	10 bits	720p/59.94	0107
	YCbCr(4:2:2)	10 bits	720p/50	0108
	YCbCr(4:2:2)	10 bits	720p/30	010A
	YCbCr(4:2:2)	10 bits	720p/29.97	010B
	YCbCr(4:2:2)	10 bits	720p/25	010C
	YCbCr(4:2:2)	10 bits	720p/24	010E
	YCbCr(4:2:2)	10 bits	720p/23.98	010F
SD	YCbCr(4:2:2)	10 bits	525i/59.94	0201
	YCbCr(4:2:2)	10 bits	625i/50	0202

4.   Reserved (address 08 to 3Fh)

This area is reserved.

10.7.3 Explanation of 3G-SDI, HD-SDI, and HD Dual Link Capture Data

The data begins at address 40h.

When the signal is 3G-SDI or HD dual link, the data from link A (or equivalent) begins at address 40h, and the data from link B (or equivalent) begins at the address defined by 40h plus the size of the link A data.

For example, if the data size is 00970FE0h, the start of the link B (equivalent) data is 0000040h + 00970FE0h = 00971020h

The order of the capture data is Y0, C0, Y1, C1, and so on. Each pixel (10 bits) is expressed with one word (16 bits). The six most significant bits (bit 15 to bit 10) of a word are zeroes for Y and reserved for C. The reserved bit values are used when the data is loaded by the LV 5800.

The capture data for various pixels is indicated below.

1st Y line word: Y0 (EAV) = 3FFh
1st C line word: C0 (EAV) = 3FFh (the most significant 6 bits are ignored)
2nd Y line word: Y1 = 000h
2nd C line word: C1 = 000h (the most significant 6 bits are ignored)

ADDRESS	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000040	FF	03	FF	1F	00	00	00	1C	00	00	00	1C	D8	02	D8	1E
0000050	04	02	04	1E	00	02	00	1E	BB	02	F7	1E	3C	02	E8	1D
0000060	40	00	00	1C	40	00	FF	1F	40	00	FF	1F	40	00	E7	1F
0000070	40	00	1B	1E	40	00	18	1E	40	00	28	1E	40	00	05	1E
0000080	40	00	00	1E	40	00	00	1E	40	00	00	1E	40	00	00	1E
0000090	40	00	00	1E	40	00	00	1E	40	00	00	1E	40	00	00	1E
00000A0	40	00	00	1E	40	00	00	1E	40	00	00	1E	40	00	00	1E
00000B0	40	00	00	1E	40	00	00	1E	40	00	00	1E	40	00	00	1E
00000C0	40	00	D7	1E	40	00	1E	1E	40	00	D4	1E	40	00	FA	1E
00000D0	40	00	D7	1E	40	00	F9	1E	40	00	DA	1D	40	00	00	1C
00000E0	40	00	FF	1F	40	00	FF	1F	40	00	E6	1D	40	00	1B	1E
00000F0	40	00	18	1E	40	00	28	1E	40	00	05	1E	40	00	00	1E
0000100	40	00	00	1E	40	00	00	1E	40	00	00	1E	40	00	00	1E

52nd Y line word: Y51 = 040h
52nd C line word: C51 = 200h (the most significant 6 bits are ignored)

Figure 10-7   3G-SDI, HD-SDI, and HD dual link capture data

10.7.4   Explanation of SD-SDI Capture Data

The data begins at address 40h.

The order of the capture data is Cb0, reserved, Y0, reserved, Cr0, reserved, Y1, reserved, Cb2, reserved, Y2, reserved, Cr2, and so on. Each pixel (10 bits) is expressed with one word (16 bits). The six most significant bits (bit 15 to bit 10) of a word are zeroes. The reserved bit values are used when the data is loaded by the LV 5800.

The capture data for various pixels is indicated below.

ADDRESS	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000040	FF	03	FF	17	00	00	00	14	00	00	00	14	D8	02	D8	16
0000050	00	00	00	14	FF	03	FF	17	FF	03	FF	17	FF	02	FF	16
0000060	2E	02	2E	16	24	02	24	16	00	02	00	16	00	02	00	16
0000070	00	02	00	16	02	02	02	16	00	02	00	16	00	01	00	15
0000080	04	02	04	16	00	02	00	16	00	01	00	15	06	02	06	16
0000090	00	02	00	16	00	02	00	16	00	02	00	16	00	02	00	16
00000A0	00	02	00	16	02	02	02	16	00	02	00	16	00	01	00	15
00000B0	04	02	04	16	00	02	00	16	00	01	00	15	06	02	06	16
00000C0	00	02	00	16	00	02	00	16	00	02	00	16	00	02	00	16
00000D0	00	02	00	16	02	02	02	16	00	02	00	16	00	01	00	15
00000E0	04	02	04	16	00	02	00	16	00	01	00	15	06	02	06	16
00000F0	00	02	00	16	00	02	00	16	75	01	75	15	00	00	00	14
0000100	FF	03	FF	17	FF	03	FF	17	FD	01	FD	15	2E	02	2E	16

Figure 10-8   SD-SDI capture data

11. APPENDIX

11.1 Menu Tree

11.1.1 Video Signal Waveform Menu

WFM				
	F1 INTEN / SCALE			
		F1 WFM INTEN	(-128 - 0 - 127)	
		1 F2 WFM COLOR	(WHITE / GREEN)	
		2 F2 WFM COLOR	(WHITE / GREEN / MULTI)	
		F3 SCALE INTEN	(-8 - 4 - 7)	
		3 F4 SCALE UNIT	(V / % / 1023 / 3FF / 1023, 255)	
		4 F4 SCALE UNIT	(V / % / 150% / 1023 / 3FF / 1023, 255)	
		5 F4 SCALE UNIT	(V / %)	
		6 F4 SCALE UNIT	(HDV, SD% / HDV, SDV / HD%, SD% / 1023 / 3FF / 1023, 255)	
		7 F4 SCALE UNIT	(HDV, SD% / HDV, SDV / HD%, SD% / 150% / 1023 / 3FF / 1023, 255)	
		8 F4 SCALE UNIT	(HDV, SD% / HDV, SDV / HD%, SD%)	
		9 F5 75%COLOR SCALE	(ON / OFF)	
		F6 SCALE COLOR	(WHITE / YELLOW / CYAN / GREEN / MAGENTA / RED / BLUE)	
		F7 up menu		
	F2 GAIN/ SWEEP			
		F1 GAIN VARIABLE	(CAL / VARIABLE)	
		F2 GAIN MAG	(X1 / X5)	
		F3 SWEEP	(H / V)	
		10 F4 SWEEP MAG	(X1 / X10 / X20 / ACTIVE / BLANK)	
		11 F4 SWEEP MAG	(X1 / X10 / X20 / BLANK)	
		12 F4 SWEEP MAG	(X1 / ACTIVE)	
		13 F4 SWEEP MAG	(X1)	
		14 F4 SWEEP MAG	(X1 / X20 / X40)	
		15 F5 H_SWEEP	(1H / 2H)	
		16 F5 V_SWEEP	(1V / 2V)	
		17 F6 FIELD	(FIELD1 / FIELD2)	
		F7 up menu		
	18 F3 LINE SELECT			
		F1 LINE SELECT	(ON / OFF)	
		19 F2 FIELD	(FIELD1 / FIELD2 / FRAME)	
		F7 up menu		

『図面変更(1023,255)』

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```
┌──┐                    ┌──┐
│F4│ CURSOR ───────────│F1│ CURSOR      ( ON / OFF )
└──┘                    └──┘
                        ┌──┐
                       │F2│ XY SEL      ( X / Y )
                        └──┘
                     20 ┌──┐
                       │F3│ Y UNIT      ( mV / % / R% / DEC / HEX )
                        └──┘
                     21 ┌──┐
                       │F3│ Y UNIT      ( % )
                        └──┘
                     22 ┌──┐
                       │F3│ X UNIT      ( sec / Hz )
                        └──┘
                        ┌──┐
                       │F4│ FD VAR      ( REF / DELTA / TRACK )
                        └──┘
                     23 ┌──┐
                       │F5│ REF SET
                        └──┘
                        ┌──┐  up
                       │F7│  menu
                        └──┘
┌──┐                 24 ┌──┐
│F5│ ARRANGE ─────────│F1│ FILTER      ( FLAT / LOW PASS )
└──┘                    └──┘
                     25 ┌──┐
                       │F1│ FILTER      ( FLAT / FLAT+LUM / LUM+CHROMA )
                        └──┘
                     24 ┌──┐
                       │F2│ BLANKING    ( REMOVE / H VIEW / V VIEW / ALL VIEW )
                        └──┘
                     25 ┌──┐
                       │F2│ BLANKING    ( REMOVE / V VIEW )
                        └──┘
                        ┌──┐                  ┌──┐
                       │F3│ PERSISTENCE ─────│F1│ PERSISTENCE  ( ON / OFF / INFINIT )
                        └──┘                  └──┘
                                              ┌──┐ PERSIST
                                             │F2│ CLEAR
                                              └──┘
                                              ┌──┐ up
                                             │F7│ menu
                                              └──┘
                      1 ┌──┐ SPECIAL
                       │F4│ FORM         ( NORMAL / TIMING )
                        └──┘
                      2 ┌──┐ SPECIAL
                       │F4│ FORM         ( NORMAL / TIMING / 4Y PARADE )
                        └──┘
                        ┌──┐ up
                       │F7│ menu
                        └──┘
┌──┐ COLOR           26 ┌──┐ COLOR
│F6│ SYSTEM ───────────│F1│ MATRIX      ( YCbCr / GBR / RGB / COMPOSITE )
└──┘                    └──┘
                     27 ┌──┐ COLOR
                       │F2│ MATRIX      ( GBR / RGB / COMPOSITE )
                        └──┘
                     28 ┌──┐
                       │F2│ YGBR        ( ON / OFF )
                        └──┘
                     29 ┌──┐
                       │F2│ YRGB        ( ON / OFF )
                        └──┘
                        ┌──┐ COMPOSITE
                       │F4│ FORMAT      ( AUTO / NTSC / PAL )
                        └──┘
                     30 ┌──┐
                       │F5│ SETUP       ( 0% / 7.5% )
                        └──┘
                        ┌──┐ up
                       │F7│ menu
                        └──┘
```

*1   Appears in the multi screen display.
*2   Appears in the 1-screen display.
*3   Appears when the input signal is 3G-SDI or HD dual link and COLOR MATRIX is set to YCbCr.
*4   Appears when the input signal is 3G-SDI or HD dual link and COLOR MATRIX is set to GBR or RGB.
*5   Appears when the input signal is 3G-SDI or HD dual link and COLOR MATRIX is set to COMPOSITE.
*6   Appears when the input signal is HD-SDI or SD-SDI and COLOR MATRIX is set to YCbCr.
*7   Appears when the input signal is HD-SDI or SD-SDI and COLOR MATRIX is set to GBR or RGB.
*8   Appears when the input signal is HD-SDI or SD-SDI and COLOR MATRIX is set to COMPOSITE.
*9   Appears when COLOR MATRIX is set to YCbCr.
*10 Appears when COLOR MATRIX is set to an option other than COMPOSITE and H_SWEEP is set to 1H.
*11 Appears when COLOR MATRIX is set to an option other than COMPOSITE and H_SWEEP is set to 2H.
*12 Appears when COLOR MATRIX is set to COMPOSITE and H_SWEEP is set to 1H.
*13 Appears when COLOR MATRIX is set to COMPOSITE and H_SWEEP is set to 2H.
*14 Appears when SWEEP is set to V.
*15 Appears when SWEEP is set to H and the OVLAY key is lit.
*16 Appears when SWEEP is set to V, the OVLAY key is lit, and the input signal is interlace or segmented frame.
*17 Appears when V_SWEEP is set to 1V.
*18 Appears when SWEEP is set to H.
*19 Appears when the input signal is interlace or segmented frame.
*20 Appears when XY SEL is set to Y, and COLOR MATRIX is set to an option other than COMPOSITE.
*21 Appears when XY SEL is set to Y, and COLOR MATRIX is set to COMPOSITE.
*22 Appears when XY SEL is set to X.
*23 Appears when Y UNIT is set to R%.
*24 Appears when COLOR MATRIX is set to an option other than COMPOSITE.
*25 Appears when COLOR MATRIX is set to COMPOSITE.
*26 Appears when the input signal is YCbCr(4:2:2).
*27 Appears when the input signal is GBR(4:4:4).
*28 Appears when COLOR MATRIX is set to GBR.
*29 Appears when COLOR MATRIX is set to RGB.
*30 Appears when COLOR MATRIX is set to COMPOSITE and the composite display format is NTSC.

11.1.2　Vector Menu

```
VECT ──┬─ 1 F1  INTEN /    ──┬─ F1  VECTOR     ( −128 − 0 − 127 )
       │         SCALE       │       INTEN
       │                     │
       │                     ├─ F2  VECTOR     ( WHITE / GREEN )
       │                     │       COLOR
       │                     │
       │                     ├─ F3  SCALE      ( −8 − 4 − 7 )
       │                     │       INTEN
       │                     │
       │                     ├─ F4  IQ AXIS    ( ON / OFF )
       │                     │
       │                     ├─ F5  SCALE      ( WHITE / YELLOW / CYAN / GREEN / MAGENTA / RED / BLUE )
       │                     │       COLOR
       │                     │
       │                     └─ F7  up
       │                            menu
       │
       ├─ 2 F1  MODE     ( LUMA / ALIGN / MIX )
       │
       ├─ 3 F1  SCALE   ──┬─ F1  TRIANGLE    ( NTSC / EBU / ITU−R 709 / DCI / OFF )
       │                  │
       │                  ├─ F2  COLOR       ( ON / OFF )
       │                  │
       │                  ├─ F3  TEMP        ( ON / OFF )
       │                  │       SCALE
       │                  │
       │                  └─ F7  up
       │                         menu
       │
       ├─ 1 F2  GAIN    ──┬─ F1  GAIN        ( CAL / VARIABLE )
       │                  │       VARIABLE
       │                  │
       │                  ├─ F2  GAIN        ( X1 / X5 / IQ−MAG )
       │                  │       MAG
       │                  │
       │                  └─ F7  up
       │                         menu
       │
       ├─ 4 F2  R        ( ON / OFF )
       │
       ├─ 5 F2  MODE     ( DIAGRAM / TEMP )
       │
       ├─ 6 F3  LINE    ──┬─ F1  LINE        ( ON / OFF )
       │         SELECT   │       SELECT
       │                  │
       │                  ├─ 7 F2  FIELD     ( FIELD1 / FIELD2 / FRAME )
       │                  │
       │                  └─ F7  up
       │                         menu
       │
       ├─ 4 F3  G        ( ON / OFF )
       │
       ├─ 1 F4  COLOR   ──┬─ F1  COLOR       ( COMPONENT / COMPOSITE )
       │         SYSTEM   │       MATRIX
       │                  │
       │                  ├─ F2  COMPOSITE   ( AUTO / NTSC / PAL )
       │                  │       FORMAT
       │                  │
       │                  ├─ 8 F3  SETUP     ( 0% / 7.5% )
       │                  │
       │                  ├─ F4  COLOR       ( 100% / 75% )
       │                  │       BAR
       │                  │
       │                  └─ F7  up
       │                         menu
       │
       ├─ 9 F4  5BAR    ──┬─ F1  SEQUENCE    ( GBR / RGB )
       │         SETUP    │
       │                  ├─ F2  SCALE       ( % / mV )
       │                  │
       │                  └─ F7  up
       │                         menu
       │
       ├─ 4 F4  B        ( ON / OFF )
       │
       ├─ 5 F4  CURSOR  ──┬─ F1  CURSOR      ( ON / OFF )
       │                  │
       │                  └─ F7  up
       │                         menu
       │
       └─ F5  DISPLAY   ( VECTOR / 5BAR / HISTOGRAM / CIE1931 )
```

```
      1  [F6] PERSISTENCE ──────── [F1] PERSISTENCE ( ON / OFF / INFINIT )

                                   [F2] PERSIST
                                        CLEAR

                                   [F7] up
                                        menu

      5  [F6] GAMMA        ( 2.2 / 2.6 )

      5  [F7] FILTER       ( LOW PASS / FLAT )
```

*1　Appears when DISPLAY is set to VECTOR.
*2　Appears when DISPLAY is set to HISTOGRAM.
*3　Appears when MODE is set to DIAGRAM on the chromaticity diagram display menu.
*4　Appears when MODE is set to MIX on the histogram display menu.
*5　Appears when DISPLAY is set to CIE1931.
*6　Appears when DISPLAY is set to an option other than HISTOGRAM.
*7　Appears when the input signal is interlace or segmented frame.
*8　Appears when COLOR MATRIX is set to COMPOSITE and the composite display format is NTSC.
*9　Appears when DISPLAY is set to 5BAR.

11.1.3　Picture Menu

```
[PIC] ── [F1] ADJUST ─── [F1] BRIGHTNESS ( -30 - 0 - 30 )

                         [F2] CONTRAST   ( 0.70 - 1.00 - 1.30 )

                         [F3] GAIN ───── [F1] R GAIN  ( 0.70 - 1.00 - 1.30 )

                                         [F2] G GAIN  ( 0.70 - 1.00 - 1.30 )

                                         [F3] B GAIN  ( 0.70 - 1.00 - 1.30 )

                                         [F7] up
                                              menu

                         [F4] BIAS ───── [F1] R BIAS  ( -0.30 - 0.00 - 0.30 )

                                         [F2] G BIAS  ( -0.30 - 0.00 - 0.30 )

                                         [F3] B BIAS  ( -0.30 - 0.00 - 0.30 )

                                         [F7] up
                                              menu

                         [F7] up
                              menu

      1  [F2] MARKER ───  2 [F1] ASPECT   ( OFF / 14:9 / 13:9 / 4:3 / 2.39:1 )
                                 MARKER

                          3 [F1] ASPECT   ( OFF / 14:9 / 13:9 / 4:3 / 2.39:1 / AFD )
                                 MARKER

                          4 [F1] ASPECT   ( OFF / 16:9 / 14:9 / 13:9 / AFD )
                                 MARKER

                          5 [F2] SAFE     ( ARIB / SMPTE / OFF )
                                 ACTION

                          5 [F3] SAFE     ( ARIB / SMPTE / OFF )
                                 TITLE

                            [F4] CENTER   ( ON / OFF )

                            [F5] FRAME    ( ON / OFF )

                          6 [F6] SHADOW   ( 0 - 100 )

                            [F7] up
                                 menu
```

『図面変更(ASPECT MARKER、SAFE ACTION、SAFE TITLE、FRAME)』

1 [F3] LINE SELECT — [F1] LINE SELECT (ON / <u>OFF</u>)
- **7** [F2] FIELD (FIELD1 / FIELD2 / <u>FRAME</u>)
- [F7] up menu

[F4] DISPLAY
- **8** [F1] SIZE (<u>FIT</u> / FULL_FRM)
- **9** [F1] SIZE (<u>FIT</u> / REAL / FULL_FRM)
- [F2] HISTOGRAM (ON / <u>OFF</u>)
- **10** [F3] GAMUT ERROR (ON / <u>OFF</u>)
- **10** [F4] GAMUT PATTERN (<u>WHITE</u> / RED / MESH)
- **11** [F6] AFD ASPECT INFO (ON / <u>OFF</u>)
- [F7] up menu

11 [F5] SUPER IMPOSE
- [F1] STANDARD (<u>OFF</u> / CC SMPTE / CC ARIB)
- **12** [F2] FORMAT (<u>608(708)</u> / 608(608) / VBI / 708)
- **13** [F2] FORMAT (<u>HD</u> / SD / ANALOG / CELLULAR)
- **14** [F3] LANGUAGE (<u>CC1</u> / CC2 / CC3 / CC4 / TEXT1 / TEXT2 / TEXT3 / TEXT4)
- **13** [F3] LANGUAGE (<u>1</u> / 2)
- **15** [F4] SERVICE DATA (<u>1</u> - 63)
- **13** [F5] CS LOG
  - **16** [F1] LOUDNESS MODE (ON / <u>OFF</u>)
  - [F2] LOG (START / <u>STOP</u>)
  - **17** [F3] CLEAR
  - **18** [F3] LOG/CHART CLEAR
  - [F4] LOG MODE (<u>OVER WR</u> / STOP)
  - [F5] TIMECODE SET
    - [F1] COMPLETE
    - [F7] CANCEL
  - **19** [F6] USB MEMORY
    - [F1] NAME INPUT
      - [F1] CLEAR ALL
      - [F2] DELETE
      - [F3] INSERT
      - [F4] <=
      - [F5] =>
      - [F6] CHAR SET
      - [F7] up menu
    - [F2] STORE
      - **20** [F1] OVER WR YES
      - [F3] OVER WR NO
    - [F4] FILE DELETE
      - [F1] DELETE YES
      - [F3] DELETE NO
    - [F5] FILENAME AUTO INC (ON / <u>OFF</u>)
    - [F7] up menu

『図面変更(改ページ位置変更)』

```
                                                            ┌── F7   up
                                                            │        menu
                        13
                     ┌── F6   CLEAR
                     │
                     ├── F7   up
                     │        menu
       21
    ── F6   MENU
            OFF
```

『図面変更(改ページ位置変更)』

*1   Appears when SIZE is set to FIT.

*2   Appears when the input signal is 3G-SDI or HD dual link.

*3   Appears when the input signal is HD-SDI.

*4   Appears when the input signal is SD-SDI.

*5   Appears when ASPECT MARKER is set to an option other than AFD.

*6   Appears when ASPECT MARKER is set to AFD.

*7   Appears when the input signal is interlace or segmented frame.

*8   Appears when the input signal is 3G-SDI or HD dual link (1080p/60, 1080p/59.94, 1080p/50).

*9   Appears when the conditions specified by *8 are not met.

*10 Appears when Gamut Error or Composite Gamut Error in the unit setup has been set to ON.

*11 Appears when the input signal is HD-SDI or SD-SDI.

*12 Appears when STANDARD is set to CC SMPTE.

*13 Appears when STANDARD is set to CC ARIB.

*14 Appears when STANDARD is set to CC SMPTE and FORMAT is set to an option other than 708.

*15 Appears when FORMAT is set to 708.

*16 Appears when the LV 58SER40A is installed.

*17 Appears when LOUDNESS MODE is OFF or when the LV 58SER40A is not installed.

*18 Appears when LOUDNESS MODE is set to ON.

*19 Appears when USB memory is connected to the LV 5800.

*20 Appears when there are files in the USB memory with the same name.

*21 Appears in the 1-screen display.

11.1.4   Status Menu

	F2 EXT_REF PHASE	**9 F1** SDI NUMBER	(1 / 2 / 3 / 4 / 5 / 6 / 7 / 8)		
		9 F2 SDI MEMORY			
		9 F3 MEMORY CLEAR			
		6 F4 REFERENCE SELECT	(EXT / LINK A)		
		9 F5 USER REF SET			
		9 F6 REF DEFAULT			
		F7 up menu			
	F7 up menu				
10 F4 ANC DATA VIEWER	**F1** ANC DUMP	**F2** HOLD TIME	(HOLD / 1s / 3s)		
		F3 DUMP MODE	(HEX / BINARY)		
		F7 up menu			
	F5 PAGE UP				
	F6 PAGE DOWN				
	F7 up menu				
F5 ANC PACKET	**11 F1** EDH	**F1** DISPLAY	(TEXT / DUMP)		
		12 F2 DUMP MODE	(HEX / BINARY)		
		F7 up menu			
	F2 FORMAT ID	**10 F1** STANDARD	(SMPTE / ARIB)		
		13 F2 STREAM SELECT	(STREAM 1 / STREAM 2)		
		6 F2 LINK SELECT	(LINK A / LINK B)		
		F7 up menu			
	F3 CONTROL PACKET	**F1** DISPLAY	(TEXT / DUMP)		
		12 F2 DUMP MODE	(HEX / BINARY)		
		F3 GROUP	(1 / 2 / 3 / 4)		
		F7 up menu			
	10 F4 V-ANC ARIB	**F1** CLOSED CAPTION	**F1** DISPLAY	(TEXT / DUMP)	
			F2 TYPE	(HD / SD / ANALOG / CELLULAR)	
			12 F3 DUMP MODE	(HEX / BINARY)	
			F7 up menu		
		F2 NET-Q	**F1** DISPLAY	(TEXT / DUMP / Q LOG)	
			12 F2 DUMP MODE	(HEX / BINARY)	
			14 F3 Q LOG CLEAR		
			14 F4 BIT MASK	**F1** COMPLETE	
				F4 ALL ON	
				F5 ALL OFF	
				F7 CANCEL	
			F7 up menu		
		F3 DATA TRIGGER	**F1** DISPLAY	(TEXT / DUMP)	
			12 F2 DUMP MODE	(HEX / BINARY)	
			F7 up menu		

		F4 USER DATA1	F2 DUMP MODE	(HEX / BINARY)	
			F7 up menu		
		F5 USER DATA2	F2 DUMP MODE	(HEX / BINARY)	
			F7 up menu		
		F7 up menu			
	10 F5 V−ANC SMPTE	F1 EIA−708	F1 DISPLAY	(TEXT / DUMP)	
			12 F2 DUMP MODE	(HEX / BINARY)	
			F7 up menu		
		F2 EIA−608	F1 DISPLAY	(TEXT / DUMP)	
			12 F2 DUMP MODE	(HEX / BINARY)	
			F7 up menu		
		F3 PROGRAM	F7 up menu		
		F4 VBI	F7 up menu		
		F5 AFD	F1 DISPLAY	(TEXT / DUMP)	
			12 F2 DUMP MODE	(HEX / BINARY)	
			F7 up menu		
		F7 up menu			
	F6 CUSTOM SEARCH	F1 DID	(00 − FF)		
		F2 SDID	(— / 00 − FF)		
		F3 SET			
		F4 DUMP MODE	(HEX / BINARY)		
		F7 up menu			
	F7 up menu				
F6 COUNTER	(SEC / FIELD / %FIELD)				
F7 ERROR CLEAR					

*1   Appears when USB memory is connected to the LV 5800.
*2   Appears when there are files in the USB memory with the same name.
*3   Appears when there is no frame capture data in the LV 5800 internal memory.
*4   Appears when there is frame capture data in the LV 5800 internal memory.
*5   Appears when the input signal is 3G-SDI level B.
*6   Appears when the input signal is HD dual link.
*7   Appears when the input signal is 3G-SDI level A, HD-SDI, or SD-SDI.
*8   Appears when MODE is set to RUN or FRM CAP.
*9   Appears when REFERENCE SELECT is not set to LINK A.
*10 Appears when the input signal is HD-SDI or SD-SDI.
*11 Appears when the input signal is SD-SDI.
*12 Appears when DISPLAY is set to DUMP.
*13 Appears when the input signal is 3G-SDI.
*14 Appears when DISPLAY is set to TEXT or Q LOG.

11.1.5 Unit Setup

Depending on the current settings, there are settings that cannot be chosen.

GENERAL SETUP		
	Input Mode	(<u>Single Input</u> / Simultaneous Input)
	Auto/Manual	(<u>Auto</u> / Manual)
	i/PsF Select	(<u>Interlace</u> / Segmented Frame)
	Link Format	(3G-A / 3G-B / HD-DualLink / <u>HD</u> / SD)
	Color System	(YCbCr(4:2:2) / <u>GBR(4:4:4)</u>)
	Pixel Depth	(<u>10bit</u> / 12bit)
	Scanning	(1080p / <u>1080i</u> / 1080PsF / 720p / 525i / 625i)
	Active Sample	(<u>1920</u> / 2048(2k))
	Frame Rate	(60 / 59.94 / 50 / <u>30</u> / 29.97 / 25 / 24 / 23.98)
	Time Code	(<u>Real Time</u> / LTC / VITC / D-VITC)

SDI OUT SETUP		
	A/Bch Output	(<u>Input Through</u> / 3G Test Signal)
	Bch Output	(<u>Input Through</u> / 3G Test Signal)
	3G-Level	(A / <u>B</u>)
	Frame Rate	(60 / <u>59.94</u> / 50)
	Pattern	(<u>100% Color Bar</u> / 75% Color Bar / 100% White / 50% White / Black / Check Field / EQ / PLL)
	Pattern Change	(<u>OFF</u> / ON)
	Frames	(5 - <u>30</u> - 300)

ERROR SETUP1		
	TRS Error	(<u>ON</u> / OFF)
	Line Number Error	(<u>ON</u> / OFF)
	CRC Error	(<u>ON</u> / OFF)
	EDH Error	(<u>ON</u> / OFF)
	Illegal Code Error	(<u>ON</u> / OFF)

```
┌──────────────┐    ┌──────────────────┐
│ ERROR SETUP2 ├────┤ Parity Error     │  ( ON / OFF )
└──────────────┘    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Checksum Error   │  ( ON / OFF )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ BCH Error        │  ( ON / OFF )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ DBN Error        │  ( ON / OFF )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Parity Error     │  ( ON / OFF )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Inhibit Line Error │ ( ON / OFF )
                    └──────────────────┘
┌──────────────┐    ┌──────────────────┐
│ ERROR SETUP3 ├────┤ LowPass Frequency │  ( ALL:1MHz / SD:1MHz Others:2.8MHz / OFF )
└──────────────┘    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Gamut Error      │  ( ON / OFF )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Gamut Upper      │  ( 90.8 - 109.4 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Gamut Lower      │  ( -7.2 - 6.1 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Area             │  ( 0.0 - 0.1 - 5.0 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Duration         │  ( 1 - 60 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Composite Gamut Error │ ( ON / OFF )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Setup            │  ( 0% / 7.5% )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Composite Upper  │  ( 90.0 - 135.0 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Composite Lower  │  ( -40.0 - 20.0 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Area             │  ( 0.0 - 0.1 - 5.0 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Duration         │  ( 1 - 60 )
                    └──────────────────┘
┌──────────────┐    ┌──────────────────┐
│ ERROR SETUP4 ├────┤ Freeze Error     │  ( ON / OFF )
└──────────────┘    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Area Upper       │  ( 0 - 100 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Area Lower       │  ( 0 - 100 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Area Left        │  ( 0 - 100 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Area Right       │  ( 0 - 100 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Duration         │  ( 2 - 300 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Black Error      │  ( ON / OFF )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Level            │  ( 0 - 100 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Area             │  ( 1 - 100 )
                    └──────────────────┘
                    ┌──────────────────┐
                ────┤ Duration         │  ( 1 - 300 )
                    └──────────────────┘
```

```
┌──────────────┐      ┌────────────────────┐
│ ERROR SETUP5 │──┬───│ Level Error        │   ( ON / OFF )
└──────────────┘  │   └────────────────────┘
                  │   ┌────────────────────┐
                  ├───│ Luminance Upper    │   ( -51 - 766 )
                  │   └────────────────────┘
                  │   ┌────────────────────┐
                  ├───│ Luminance Lower    │   ( -51 - 766 )
                  │   └────────────────────┘
                  │   ┌────────────────────┐
                  ├───│ Chroma Upper       │   ( -400 - 399 )
                  │   └────────────────────┘
                  │   ┌────────────────────┐
                  └───│ Chroma Lower       │   ( -400 - 399 )
                      └────────────────────┘
```

11.2   CHANGE HISTORY OF THE SOFTWARE

This manual was written for the following firmware versions:

• Ver. 10.6 on the LV 5800
• Ver. 5.2 on the LV 7800
To check the version number, press SYS → F•5 SYSTEM INFORMATION.

Ver 10.6 on the LV 5800 / Ver 5.2 on the LV 7800

• On the LV 58SER06, the video signal waveform display now includes 1023,255 for SCALE UNIT.
• On the LV 58SER06, the picture display ASPECT MARKER now includes 14:9, 13:9, and 2.39:1.
• On the LV 58SER06, a frame marker feature has been added to the picture display.

Ver 9.1 on the LV 5800 / Ver 3.7 on the LV 7800

• The Japanese closed caption CS log feature and TV commercial (Japanese closed caption and loudness) check feature have been added to the LV 58SER06.

Ver 8.7 on the LV 5800 / Ver 3.3 on the LV 7800

• For the LV 58SER06, support has been added for additional 3G-SDI formats (such as RGB 4:4:4).

Ver 7.5 on the LV 5800 / Ver 2.1 on the LV 7800

• A feature has been added to the LV 58SER06 that displays "CS" in cyan on the Japanese closed caption display when a clear screen packet is received.

Ver 7.0 on the LV 5800 / Ver 1.6 on the LV 7800

• A feature for displaying R, G, and B on the vector display's histogram has been added to the LV 58SER06.

Ver 6.8 on the LV 5800 / Ver 1.4 on the LV 7800

• A CIE chromaticity diagram display feature has been added to the vector display on the LV 58SER06.

Ver 6.6 on the LV 5800 / Ver 1.4 on the LV 7800

• The LV 58SER06 now supports HD-SDI, SD-SDI, and HD dual link.
• An error capture feature has been added to the LV 58SER06 for BCH errors, DBN errors, parity errors (audio), and inhibit line errors.

Ver 6.3 on the LV 5800 / Ver 1.3 on the LV 7800

• A histogram display feature has been added to the vectorscope display of the LV 58SER06.

Ver 5.9 on the LV 5800 / Ver 1.2 on the LV 7800

• The LV 58SER06 is now supported.

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所含有毒有害物质信息

部件号码：LV 58SER06

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	×	○	○	○	○	○

备注）

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

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

Ver.1

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