

LV 58SER01A

LV 58SER01

SDI INPUT

INSTRUCTION MANUAL

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1. INTRODUCTION

1.1 Maximum Allowable Input Voltage to the Input Connector



The maximum allowable input voltage to the input connector is shown in the table below. Do not apply excessive voltage to prevent damage to the instrument.

Maximum Input Voltage

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

1.2 Precautions Concerning the Unit

Aliasing occurs in the V sweep display of 1080p/60, 59.94, and 50, because the unit decimates the sampling data.

The picture display is processed using 8 bits even if the quantization is set to 12 bits.

1.3 Notations Used in This Manual

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

1.4 Trademark Acknowledgments

The typefaces included herein are solely developed by DynaComware Taiwan Inc.

2. PRODUCT SPECIFICATIONS

2.1 General

This SDI input unit can be installed into the input slot of an LV 5800(A) (multi monitor) or into an LV 7800 (multi rasterizer). You can install a maximum of four LV 58SER01A units into these instruments. By operating the instrument, you can display SDI signals' video signal waveforms, vector waveforms, pictures, error detection results, and so on.

From Ach / Bch output terminal (reclock out), the SDI signal input to A ch or B ch can be output by interlocking with the input key. (*1)

In addition, the following features can be achieved when used in combination with other units. (*2)

- Eye pattern display of SDI signals (in combination with the LV 58SER02).
- Lissajous and level displays of the embedded audio signal (in combination with the LV 58SER40A).

*1 This function is not available on the LV 58SER01.

*2 This instruction manual does not cover these features. See the instruction manual of the other unit.

2.2 Features of the SDI Input Unit

- **Two Serial Digital Inputs/Outputs**

Each unit contains two SDI inputs. The unit can receive two separate SDI signals or a single dual link signal.

In addition, the unit is equipped with SDI outputs that deliver reclocked signals of each SDI input.

Furthermore, from Ach / Bch output terminal (reclock out), the SDI signal input to Ach or Bch can be output by interlocking with the input key. (*1)

*1 This function is not available on the LV 58SER01.

- **Video Signal Display Function**

The video signal waveforms, vectors, and pictures of the SDI signal can be shown on a 1-, 2-, or 4-screen multi display. In the multi display, you can select any combination of the input signals and display the video signal waveform and the like.

* Multi display does not allow link A and link B to be displayed separately during dual link operation.

- **Error Detection Function**

Various errors can be detected including SDI signal errors such as CRC errors of HD-SDI signals and EDH errors of SD-SDI signals as well as errors related to the embedded audio signals and ancillary data.

- **Ancillary Data Analysis**

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

- **SDI-EXT REF Phase Display Function**

The relative phase between SDI inputs can be measured.

- **Lip Sync Display Function**

Combining the LV 58SER01A with an LT 4400 (in which an LT 4400SER01 is installed) and an LV 58SER40(A) makes it possible to measure the offset between the video signal and the audio signal that occurs in the transfer route.

- **5 BAR Display Function**

The 5 BAR display allows simultaneous monitoring of 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 Demultiplex Function**

The unit is equipped with a function for demultiplexing the embedded audio signal. Level meter and Lissajous displays can be achieved when used in combination with the digital audio unit (LV 58SER40A). The signal can also be output as AES/EBU.

- **Eye Pattern Display**

Eye patterns can be displayed by installing the Eye Pattern Unit (LV 58SER02). The eye pattern display allows you to select A or B.

- **External Synchronization**

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. PRODUCT SPECIFICATIONS

2.3 Specifications

2.3.1 Input signal

Supported Formats and Standards of Dual Link System Video Signals

Format	Quantization	Scanning	Frame (Field) Frequency	Supported Standards
GBR 4:4:4	10 bit	1080p	30/29.97/25/24/23.98	SMPTE 372M (1920×1080)
		1080PsF	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
	12 bit	1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
Y,CB,CR 4:2:2	10 bit	1080p	60/59.94/50	
	12 bit	1080p	30/29.97/25/24/23.98	
		1080PsF	30/29.97/25/24/23.98	
		1080i	60/59.94/50	
GBR 4:4:4 (2K)	12 bit	1080p	24/23.98	(2048×1080)
		1080PsF	24/23.98	

* The picture display is 8-bit resolution.

* The phase difference between link A and link B is automatically corrected up to 100 clocks (approximately 1.4 μs) and displayed.

Various error detecting functions shown in the status display do not operate correctly when link A and link B have not synchronized.

Supported Formats and Standards of Single Link Video Signals

Format	Quantization	Scanning	Frame (Field) Frequency	Supported Standards
Y,CB,CR 4:2:2	10 bit	1080i	60/59.94/50	SMPTE 274M
		1080p	30/29.97/25/24/23.98	SMPTE 292M
		1080PsF	30/29.97/25/24/23.98	SMPTE RP211 SMPTE 292M
		720p	60/59.94/50/ 30/29.97/25/24/23.98	SMPTE 296M SMPTE 292M
		525i	59.94	SMPTE 259M
		625i	50	

* The picture display is 8-bit resolution.

Other Standards

Ancillary Standard	SMPTE 291M
Embedded Audio Standards	SMPTE 299M (HD-SDI) SMPTE 272M (SD-SDI)

Format Setting

Link Switching	Manual switching between single link and dual link
Format Setting	Auto setting (automatically sets only the frame/field frequency for the dual link)

2. PRODUCT SPECIFICATIONS

2.3.2 Input/Output Connector

SDI Input

Input Connector	BNC connector 2 connectors
During single link	Ach/Bch 2 systems
During dual link	Link A/Link B 1 system
Input Impedance	75 Ω
Input Return Loss	≥ 15 dB (5 MHz to serial clock frequency)
Maximum Input Voltage	± 2 V (DC + Peak AC)

SDI Output

Output Connector	BNC connector 2 connectors Serially reclocks the input signal and outputs the resultant signal
During single link	Ach/Bch switchable 1 system (*1) Bch fixed 1 system
During dual link	Link A/Link B 1 system
Output Impedance	75 Ω
Output Voltage	800 mVp-p ± 10 %
Output Return Loss	≥ 15 dB (5 MHz to serial clock frequency)

*1 In LV 58SER01, Ach is fixed.

2.3.3 Waveform Display Function

Waveform Operation

Display Mode	Overlay display (Displays component signals overlaid) Parade display (Displays component signals side by side)
Blanking Period	Show/hide switchable
Y, C _B , C _R to GBR Conversion	Converts Y, C _B , C _R signals into G, B, R and displays the result
Pseudo-Composite Display	Displays component signals artificially as composite signals
Timing Display (*1)	Displays by calculating Y-CB and Y-CR. Uses bowtie signals. (Authorized by Tektronix, Inc.)
Channel Assignment	Select G, B, R order or R, G, B order during G, B, R conversion display
Line Select	Displays the selected line
Image Quality Adjustment	Brightness adjustment

Vertical Axis

Sensitivity	
V Scale	0 V to 0.7 V and -0.3 V to 0.7 V
% Scale	0 % to 100 % and -50 % to 100 %
Decimal Scale	64 to 940 (for YGBR), 64 to 960 (for CbCr) 0 to 1023 (for YGBR), 0 to 255 (for YGBR)
Hexadecimal	040 to 3AC (for YGBR), 040 to 3C0 (for CbCr)
Gain	$\times 1$, $\times 5$, or variable

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Variable Gain	×0.2 to ×10
Amplitude Accuracy	≤ ±0.5 %
Frequency Characteristics HDTV	
Y Signal	≤ ±0.5 % (1 MHz to 30 MHz)
C _B , C _R Signal	≤ ±0.5 % (0.5 MHz to 15 MHz)
Low-pass Attenuation	≥ 20 dB (at 20 MHz)
Frequency Characteristics SDTV	
Y Signal	≤ ±0.5 % (1 MHz to 5.75 MHz)
C _B , C _R Signal	≤ ±0.5 % (0.5 MHz to 2.75 MHz)
Low-pass Attenuation	≥ 20 dB (at 3.8 MHz)
Horizontal Axis	
Line Display	
Display Format	Overlay : 1H, 2H Parade : 1H, 2H, 3H Timing : Y- C _B , Y- C _R 4Y Parade(*2) : 4H
Magnification	×1, ×10, ×20, ACTIVE, or BLANK
Field Display	
Display Format	Overlay(*3) : 1V, 2V Parade : 1V, 2V, 3V
Magnification	×1, ×20, ×40
Time Base Accuracy	≤ ±0.5 %
Cursor Measurement	
Configuration	
Horizontal Cursors	2 cursors (REF and DELTA)
Vertical Cursors	2 cursors (REF and DELTA)
Amplitude Measurement	Measure in terms of [%] or [V] or [DEC] or [HEX]
Time Measurement	Displayed in [sec]
Frequency Display	Displays the frequency in which the time between cursors is considered a cycle

*1 Dual link is not supported.

*2 The 4Y parade display requires that the four inputs are of the same format and are synchronized.

*3 2V display not allowed for progressive

2.3.4 Vectorscope Display

Sensitivity	75% or 100% (for the color bars)
Gain	×1, ×5, IQ-MAG, or variable
Variable Gain	×0.2 to ×10
Amplitude Accuracy	≤ ±0.5 %
IQ Axis	Select show/hide
Pseudo-Composite Display	Displays component signals by converting to composite signals that have BURST added artificially. (The color matrix for HDTV signals is converted to SDTV.)
Image Quality Adjustment	Brightness adjustment
Histogram Display	Displays the luminance distribution

2. PRODUCT SPECIFICATIONS

2.3.5 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

2.3.6 Phase Difference Display

Display	Displays the phase difference between the SDI signal and external sync signal numerically and graphically Holds and displays eight phase difference values being measured
Display Range	
V Direction	Approximately $\pm 1/2$ frame (see Section 9.6, "Displaying the Phase Difference between the SDI and External Sync Signal".)
H Direction (*1)	± 1 line
Synchronization Signal	HD tri-level sync signal or B. B signal
Phase Difference Measurement in Dual Link	Displays the phase difference between link A and link B in terms of parallel clocks number. (includes an error of ± 1 clock)

*1 The phase difference display in the H direction may fluctuate in the range of ± 1 clock when the signal is switched.

2.3.7 Picture Display

HDTV Display	Displayed by sampling pixels (8 bits for R, G, and B)
SDTV Display	Displayed by interpolating pixels (8 bits for R, G, and B)
Marker Display	Center marker display 16:9, 14:9, 13:9, 4:3, or 2.39:1 marker display Frame marker display Safe action marker display Safe title marker display AFD marker display
Gamut Error Display	Marks sections containing gamut errors within the picture
Line Select	Displays a marker for the selected line
Display Size	Reduced display, full frame display, and actual size display (*1)
Histogram Display	Displays the luminance distribution
AFD Display	Displays abbreviations for SMPTE 2016-1-2007 standard AFD codes

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Image Quality Adjustment	GBR level adjustment, contrast adjustment, and brightness adjustment
Simple Japanese Closed Caption Display	Displays simple Japanese closed caption on the picture screen. (You can choose to display HD, SD, analog, or mobile phone closed captions. You can select display language 1 or 2.)
Standard	ARIB STD B-37 short form data
Video Formats	1080i/59.94 (SMPTE 274M, 292) 525i/59.94 (SMPTE 259M)
Display	The display location can only be adjusted for HD and SD closed caption.
Characters	Only <i>kanji</i> , roman numerals, <i>katakana</i> , <i>hiragana</i> , additional characters (ARIB STD-B24), additional <i>kanji</i> (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

*1 Actual size display cannot display in 1080p/60, 59.94, 50 formats respectively.

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2.3.8 Status Display

Status Display of SDI Signals

Signal Detection	Detects the presence or absence of SDI signals
Format	Detected among the supported video signal formats (Detects only the frame rate during dual link)

Equivalent Cable Length Measurement

Displays the signal attenuation of the SDI signal by converting to cable length

Supported Cables	HD-SDI: Select L-7CHD, LS-5CFB, or 1694A SD-SDI: Select LS-5C2V, 8281, or 1505A
------------------	--

Accuracy ± 20 m

Resolution 5 m (10 m for L-7CHD)

Embedded Audio Channel	Displays the multiplexed audio channel number (Supports only link A during dual link)
------------------------	--

Error Detection of SDI Signals

CRC Error	Detects transmission errors of HD-SDI signals
EDH Error	Detects transmission errors of SD-SDI signals
TRS Error	Detects errors in the TRS position and protection bit
Line Number Error	Detects line number errors in HD-SDI signals
Illegal Code Error	Detects data in the range of 000h to 003h and 3FC to 3FF outside the TRS or ADF header.

Embedding Prohibition Error	Detects the presence or absence of audio in the embedded prohibition line. (Supports only link A during dual link)
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Cable Length Meter Error	Detects the signal attenuation to detect errors
HD-SDI	Set in the range of 5 m to 200 m in 5-m intervals
SD-SDI	Set in the range of 50 m to 300 m in 5-m intervals

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. (Phase difference measurement includes the error of ± 1 clock.)

Error Detection in Embedded Audio (Supports only link A during dual link)

BCH Error	Detects transmission errors in audio packets embedded in HD-SDI signals
DBN Error	Detects sequency errors in audio packets
Parity Error	Detects parity errors in audio packets embedded in HD-SDI signals

Error Detection in Ancillary Data

Checksum Error	Detects transmission errors in the ancillary data
Parity Error	Detects parity errors in the ancillary data header.

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Image Quality Evaluation

Gamut Error	Detects gamut errors according to the specified time Indicates the gamut error position on the picture
Upper Limit	90.8 % to 109.4 % (0.1 % resolution)
Lower Limit	-7.2 % to +6.1 % (0.1 % resolution)
Area Designation	0.0 % to 5.0 % (0.1 % resolution)
Time Designation	1 to 60 frames
Frequency Characteristics	Eliminates transient gamut errors such as in an overshoot.
HD-SDI	Approx. 1 MHz LPF (IEEE STD 205), approx. 2.8 MHz LPF, OFF
SD-SDI	Approx. 1 MHz LPF (EBU R103-2000), OFF
Composite Gamut Error	Monitors the level error when the component signal is converted into composite signal
Upper Limit	90.0 % to 135.0 % (0.1 % resolution)
Lower Limit	-40.0 % to 20.0 % (0.1 % resolution)
Frequency Characteristics	Common with the gamut error
Level Error	Detects Y C _B C _R level errors (Dual link is not supported.)
Y Upper Limit	-51 mV to 766 mV (1-mV resolution)
Y Lower Limit	-51 mV to 766 mV (1-mV resolution)
C _B C _R Upper Limit	-400 mV to 399 mV (1-mV resolution)
C _B C _R Lower Limit	-400 mV to 399 mV (1-mV resolution)
Freeze Detection	Detects video freeze according to the specified time (Dual link is not supported.)
Detection Method	Checksum of the video period
Time Designation	2 to 300 frames
Black Detection	Detects blackouts in the video (Dual link is not supported.)
Black Level Designation	0 to 100%
Area Designation	1 to 100 %
Time Designation	1 to 300 frames
Event Log	
Logged Items	Error items, input switching operations, and timestamps

2.3.9

5 BAR Display

Bar Display	Displays the YGBR component and composite gamut
Error Level Setting	
Component Gamut	Common with the gamut error
Composite Gamut	Common with the composite gamut error
Gamut Display Frequency Characteristics	Common with the gamut error
Miscellaneous	When a line is selected, detection is performed on only the selected line for the component gamut.

2. PRODUCT SPECIFICATIONS

2.3.10 Analysis Function

Data Dump Display

Display Format	Displayed by serial data sequence or channel separation (Select link A, link B, or link A/B to be displayed for dual link)
Line Select	Displays the selected line
Sample Select	Displays selected samples
Jump Function	Move to EAV or SAV by one-key operation
Data Output	Save data in text format to a PC via Ethernet network or USB memory

Lip Sync Display (*1)

Displayed Contents	Measures the time difference between the SDI signal and embedded audio signal and displays the results numerically and graphically
Reference Signal	A Leader TSG that supports lip syncing
Supported Audio Signals	Embedded audio signal
Supported Format	1080i/59.94, 1080i/50, 720p/59.94, 525i/59.94, and 625i/50
Displayed Channels	16 channels
Measurement Range	± 50 ms, ± 100 ms, ± 500 ms, ± 1.0 s, or ± 2.5 s
Measurement Resolution	1 ms

Audio Control Packets (only link A is supported for dual link)

Displayed Contents	Analyzes and displays audio control packets
Display Format	Text, hexadecimal, or binary
Group Selection	Select a group among four groups

EDH Display

Supported Standard	SMPTE RP-165
Displayed Contents	Analyzes and displays EDH packets and displays received CRC errors
Display Format	Text, hexadecimal, or binary

Format ID Display

Supported Standards	SMPTE 352M and ARIB STD-B39 (only SMPTE 352M is supported for dual link)
Displayed Contents	Analyzes and displays the format ID

Closed Caption Display (not supported for dual link)

Supported Standard	ARIB STD-B37
Displayed Contents	Analyzes and displays closed caption signals
Display Format	Text, hexadecimal, or binary

Inter-Stationary Control Signal (NET-Q) (not supported for dual link)

Supported Standard	ARIB STD-B39
Displayed Contents	Analyzes and displays inter-stationary control signals
Display Format	Text, hexadecimal, or binary
Log Function	Logs Q signals

2. PRODUCT SPECIFICATIONS

Data broadcasting trigger signal (not supported for dual link)

Supported Standard	ARIB STD-B35
Display Format	Text, hexadecimal, or binary

V-ANC User Data Display (not supported for dual link)

Supported Standard	ARIB TR-B23
Display Format	Hexadecimal or binary

Arbitrary Ancillary Packet Display (only link A is supported for dual link)

ANC Designation	Select DID or SDID
Display Format	Hexadecimal or binary

ADF Packet Display (not supported for dual link)

Supported Standard	SMPTE 2016-1-2007
Display Format	Text, hexadecimal, or binary

Time Code Display (only link A is supported for dual link)

Supported Time Codes	LTC (SMPTE 12M-2), VITC (SMPTE 12M-2), D-VITC (SMPTE 266M)
Display Method	Switches the display between the internal clock and time code

*1 To perform lip sync measurements, an LT 4400 (in which an LT 4400SER01 is installed) and an LV 58SER40(A) are required.

2.3.11 Embedded Audio Processing

Clock Generation System

SD-SDI	Generated from the video clock
HD-SDI	Generated from the video clock
Dual Link	Generated from the video clock

Synchronization Relationship All synchronized to the video clock

Phase Relationship All matched

Demultiplexed Channel Select up to four groups (16 channels) from Ach, Bch, or link A during dual link

* The LV 58SER40A is required to display and output audio.

2.3.12 Cable Length Meter Measurement

Detection System Converts the signal attenuation to a coaxial cable length and displays the result

Supported Cables

HD-SDI	L-7CHD, LS-5CFB, and 1694A
SD-SDI	LS-5C2V, 8281, and 1505A

Display Range

HD-SDI	Less than 5 m to greater than or equal to 130 m (Less than 10 m to greater than or equal to 200 m for L-7CHD.)
--------	---

SD-SDI	Less than 50 m to greater than or equal to 300 m
--------	--

Accuracy ± 20 m

Resolution 5 m (10 m for L-7CHD)

2. PRODUCT SPECIFICATIONS

2.3.13 Frame Capture Function

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 RAM memory and USB memory Only one frame from two signals can be stored in the internal memory (only one frame from one signal during dual link).
Data Output	Screen captures can be saved as .dpx files, .tif files, or in a file format that the LV 5800(A) can load. They can be saved to USB memory or sent to a PC through an Ethernet connection.
Data Input	Data saved to USB memory can be loaded and displayed on the LV 5800(A).
Error Capture Function	Automatically captures frame data when an error occurs

* The captured frame can only be displayed if an SDI input of the same format as the captured data is available.

2.3.14 Closed Caption Display Function

Supported Standards

Function Name	Standard	DID	SDID
EIA-708 CC decode function	SMPTE334M	161h	101h
EIA/CEA-608-B CC decode function (EIA-708-B)	SMPTE334M	161h	101h
EIA/CEA-608-B CC decode function (EIA/CEA-608-B)	SMPTE334M	161h	102h
VBI (EIA/CEA-608-B Line21) CC decode function	CEA/EIA-608-B		

Display Contents of the CDP Packet

Header information of the CDP packet

- 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

Displayed Contents of the XDS Packet

Content advisory information

Copy management information

2. PRODUCT SPECIFICATIONS

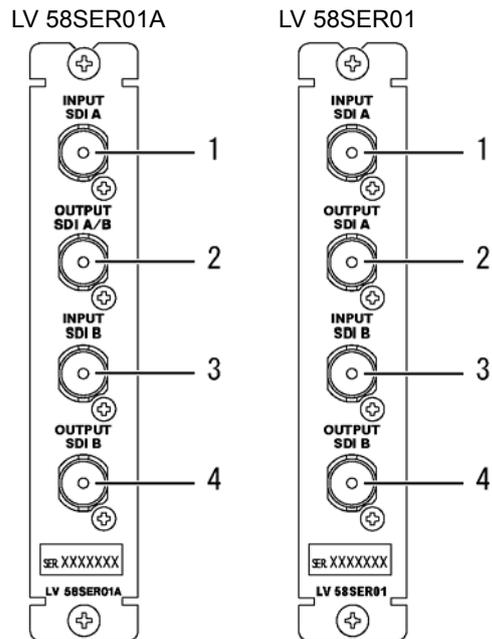
Displayed Contents of the Program Description Packet

- 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

2.3.15 General Specifications

Environmental Conditions	Conforms to the instrument that it is installed in
Power Consumption	Supplied from the instrument; 18 W max.
Weight	0.28 kg
Accessory	Instruction manual

3. NAMES AND FUNCTIONS OF PARTS

**1 INPUT SDI A (SDI Signal Input A Connector)**

Input A connector for SDI signal. It corresponds to link A during dual link.

Each input connector is internally terminated at 75 Ω . You do not need to connect a terminator.

Use a cable with a characteristic impedance of 75 Ω for the connection.



CAUTION

Do not apply a voltage exceeding ± 2 V (DC + peak AC) to the SDI signal input connector. If you do, the instrument may malfunction.

2 OUTPUT SDI A/B (SDI Signal Output A/B Connectors)

Reclocked outputs of SDI signals.

The SDI signals applied to the INPUT SDI A and INPUT SDI B can be switched and output. Connect the output to an external instrument such as a picture monitor supporting SDI input. 75- Ω termination is required at the receiving end.

* It cannot be switched and output in LV 58SER01, and it becomes the relock output of INPUT SDI A.

3 INPUT SDI B (SDI Signal Input B Connector)

Input B connector for SDI signal. It corresponds to link B during dual link.

Each input connector is internally terminated at 75 Ω . You do not need to connect a terminator.

Use a cable with a characteristic impedance of 75 Ω for the connection.



CAUTION

Do not apply a voltage exceeding ± 2 V (DC + peak AC) to the SDI signal input connector. If you do, the instrument may malfunction.

3. NAMES AND FUNCTIONS OF PARTS

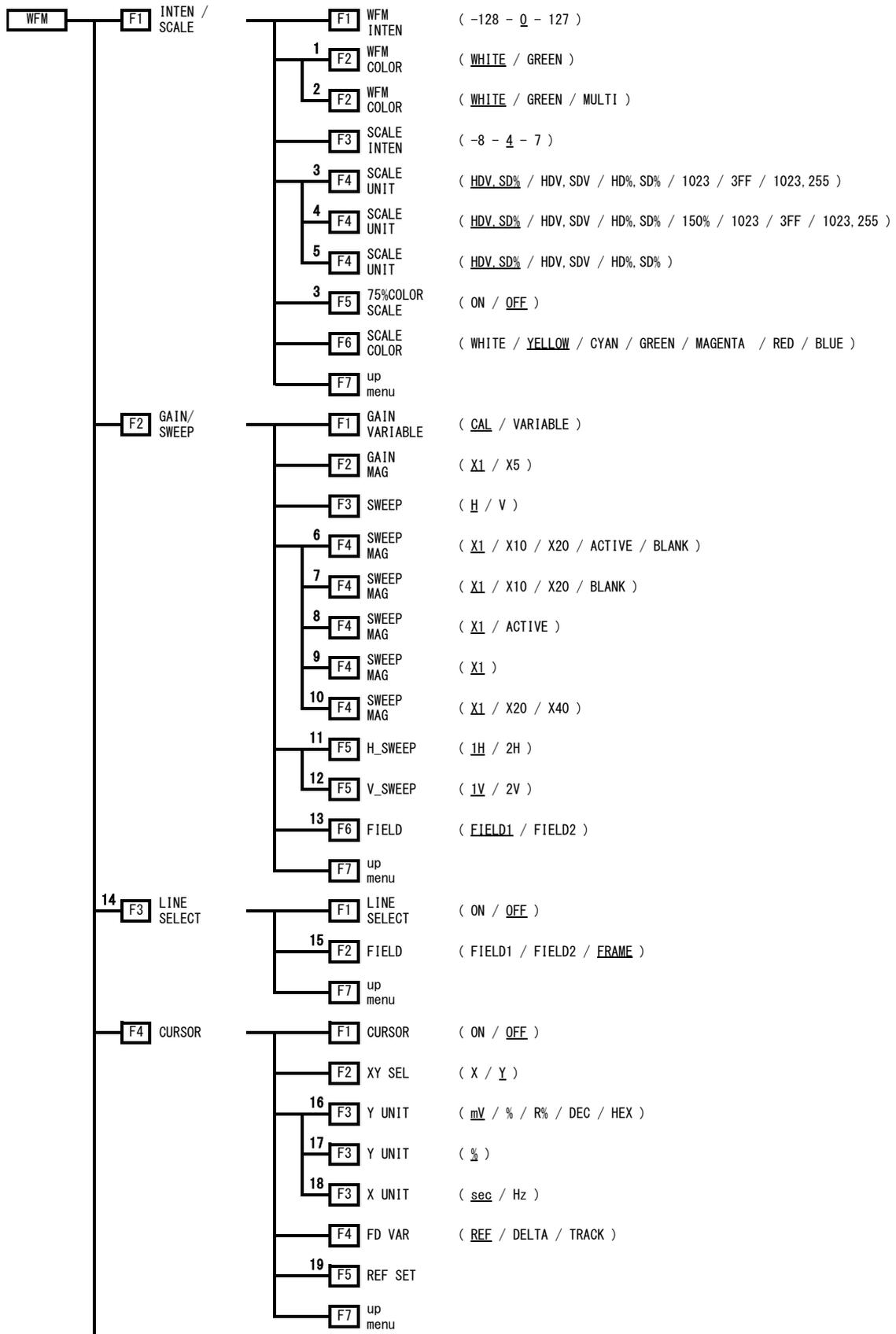
4 OUTPUT SDI B (SDI Signal Output B Connector)

Reclocked output of SDI signal applied to the INPUT SDI B.

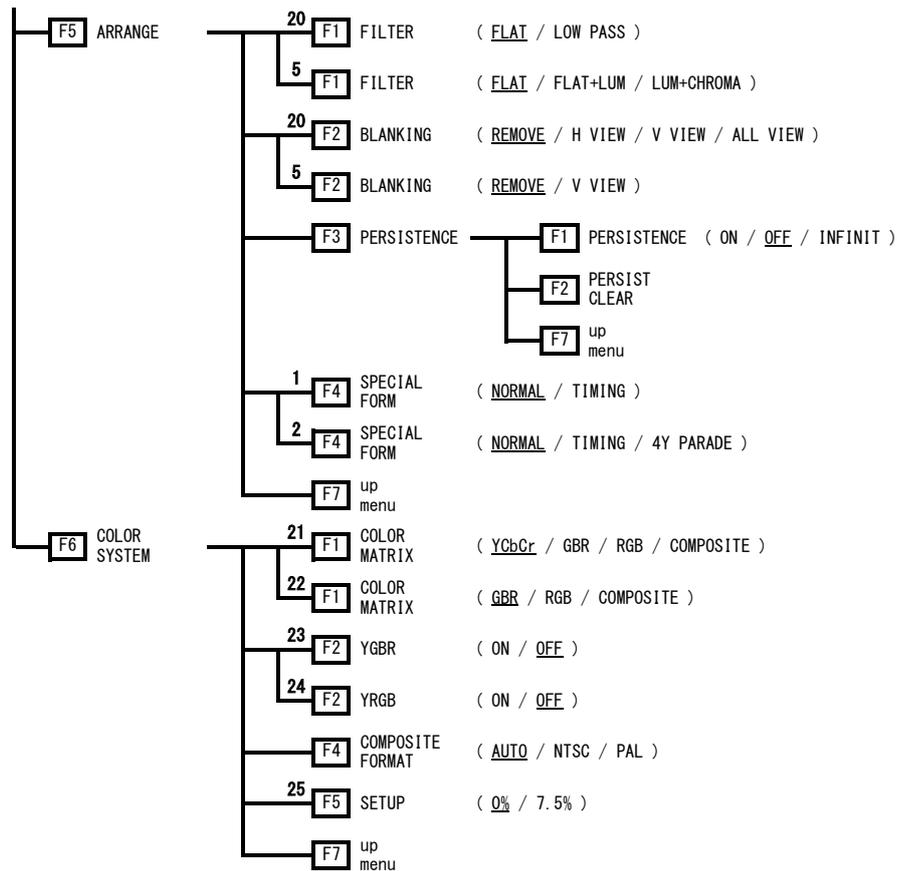
Connect the output to an external instrument such as a picture monitor supporting SDI input. 75- Ω termination is required at the receiving end.

4. MENU STRUCTURE

4.1 Waveform Display Menu



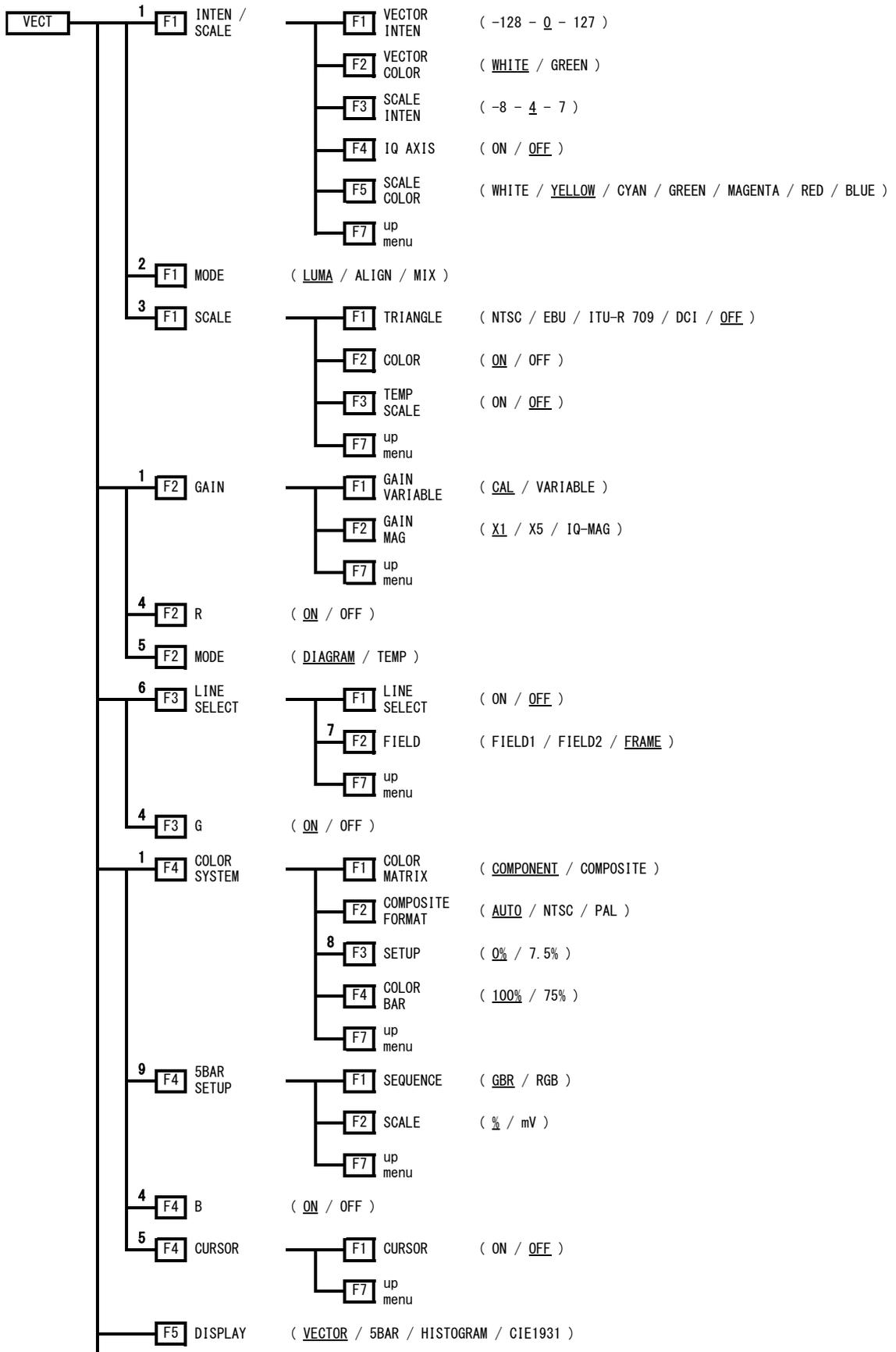
4. MENU STRUCTURE



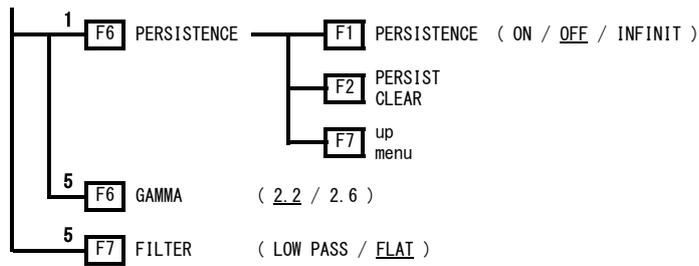
- *1 Displayed if 2- or 4- screen multi display is enabled.
- *2 Displayed if 1-screen display is enabled.
- *3 Displayed if COLOR MATRIX is set to YCbCr .
- *4 Displayed if COLOR MATRIX is set to GBR or RGB.
- *5 Displayed if COLOR MATRIX is set to COMPOSITE.
- *6 Displayed if COLOR MATRIX is set to YCbCr, GBR, or RGB and H_SWEEP is set to 1H.
- *7 Displayed if COLOR MATRIX is set to YCbCr, GBR, or RGB and H_SWEEP is set to 2H.
- *8 Displayed if COLOR MATRIX is set to COMPOSITE and H_SWEEP is set to 1H.
- *9 Displayed if COLOR MATRIX is set to COMPOSITE and H_SWEEP is set to 2H.
- *10 Displayed if SWEEP is set to V.
- *11 Displayed if SWEEP is set to H and the OVLAY key is ON.
- *12 Displayed if SWEEP is set to V, the OVLAY key is ON, and the input signal is interlace or segmented frame.
- *13 Displayed if V_SWEEP is set to 1V and the input signal is interlace or segmented frame.
- *14 Displayed if SWEEP is set to H.
- *15 Displayed if the input signal is interlace or segmented frame.
- *16 Displayed if XY SEL is set to Y and COLOR MATRIX is set to YCbCr, GBR, or RGB.
- *17 Displayed if XY SEL is set to Y and COLOR MATRIX is set to COMPOSITE.
- *18 Displayed if XY SEL is set to X.
- *19 Displayed if Y UNIT is set to R%.
- *20 Displayed if COLOR MATRIX is set to YCbCr, GBR, or RGB.
- *21 Displayed if the link format is single link or the color system is set to YCbCr (4:2:2) in dual link format.
- *22 Displayed if the link format is 2k or the color system is set to GBR (4:4:4) in dual link format.
- *23 Displayed if COLOR MATRIX is set to GBR.
- *24 Displayed if COLOR MATRIX is set to RGB.
- *25 Displayed if COLOR MATRIX is set to COMPOSITE and the composite display format is NTSC.

4. MENU STRUCTURE

4.2 Vectorscope Display Menu



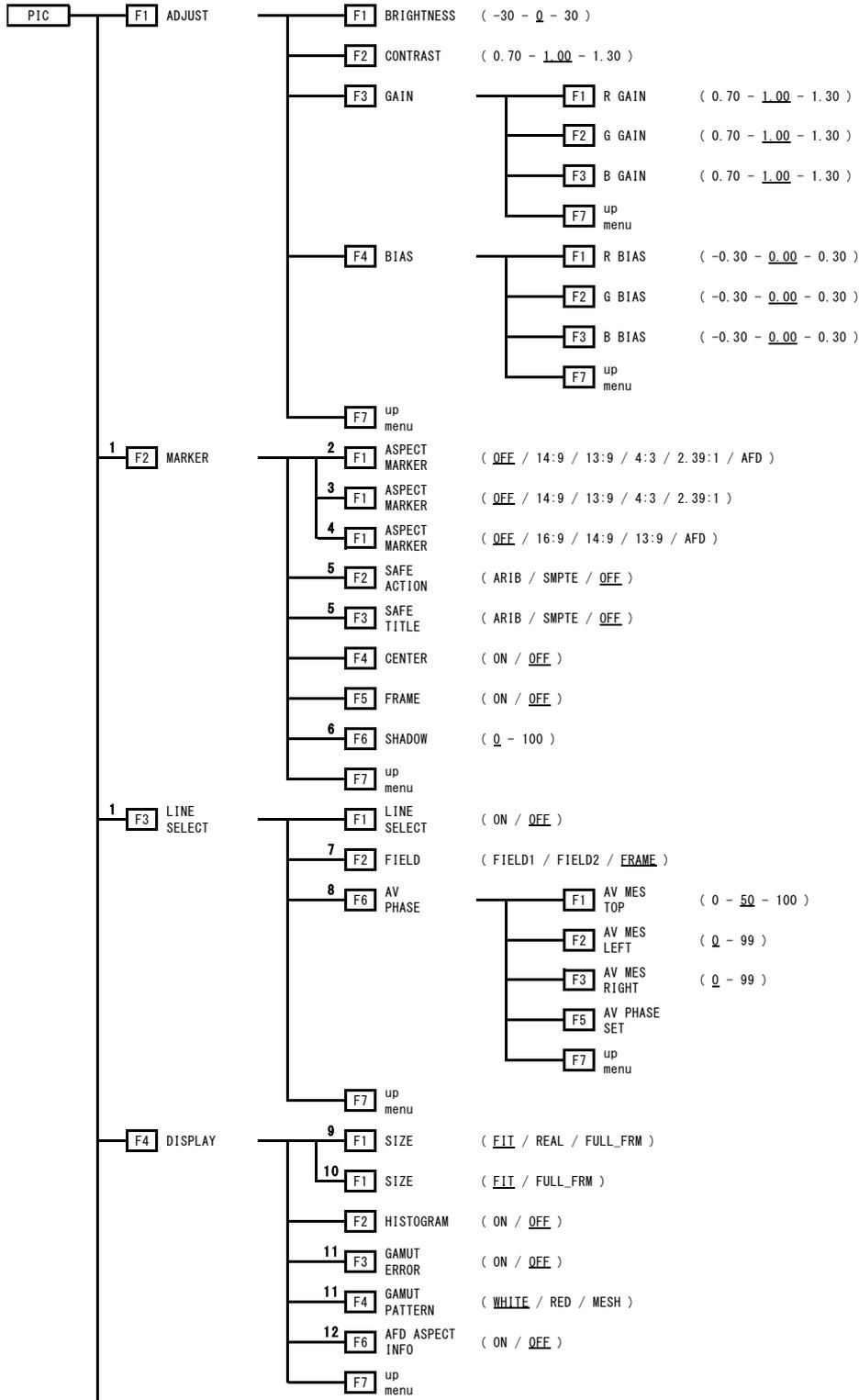
4. MENU STRUCTURE



- *1 Displayed if DISPLAY is set to VECTOR.
- *2 Displayed if DISPLAY is set to HISTOGRAM.
- *3 Displayed if MODE is set to DIAGRAM on the chromaticity diagram display menu.
- *4 Displayed if MODE is set to MIX on the histogram display menu.
- *5 Displayed if DISPLAY is set to CIE1931.
- *6 Displayed if DISPLAY is set to an option other than HISTOGRAM.
- *7 Displayed if the input signal is interlace or segmented frame.
- *8 Displayed if COLOR MATRIX is set to COMPOSITE and the composite display format is NTSC.
- *9 Displayed if DISPLAY is set to 5BAR.

4. MENU STRUCTURE

4.3 Picture Display Menu

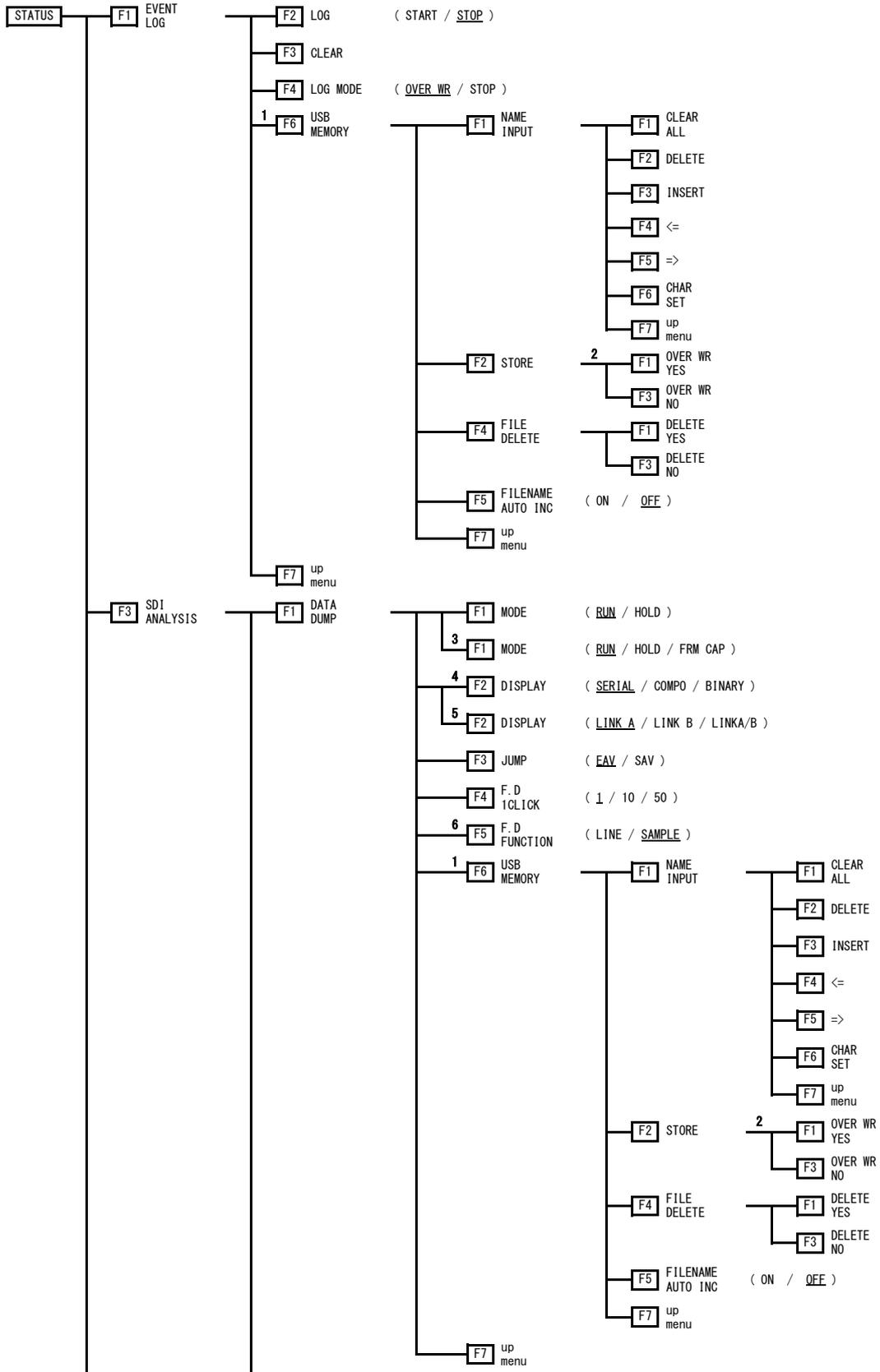


4. MENU STRUCTURE

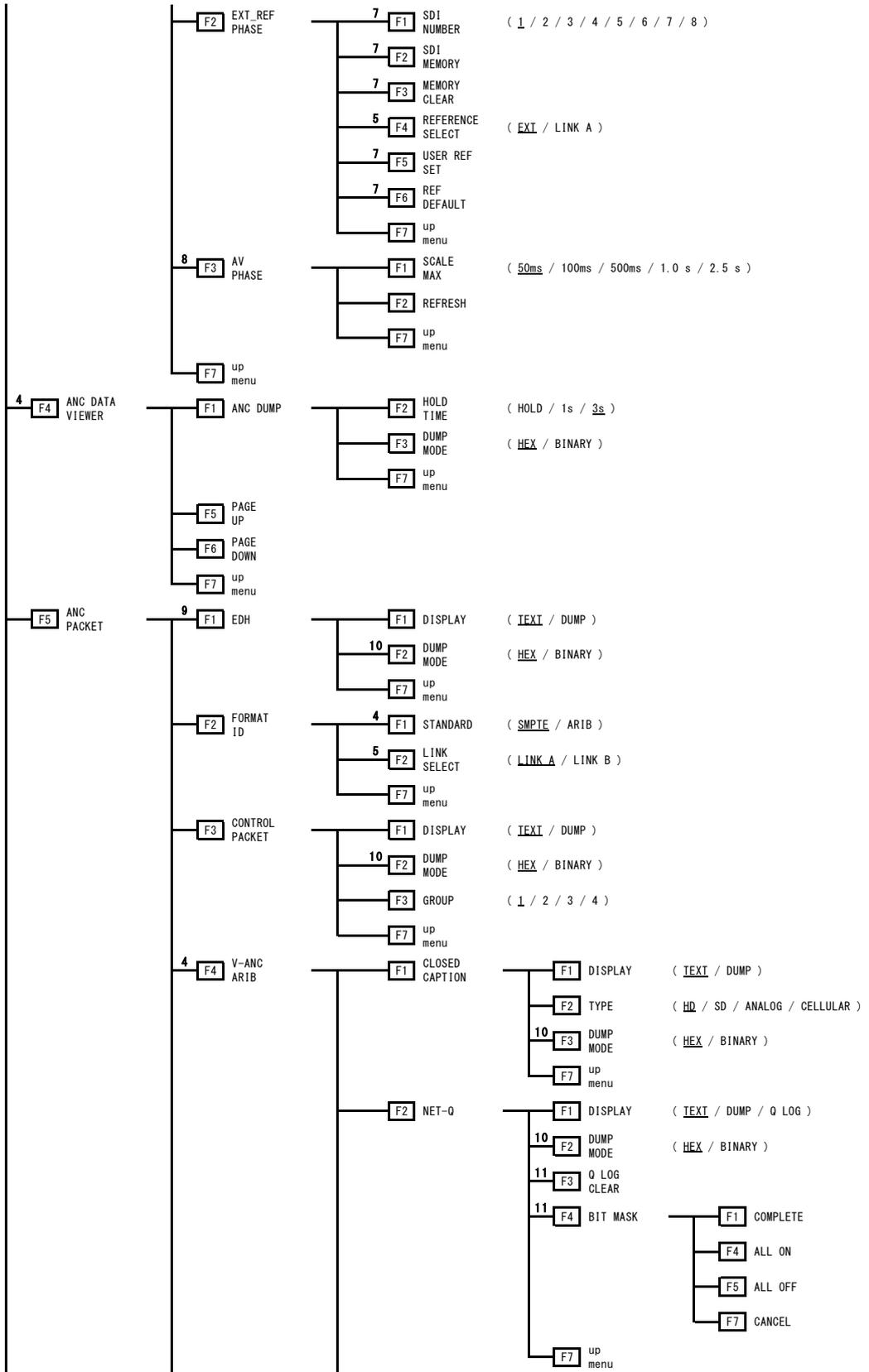
- *1 Displayed if SIZE is set to FIT.
- *2 Displayed if the input signal is HD and the Link Format is Single.
- *3 Displayed if the input signal is HD and the Link Format is Dual or 2k.
- *4 Displayed if the input signal is SD.
- *5 Displayed if ASPECT MARKER is set to an option other than AFD.
- *6 Displayed if ASPECT MARKER is set to AFD.
- *7 Displayed if the input signal is interlace or segmented frame.
- *8 Displayed if the LV 58SER40(A) is installed and the Link Format is Single.
- *9 Displayed if the conditions in *10 are not met.
- *10 Displayed if the following conditions are satisfied.
 - Link format is dual link.
 - Color system is set to YCbCr (4:2:2).
 - Pixel depth is set to 10 bit.
 - Scanning is set to 1080p.
- *11 Displayed if either Gamut Error or Composite Gamut Error is set to ON in the ERROR SETUP3 page in the system settings.
- *12 Displayed if Link Format is set to Single Link.
- *13 Displayed if STANDARD is CC SMPTE.
- *14 Displayed if STANDARD is CC ARIB.
- *15 Displayed if STANDARD is CC SMPTE and FORMAT is 608(708), 608(608), or VBI.
- *16 Displayed if STANDARD is CC SMPTE and FORMAT is 708.
- *17 Displayed if the LV 58SER40A is installed.
- *18 Displayed if LOUDNESS MODE is OFF or the LV 58SER40A is not installed.
- *19 Displayed if LOUDNESS MODE is ON.
- *20 Displayed if a USB memory device is connected to the USB connector.
- *21 Displayed if a file with the same name exists in the USB memory.
- *22 Displayed if 1-screen display is enabled.

4. MENU STRUCTURE

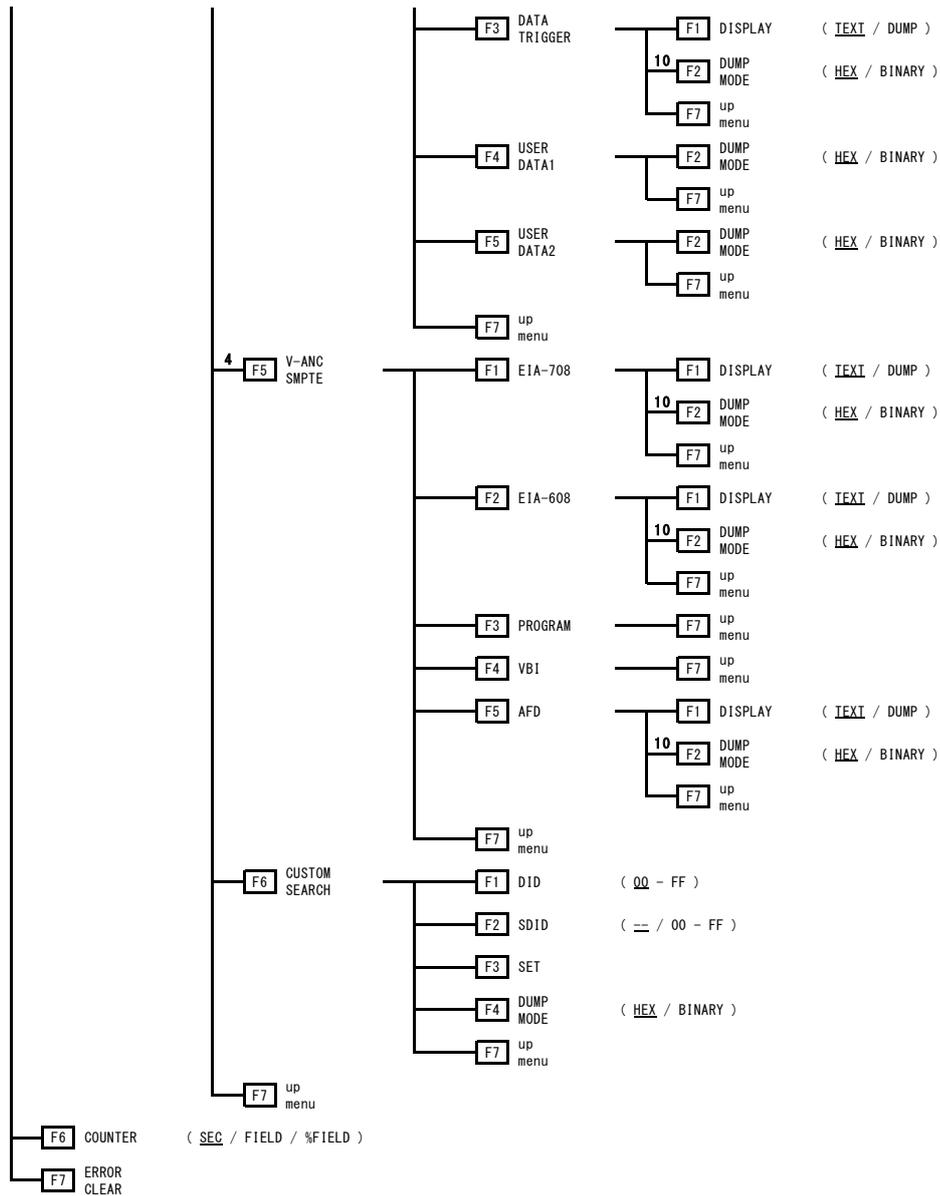
4.4 Status Display Menu



4. MENU STRUCTURE



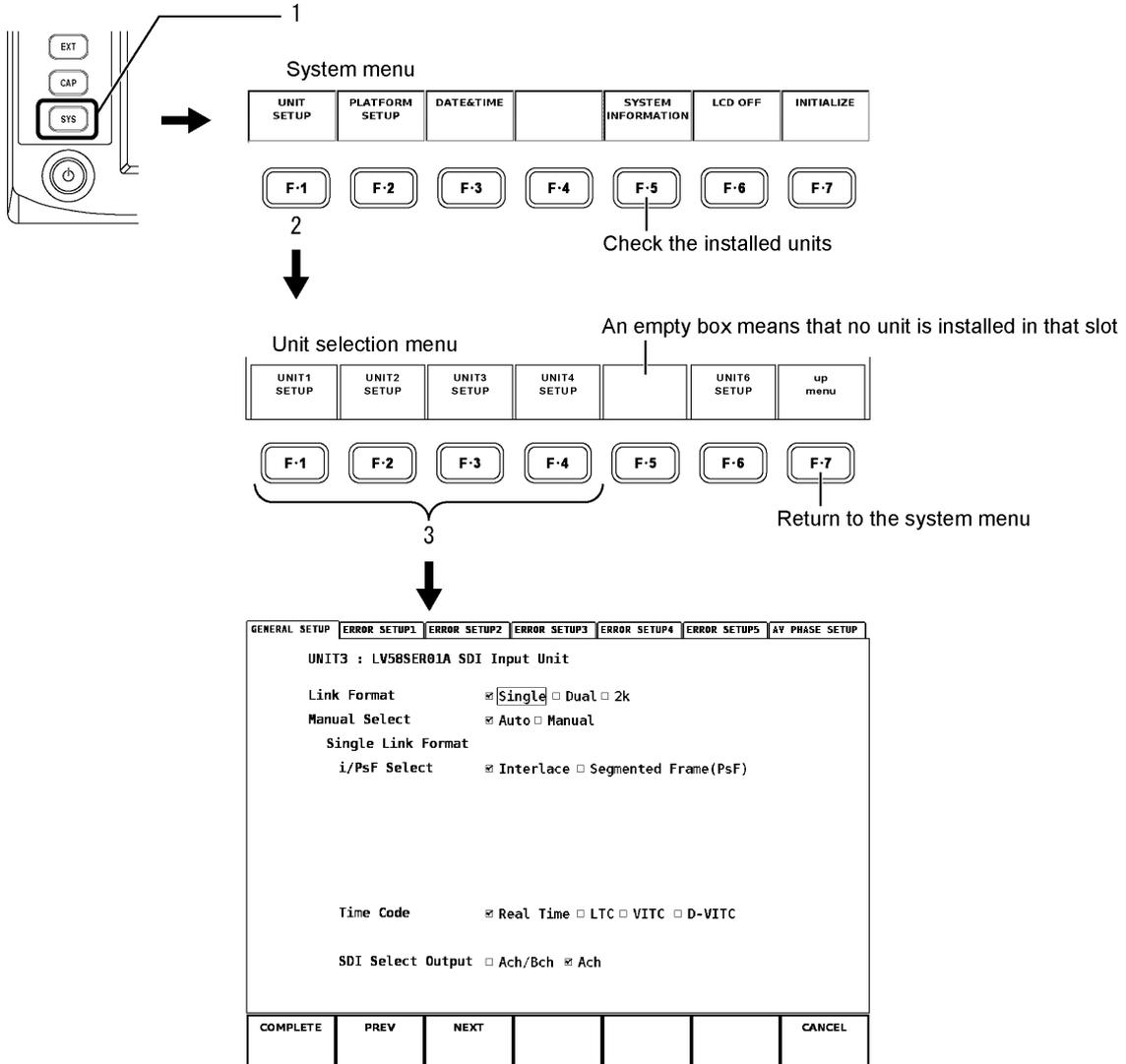
4. MENU STRUCTURE



5. SYSTEM SETUP OF THE UNIT

The system setup is used to set the basic format, error detection, and the like of this unit. If multiple units are installed in the instrument, you must set each unit separately. The system setup applies to both channels A and B of each unit. You cannot set each channel separately. The setup is carried out at the unit level.

• Key Operation to Display the Setup Screen



5.1 GENERAL SETUP

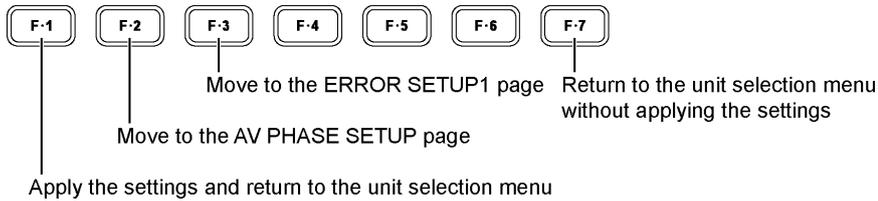
GENERAL SETUP page is used to select single link (1920x1080) or dual link (1920x1080) or dual link (2048x1080:2k), and to set video signal format, time code format, and OUTPUT SDI A/B connectors (LV 58SER01 is not supported).

• Key Operation to Display the Setup Screen

- **[SYS]** → **[F·1]** UNIT SETUP → **[F·1]** to **[F·4]** (SETUP for the unit number in which this unit is installed)

Single Link

GENERAL SETUP	ERROR SETUP1	ERROR SETUP2	ERROR SETUP3	ERROR SETUP4	ERROR SETUP5	AV PHASE SETUP
UNIT3 : LV58SER01A SDI Input Unit						
Link Format		<input checked="" type="checkbox"/> Single <input type="checkbox"/> Dual <input type="checkbox"/> 2k				
Manual Select		<input checked="" type="checkbox"/> Auto <input type="checkbox"/> Manual				
Single Link Format						
i/PsF Select		<input checked="" type="checkbox"/> Interlace <input type="checkbox"/> Segmented Frame(PsF)				
Time Code		<input checked="" type="checkbox"/> Real Time <input type="checkbox"/> LTC <input type="checkbox"/> VITC <input type="checkbox"/> D-VITC				
SDI Select Output		<input type="checkbox"/> Ach/Bch <input checked="" type="checkbox"/> Ach				
COMPLETE	PREV	NEXT				CANCEL



Dual Link (1920x1080)

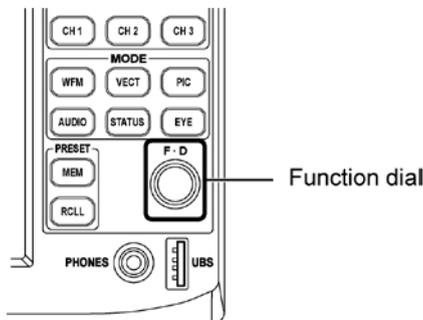
GENERAL SETUP	ERROR SETUP1	ERROR SETUP2	ERROR SETUP3
UNIT1 : LV58SER01A SDI Input Unit			
Link Format		<input type="checkbox"/> Single <input checked="" type="checkbox"/> Dual <input type="checkbox"/> 2k	
Dual Link Format			
Color System		<input checked="" type="checkbox"/> GBR(4:4:4) <input type="checkbox"/> YCbCr(4:2:2)	
Pixel Depth		<input checked="" type="checkbox"/> 10bit <input type="checkbox"/> 12bit	
Scanning		<input checked="" type="checkbox"/> 1080i <input type="checkbox"/> 1080PsF <input type="checkbox"/> 1080p	
Time Code		<input checked="" type="checkbox"/> Real Time <input type="checkbox"/> LTC <input type="checkbox"/> VITC	
COMPLETE	PREV	NEXT	CANCEL

Dual Link (2048x1080)

GENERAL SETUP	ERROR SETUP1	ERROR SETUP2	ERROR SETUP3
UNIT1 : LV58SER01A SDI Input Unit			
Link Format	<input type="checkbox"/> Single <input type="checkbox"/> Dual <input checked="" type="checkbox"/> 2K		
Dual Link Format			
Color System	<input checked="" type="checkbox"/> GBR(4:4:4) <input type="checkbox"/> YCbCr(4:2:2)		
Pixel Depth	<input type="checkbox"/> 10bit <input checked="" type="checkbox"/> 12bit		
Scanning	<input type="checkbox"/> 1080i <input type="checkbox"/> 1080PsF <input checked="" type="checkbox"/> 1080p		
Time Code	<input checked="" type="checkbox"/> Real Time <input type="checkbox"/> LTC <input type="checkbox"/> VITC		
COMPLETE	PREV	NEXT	CANCEL

• Setting the Items

Use the function dial (F•D) at the lower right of the front panel and place checks in the relevant setup items.



Checking the Setup Items

1. Turn the function dial (F•D) to move the cursor (□).
2. Press the function dial (F•D) at the relevant item.

A red check appears in the box of the selected item, and the check placed on the previously selected item clears.

Applying the Settings

3. Press **F•1** COMPLETE.

The settings are applied. Then, the screen returns to the unit selection menu. The settings are applied only if you carry out this step.

If you do not want to apply the settings, press **F•7** CANCEL. The screen returns to the unit selection menu without applying the settings.

Applying the Setup Items at Once

You can also specify settings on multiple pages and apply all the settings at once. To do so, press **F•3** NEXT or **F•2** PREV to move between pages and continue specifying the settings. When you are done specifying all the settings, press **F•1** COMPLETE.

- * Press **F•7** CANCEL to not apply any of the specified settings.

• **Description of Setup Items**

• **Link Format**

Selects out of single link, dual link (1920x1080), or dual link (2048x1080: 2k).

If you select dual link, only the frame rate is automatically detected. You must manually select the color system, quantization, and scan mode. In addition, the dual link function operates only if signals are applied to both link A and B.

Single: Operate in single link mode .

Dual: Operate in dual link mode (1920x1080).

2k: Operate in dual link mode (2048x1080).

• **Manual Select**

When format is Single link, you set whether to detect automatically the frame rate and the scan mode. If the input signal format is different from the setup format when Manual has been selected, an error message "UNKNOWN" is displayed at the upper right of the screen.

Auto: The frame rate and the scan mode are detected automatically.

Manual: The frame rate and the scan mode are set up manually.

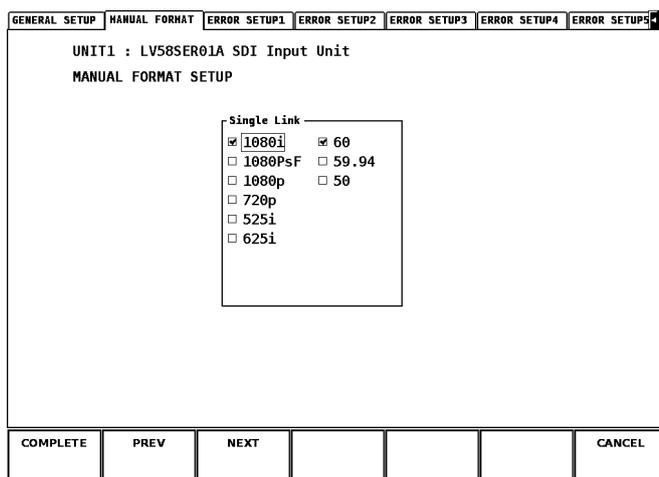
When Manual is selected, "MANUAL FORMAT" tab is displayed newly at the right side of the "GENERAL SETUP" tab.

To display the MANUAL FORMAT screen, press **F•3** NEXT on the GENERAL SETUP screen.

In the MANUAL FORMAT screen, the scan mode is displayed at the left side and the frame rate is displayed at the right side. To set up the format, select the scan mode first.

Since the frame rate corresponding to the selected scan mode is displayed, next select the frame rate.

Refer to the "Supported Formats and Standards of Single Link System Video Signals" of "2.3.1, Input Signal" for the format which can be set up.



- **Single Link Format**
i/PsF Select

Select the display format of the video. This item appears in single link mode and Manual Select is Auto.

Interlace:	Displayed in the interlace format.
Segmented Frame:	Displayed in the segmented frame format.

Time Code

Select which clock to use to display the current time and the timestamps of the event log and Q signal log. This setting (excluding D-VITC) applies to both single link and dual link operations.

Real Time:	Display the time using the internal realtime clock.
LTC:	Display the time using the LTC time code embedded in the SDI signal.
VITC:	Display the time using the VITC time code embedded in the SDI signal.
D-VITC:	Display the time using the D-VITC time code embedded in the SD-SDI signal.

SDI Select Output

Select the operation of the OUTPUT SDI A/B output terminal from below. This item appears in single link mode. This setting is not available on the LV 58SER01.

Ach/Bch:	Switch the reclocked output according to the input channel of the active window.
Ach:	Reclock and output the Ach input signal regardless of the selected channel.

- **Dual Link Format**

Color System

Select the color system from below. This item appears in dual link mode.

GBR(4:4:4): Select the GBR 4:4:4 input signal.

YCbCr(4:2:2): Select the YC_BC_R 4:2:2 input signal. (This is not selectable when the link format is 2k.)

Pixel Depth

Select the number of quantization bits per pixel. This item appears in dual link mode.

10bit: Select the input signal of 10-bit quantization. (This is not selectable when the link format is 2k.)

12bit: Select the input signal of 12-bit quantization.

Scanning

Select the scan mode from below. This item appears in dual link mode.

1080i: Select the interlace input signal. (This is not selectable when the link format is 2k.)

1080PsF: Select the segment-frame input signal.

1080p: Select the progressive input signal.

Time Code

Select which clock to use to display the current time and the timestamps of the event log and Q signal log. This setting applies to both single link and dual link operations.

Real Time: Display the time using the internal realtime clock.

LTC: Display the time using the LTC time code embedded in the SDI signal link A.

VITC: Display the time using the VITC time code embedded in the SDI signal link A.

- * If you select a pixel depth or scanning setting that is not supported by the specified color system, the "ILLEGAL FORMAT" message will appear.

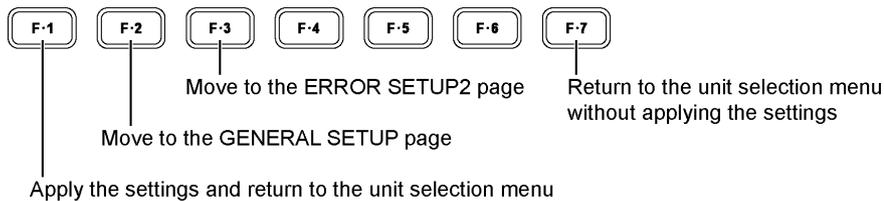
5.2 ERROR SETUP1

The ERROR SETUP1 page is used to set the TRS, line number, CRC/EDH, illegal code, and cable error.

• Key Operation to Display the Setup Screen

- **[SYS]** → **[F•1]** UNIT SETUP → **[F•1]** to **[F•4]** (SETUP for the unit number in which this unit is installed) → press **[F•3]** NEXT once or **[F•2]** PREV six times from the GENERAL SETUP page

GENERAL SETUP	ERROR SETUP1	ERROR SETUP2	ERROR SETUP3	ERROR SETUP4	ERROR SETUP5	AV PHASE SETUP
UNIT1 : LV58SER01 SDI Input Unit						
SDI Error Setup						
TRS Error			☒ ON ☐ OFF			
Line Number Error(HD)			☒ ON ☐ OFF			
CRC Error(HD)			☒ ON ☐ OFF			
EDH Error(SD)			☒ ON ☐ OFF			
Illegal Code Error			☒ ON ☐ OFF			
Cable Error			☒ ON ☐ OFF			
HD Cable			☒ LS-5CFB ☐ 1694A ☐ L-7CHD			
HD Cable Error	200		m			
HD Cable Warning	200		m			
SD Cable			☒ L-5C2V ☐ 8281 ☐ 1505A			
SD Cable Error	300		m			
SD Cable Warning	300		m			
COMPLETE	PREV	NEXT				CANCEL



• Setting the Items

Some setup items require a check to be placed while others require a value to be entered. In either case, the function dial (F•D) at the lower right of the front panel is used to specify the settings.

[See Also] Setting items that require a check to be placed, Applying the Setup Items at Once
 → Section 5.1, “GENERAL SETUP”

Entering Values

1. Turn the function dial (F•D) to move the cursor ().
The input box turns purple.
2. Press the function dial (F•D).
The input box turns yellow-green.
3. Turn the function dial (F•D) to select the desired value.
4. Press the function dial (F•D).
The specified value appears in the input box.

Applying the Settings**5. Press F•1 COMPLETE.**

The settings are applied. Then, the screen returns to the unit selection menu. The settings are applied only if you carry out this step.

If you do not want to apply the settings, press F•7 CANCEL. The screen returns to the unit selection menu without applying the settings.

• Description of Setup Items**• TRS Error**

Controls the detection of TRS POS errors and TRS Code errors.

ON: Detect, OFF: Not detect

[See Also] Description of TRS POS errors → “• TRS Pos: TRS POS Error Detection” in section 9.1.2

Description of TRS Code errors → “• TRS Code: TRS Code Error Detection” in section 9.1.2

• Line Number Error (HD)

Controls the detection of line number errors.

ON: Detect, OFF: Not detect

[See Also] Description of line number errors → “• Line Number: Line Number Error Detection” in section 9.1.2

• CRC Error (HD)

Controls the detection of CRC errors.

ON: Detect, OFF: Not detect

[See Also] Description of CRC error → “• CRC Ych, CRC Cch: CRC Error Detection” in section 9.1.2

• EDH Error (SD)

Controls the detection of EDH errors.

ON: Detect, OFF: Not detect

[See Also] Description of EDH error → “• EDH: EDH Error Detection” in section 9.1.2

• Illegal Code Error

Controls the detection of illegal code errors.

ON: Detect, OFF: Not detect

[See Also] Description of illegal code errors → “• Illegal code: Illegal Code Error Detection” in section 9.1.2

- **Cable Error**

Controls the detection of cable errors.

ON: Detect, OFF: Not detect

If the signal attenuation calculated by the equivalent cable length measurement exceeds the warning level specified in this setting, the cable length in the status display is shown in yellow. If the signal attenuation exceeds the error level, the cable length is shown in red.

[See Also] Description of the equivalent cable length measurement → “• Cable Length: Equivalent Cable Length Meter” in section 9.1.2

You can set the following items only if the cable error setting above is ON.

HD Cable:	Select the cable type for HD-SDI signal input.
HD Cable Error:	Set the error cable length of the equivalent cable length measurement for HD-SDI signal input. Selectable range: 5 to 200 m in 5 m steps
HD Cable Warning:	Set the warning cable length of the equivalent cable length measurement for HD-SDI signal input. Selectable range: 5 to 200 m in 5 m steps
SD Cable:	Select the cable type for SD-SDI signal input.
SD Cable Error:	Set the error cable length of the equivalent cable length measurement for SD-SDI signal input. Selectable range: 50 to 300 m in 5 m steps
SD Cable Warning:	Set the warning cable length of the equivalent cable length measurement for SD-SDI signal input. Selectable range: 50 to 300 m in 5 m steps

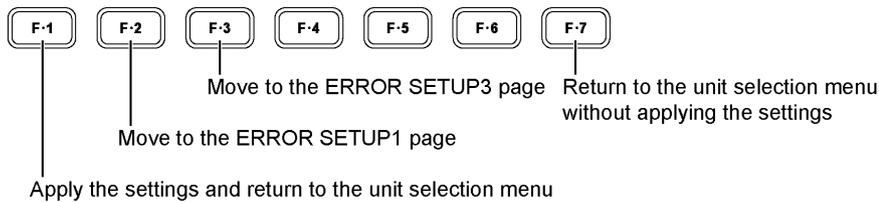
5.3 ERROR SETUP2

The ERROR SETUP2 page is used to set the parity and checksum errors of the ancillary data as well as the errors concerning BCH, DBN, parity, and embedded prohibition line.

• Key Operation to Display the Setup Screen

- **[SYS]** → **[F•1]** UNIT SETUP → **[F•1]** to **[F•4]** (SETUP for the unit number in which this unit is installed) → press **[F•3]** NEXT twice or **[F•2]** PREV five times from the GENERAL SETUP page.

GENERAL SETUP	ERROR SETUP1	ERROR SETUP2	ERROR SETUP3	ERROR SETUP4	ERROR SETUP5	AV PHASE SETUP
UNIT3 : LV58SER01A SDI Input Unit						
Ancillary Data Error Setup						
Parity Error <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF						
Checksum Error <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF						
Embedded Audio Error Setup						
BCH Error <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF						
DBN Error <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF						
Parity Error <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF						
Inhibit Line Error <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF						
COMPLETE	PREV	NEXT				CANCEL



• Setting the Items

Use the function dial (F•D) at the lower right of the front panel and place checks in the relevant setup items.

[See Also] Setup procedure details → Section 5.1, "GENERAL SETUP"

● **Description of Setup Items**

• **Parity Error (Ancillary Data Error Setup)**

Controls the detection of parity errors in the ancillary data header section.

ON: Detect, OFF: Not detect

[See Also] Description of parity errors → “• (ANC) Parity: Ancillary Parity Bit Error Detection” in section 9.1.2

• **Checksum Error**

Controls the detection of checksum errors.

ON: Detect, OFF: Not detect

[See Also] Description of checksum errors → “• Checksum: Checksum Error Detection” in section 9.1.2

• **BCH Error**

Controls the detection of BCH errors.

ON: Detect, OFF: Not detect

[See Also] Description of BCH errors → “• BCH: BCH Error Detection” in section 9.1.2

• **DBN Error**

Controls the detection of DBN errors.

ON: Detect, OFF: Not detect

[See Also] Description of DBN errors → “• DBN: Audio DBN Error Detection” in section 9.1.2

• **Parity Error (Embedded Audio Error Setup)**

Controls the detection of parity errors in embedded audio packets.

ON: Detect, OFF: Not detect

[See Also] Description of parity errors → “• (Audio) Parity: Audio Parity Error Detection” in section 9.1.2

• **Inhibit Line Error**

Controls the detection of inhibit line errors.

ON: Detect, OFF: Not detect

[See Also] Description of inhibit line errors → “• Inhibit: Detection of Embedding to the Audio Embedded Prohibition Line” in section 9.1.2

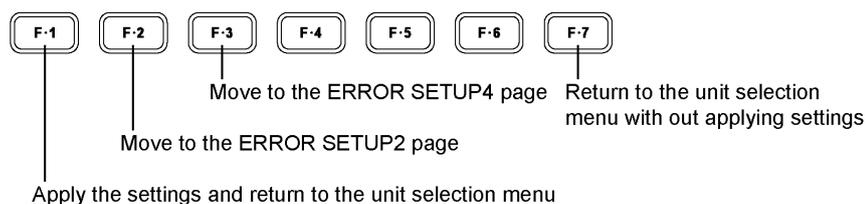
5.4 ERROR SETUP3

The ERROR SETUP3 page is used to set gamut errors and composite gamut errors.

• **Key Operation to Display the Setup Screen**

- **[SYS]** → **[F•1]** UNIT SETUP → **[F•1]** to **[F•4]** (SETUP for the unit number in which this unit is installed) → press **[F•3]** NEXT three times or **[F•2]** PREV four times from the GENERAL SETUP page.

GENERAL SETUP	ERROR SETUP1	ERROR SETUP2	ERROR SETUP3	ERROR SETUP4	ERROR SETUP5	AV PHASE SETUP
UNIT1 : LV58SER01A SDI Input Unit						
Video Error Setup1						
LowPass Frequency	<input checked="" type="checkbox"/> HD/SD:1MHz		<input type="checkbox"/> HD:2.8MHz SD:1MHz		<input type="checkbox"/> OFF	
Gamut Error	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF					
Gamut Upper	<input type="text" value="109.4"/>	%(90.0-109.4)	766mV			
Gamut Lower	<input type="text" value="-7.2"/>	%(-7.2-6.1)	-50mV			
Area	<input type="text" value="0.1"/>	%(0.0-5.0)				
Duration	<input type="text" value="1"/>	Frames(1-60)				
Composite Gamut Error	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF					
Setup	<input checked="" type="checkbox"/> 0% <input type="checkbox"/> 7.5%		NTSC	PAL		
Composite Upper	<input type="text" value="135.0"/>	%(90.0-135.0)	964mV	945mV		
Composite Lower	<input type="text" value="-40.0"/>	%(-40.0-20.0)	-280mV	-280mV		
Area	<input type="text" value="0.1"/>	%(0.0-5.0)				
Duration	<input type="text" value="1"/>	Frames(1-60)				
COMPLETE	PREV	NEXT				CANCEL



• **Setting the Items**

Some setup items require a check to be placed while others require a value to be entered. In either case, the function dial (F•D) at the lower right of the front panel is used to specify the settings.

[See Also] Setup procedure details → Section 5.2, "ERROR SETUP1"

• **Description of Setup Items**

• **LowPass Frequency**

A low-pass filter is applied to the video data before detecting gamut errors and composite gamut errors. Select the characteristics of the filter from below.

HD/SD:1MHz: Apply a 1-MHz low-pass filter to the HD-SDI and SD-SDI input signals.

The filter complies with EBU R103-2000 in the case of SD-SDI input signals.

HD:2.8MHz SD:1MHz: Apply a 1-MHz low-pass filter to SD-SDI input signals and 2.8-MHz low-pass filter to HD-SDI input signals.

The filter complies with EBU R103-2000 in the case of SD-SDI input signals. The filter has the characteristics defined by IEEE STD 205 in the case of HD-SDI input signals.

OFF: Do not apply any filter processing to the input signal.

- **Gamut Error**

Controls the detection of gamut errors.

ON: Detect, OFF: Not detect

[See Also] Description of gamut errors → “• Gamut: Gamut Error Detection” in section 9.1.2

Gamut Upper: The upper limit of the gamut error level (selectable range: 90.8 to 109.4 %, 636 to 766 mV)

An error occurs if the level exceeds the upper limit.

Gamut Lower: The lower limit of the gamut error level (selectable range: -7.2 to 6.1 %, -50 to 43 mV)

An error occurs if the level falls below the lower limit.

You can set the following items only if the gamut error is ON.

Area: Set the percentage threshold of errors in the active picture area used to trigger an error (selectable range 0.0 to 5.0%)

Duration: Set threshold of the number of consecutive video frames containing errors used to trigger an error (selectable range: 1 to 60 frames)

- **Composite Gamut Error**

Controls the detection of composite gamut errors.

ON: Detect, OFF: Not detect

[See Also] Description of composite gamut errors → “• Comp Gamut: Composite Gamut Error Detection” in section 9.1.2

Setup: Select whether to include Y setup when converting the composite signal.

0%: No setup, 7.5%: Include 7.5 % setup

Composite Upper: The upper limit of the composite gamut error level (selectable range: 90.0 to 135.0 %, 643 to 964 mV for NTSC and 630 to 945 mV for PAL)

An error occurs if the level exceeds the upper limit.

Composite Lower: The lower limit of the composite gamut error level (selectable range: -40.0 to 20.0 %, -286 to 143 mV for NTSC and -280 to 140 mV for PAL)

An error occurs if the level falls below the lower limit.

You can set the following items only if the composite gamut error is ON.

Area: Set the percentage threshold of errors in the active picture area for activating the error (selectable range 0.0 to 5.0%)

Duration: Set threshold of the number of consecutive video frames containing errors used to trigger an error (selectable range: 1 to 60 frames)

5.5 ERROR SETUP4

The ERROR SETUP4 page is used to set freeze errors and black errors.

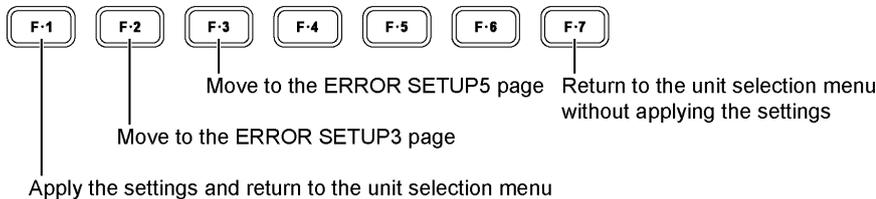
This setup does not support a dual link. A setup is not displayed when the setup of a link format is a dual link.

[See Also] Setup of a link format → Section 5.1, "GENERAL SETUP"

• Key Operation to Display the Setup Screen

- **[SYS]** → **[F•1]** UNIT SETUP → **[F•1]** to **[F•4]** (SETUP for the unit number in which this unit is installed) → press **[F•3]** NEXT four times or **[F•2]** PREV three times from the GENERAL SETUP page.

GENERAL SETUP	ERROR SETUP1	ERROR SETUP2	ERROR SETUP3	ERROR SETUP4	ERROR SETUP5	AV PHASE SETUP
UNIT1 : LV58SER01 SDI Input Unit						
Video Error Setup2						
Freeze Error	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF					
Area Upper	<input type="text" value="0"/>	% (0-100)				
Area Lower	<input type="text" value="0"/>	% (0-100)				
Area Left	<input type="text" value="0"/>	% (0-100)				
Area Right	<input type="text" value="0"/>	% (0-100)				
Duration	<input type="text" value="2"/>	Frames (2-300)				
Black Error	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF					
Level	<input type="text" value="0"/>	% (0-100)				
Area	<input type="text" value="100"/>	% (1-100)				
Duration	<input type="text" value="1"/>	Frames (1-300)				
COMPLETE	PREV	NEXT				CANCEL



• Setting the Items

Some setup items require a check to be placed while others require a value to be entered. In either case, the function dial (F•D) at the lower right of the front panel is used to specify the settings.

[See Also] Setup procedure details → Section 5.2, "ERROR SETUP1"

• Description of Setup Items

• Freeze Error

Controls the detection of freeze errors.

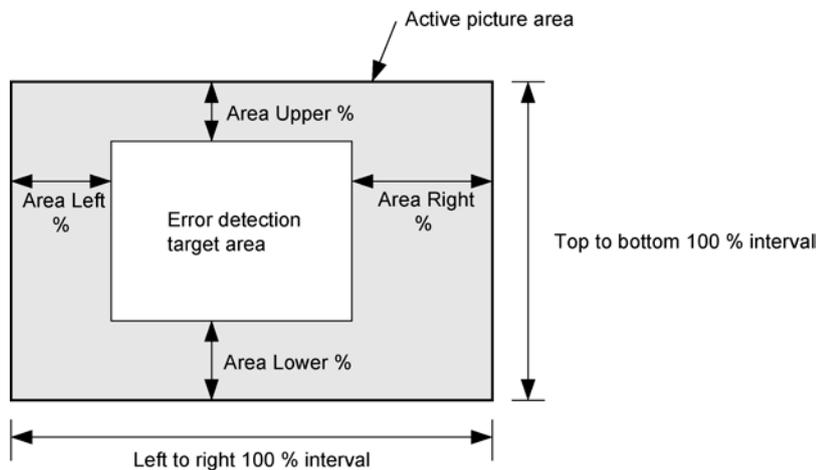
ON: Detect, OFF: Not detect

[See Also] Description of freeze errors → "• Freeze: Freeze Error Detection" in section 9.1.2

5. SYSTEM SETUP OF THE UNIT

You can set the following items only if the freeze error is ON.

- Area Upper: Set the percentage of the upper active picture area to be excluded from the error detection (selectable range 0 to 100 %)
- Area Lower: Set the percentage of the lower active picture area to be excluded from the error detection (selectable range 0 to 100 %)
- Area Left: Set the percentage of the left active picture area to be excluded from the error detection (selectable range 0 to 100 %)
- Area Right: Set the percentage of the right active picture area to be excluded from the error detection (selectable range 0 to 100 %)
- Duration: Set threshold of the number of consecutive video frames containing errors used to trigger an error (selectable range: 2 to 300 frames)



- **Black Error**

Controls the detection of black errors.

ON: Detect, OFF: Not detect

[See Also] Description of black errors → “• Black: Black Error Detection” in section 9.1.2

You can set the following items only if the black error is ON.

- Level: Set the black level of the Y video data (selectable range: 0 to 100 %)
Dots whose level is lower than the specified level are considered error dots.
- Area: Set the percentage threshold of errors in the active picture area for activating the error (selectable range: 1 to 100%)
- Duration: Set threshold of the number of consecutive video frames containing errors used to trigger an error (selectable range: 1 to 300 frames)

5.6 ERROR SETUP5

The ERROR SETUP5 page is used to set level errors.

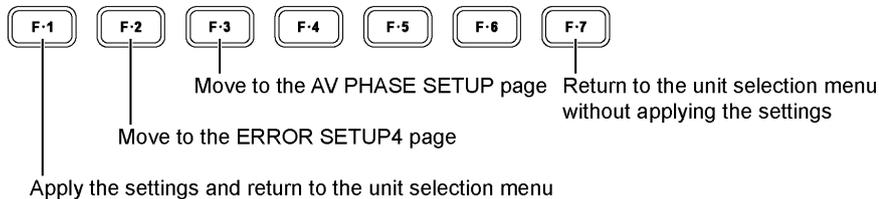
This setup does not support a dual link. A setup is not displayed when the setup of a link format is a dual link.

[See Also] Setup of a link format → Section 5.1, "GENERAL SETUP"

• Key Operation to Display the Setup Screen

- **[SYS]** → **[F•1]** UNIT SETUP → **[F•1]** to **[F•4]** (SETUP for the unit number in which this unit is installed) → press **[F•3]** NEXT five times or **[F•2]** PREV twice from the GENERAL SETUP page.

GENERAL SETUP	ERROR SETUP1	ERROR SETUP2	ERROR SETUP3	ERROR SETUP4	ERROR SETUP5	AV PHASE SETUP
UNIT1 : LV58SER01 SDI Input Unit						
Video Error Setup3						
Level Error <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF						
Luminance Upper <input type="text" value="766"/> mV(-51-766)						
Luminance Lower <input type="text" value="-51"/> mV(-51-766)						
Chroma Upper <input type="text" value="399"/> mV(-400-399)						
Chroma Lower <input type="text" value="-400"/> mV(-400-399)						
COMPLETE	PREV	NEXT				CANCEL



• Setting the Items

Some setup items require a check to be placed while others require a value to be entered. In either case, the function dial (F•D) at the lower right of the front panel is used to specify the settings.

[See Also] Setup procedure details → Section 5.2, "ERROR SETUP1"

• **Description of Setup Items**

• **Level Error**

Controls the detection of level errors.

ON: Detect, OFF: Not detect

[See Also] Description of level errors → “• Level Ych, Level Cch: Level Error Detection” in section 9.1.2

You can set the following items only if the level error is ON.

- | | |
|------------------|---|
| Luminance Upper: | Set the upper limit of the luminance data of the active picture area in mV.
An error occurs if the level exceeds this value (selectable range: -51 to 766 mV in 1 mV steps). |
| Luminance Lower: | Set the lower limit of the luminance data of the active picture area in mV.
An error occurs if the level falls below this value (selectable range: -51 to 766 mV in 1 mV steps). |
| Chroma Upper: | Set the upper limit of the chroma data of the active picture area in mV.
An error occurs if the level exceeds this value (selectable range: -400 to 399 mV). |
| Chroma Lower: | Set the lower limit of the chroma data of the active picture area in mV.
An error occurs if the level falls below this value (selectable range: -400 to 399 mV). |

5.7 AV PHASE SETUP

The AV PHASE SETUP page is used to configure lip sync settings.

This setup does not support a dual link. If the link format is set to dual link or when the LV 58SER40(A) is not installed, this is not displayed.

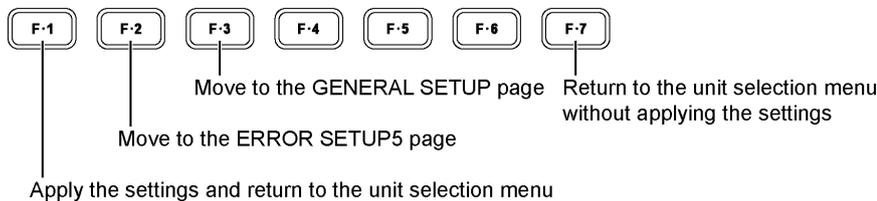
[See Also] Lip sync → Section 9.7, "Lip Sync Display"

Setup of a link format → Section 5.1, "GENERAL SETUP"

• Key Operation to Display the Setup Screen

- **[SYS]** → **[F•1]** UNIT SETUP → **[F•1]** to **[F•4]** (SETUP for the unit number in which this unit is installed) → press **[F•3]** NEXT six times or **[F•2]** PREV once from the GENERAL SETUP page.

GENERAL SETUP	ERROR SETUP1	ERROR SETUP2	ERROR SETUP3	ERROR SETUP4	ERROR SETUP5	AV PHASE SETUP
UNIT1 : LV58SER01A SDI Input Unit						
AV MES TOP		<input type="text" value="50"/>				%(0-100)
AV MES LEFT		<input type="text" value="0"/>				%(0-99)
AV MES RIGHT		<input type="text" value="0"/>				%(0-99)
Video Level		<input type="text" value="75"/>				%(25-100)
Audio Level		<input type="text" value="-30"/>				dBFS (-30-0)
COMPLETE	PREV	NEXT				CANCEL



• Setting the Items

Set the value using the function dial (F•D) in the lower right of the front panel.

[See Also] Setup procedure details → Section 5.2, "ERROR SETUP1"

• Description of Setup Items

• AV MES TOP

Set the video signal measurement line with the top edge of the picture taken to be 0 % and the bottom edge to be 100 %.

You can also set this using the LINE SELECT menu of the picture display while viewing the picture.

(Selectable range: 0 to 100 %)

[See Also] Section 8.3.3, "Setting the Lip Sync Measurement Range"

5. SYSTEM SETUP OF THE UNIT

- **AV MES LEFT**

Set the video signal measurement range (left side) with the left edge of the picture taken to be 0 % and the right edge to be 100 %. You cannot set this to the right of the line set with AV MES RIGHT.

You can also set this using the LINE SELECT menu of the picture display while viewing the picture.

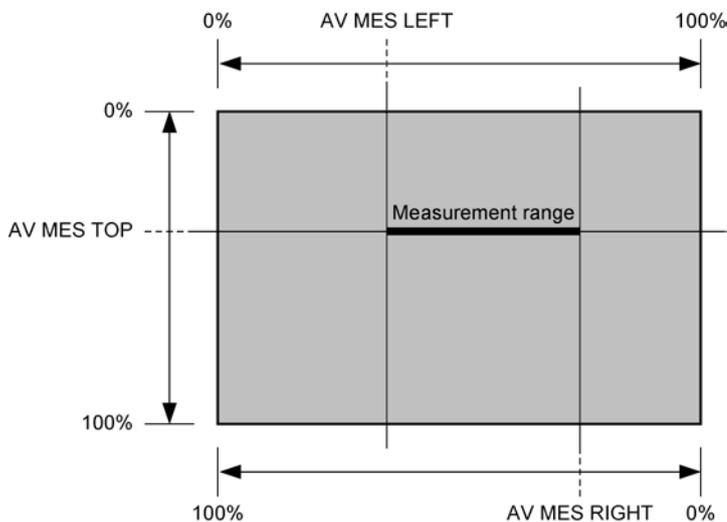
(Selectable range: 0 to 99 %)

- **AV MES RIGHT**

Set the video signal measurement range (right side) with the right edge of the picture taken to be 0 % and the left edge to be 100 %. You cannot set this to the left of the line set with AV MES LEFT.

You can also set this using the LINE SELECT menu of the picture display while viewing the picture.

(Selectable range: 0 to 99 %)



- **Video Level**

Set the video signal luminance level. The time difference from the audio signal is measured when the luminance level of the measurement range specified with AV MES exceeds the level specified here.

(Selectable range: 25 to 100 %)

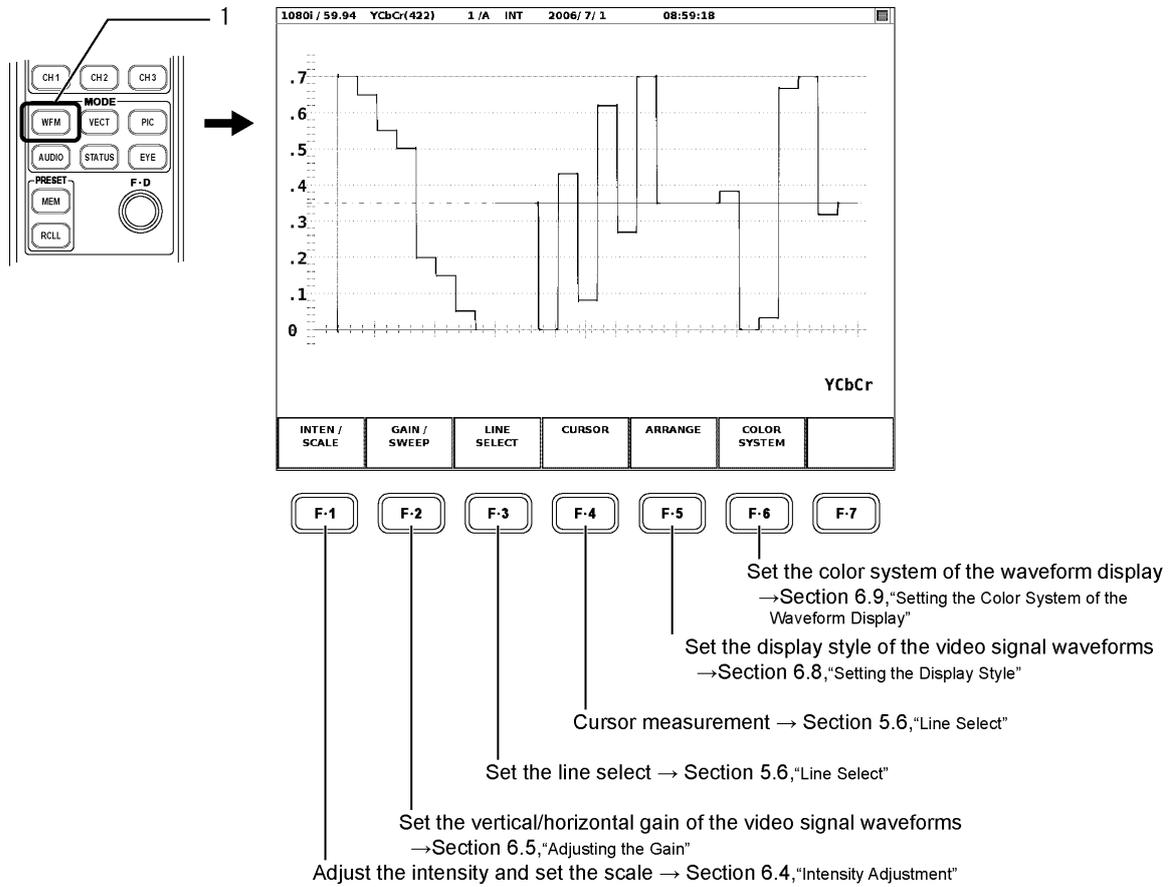
- **Audio Level**

Set the audio signal level. The time difference from the video signal is measured when the audio signal level exceeds the level specified here.

(Selectable range: -30 to 0 dBFS)

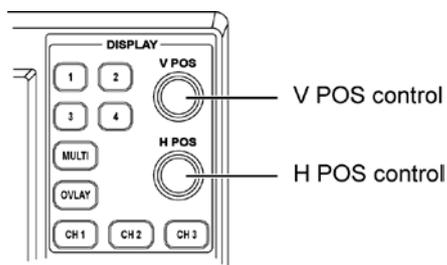
6. VIDEO SIGNAL WAVEFORM DISPLAY

Press the WFM (video signal waveform display) key on the front panel to display the video signal waveform, scale, waveform display menu, and the like.



6.1 Setting the Waveform Display Position

Use the V POS (vertical position adjustment) control and H POS (horizontal position adjustment) control on the front panel to adjust the position of the video signal waveform display in the selected display area.



• V POS Control

Adjusts the vertical display position of the video signal waveform.

Press the control to reset the vertical display position of the video signal waveform to the reference position.

- **H POS Control**

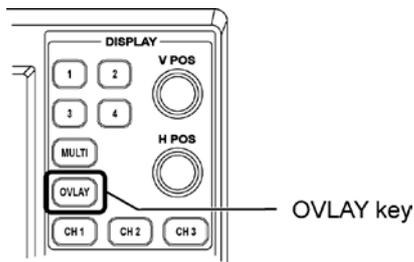
Adjusts the horizontal display position of the video signal waveform.

Press the control to reset the horizontal display position of the video signal waveform to the reference position.

6.2 Setting the Waveform Display Mode

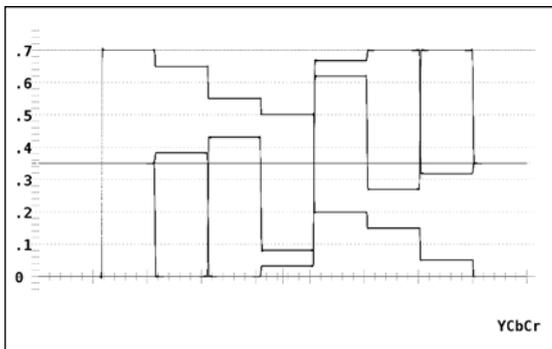
You can switch between overlay display (mode in which waveforms are overlaid) or parade display (mode in which waveforms are displayed side by side) for the waveforms shown in the selected display area.

Press the OVLAY (overlay display) key on the front panel to make the switch. Waveforms are displayed overlaid if the OVLAY key is illuminated; waveforms are displayed in parade mode if not.



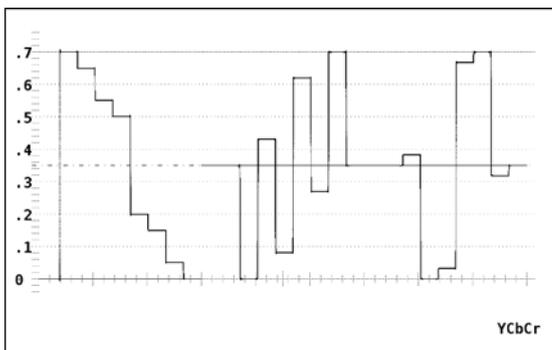
- **Overlay Display**

If overlay display is enabled, the waveforms that are turned ON in section 6.3, “Setting the Waveform Display Channels” are displayed overlaid.



- **Parade Display**

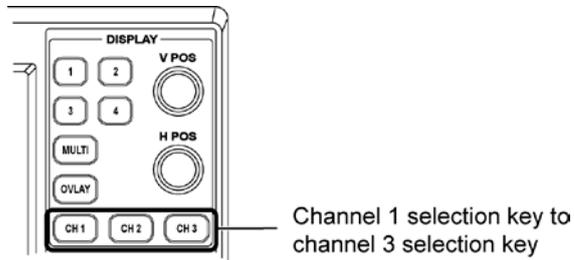
If parade display is enabled, the waveforms that are turned ON in section 6.3, “Setting the Waveform Display Channels” are displayed side by side.



6.3 Setting the Waveform Display Channels

Press the CH1 to CH3 keys to turn ON/OFF the display of the component video signal waveform assigned to each key in the selected display area.

The waveform assigned to each key is displayed if the corresponding channel (CH1 to CH3) key is illuminated and not displayed if the key is OFF.

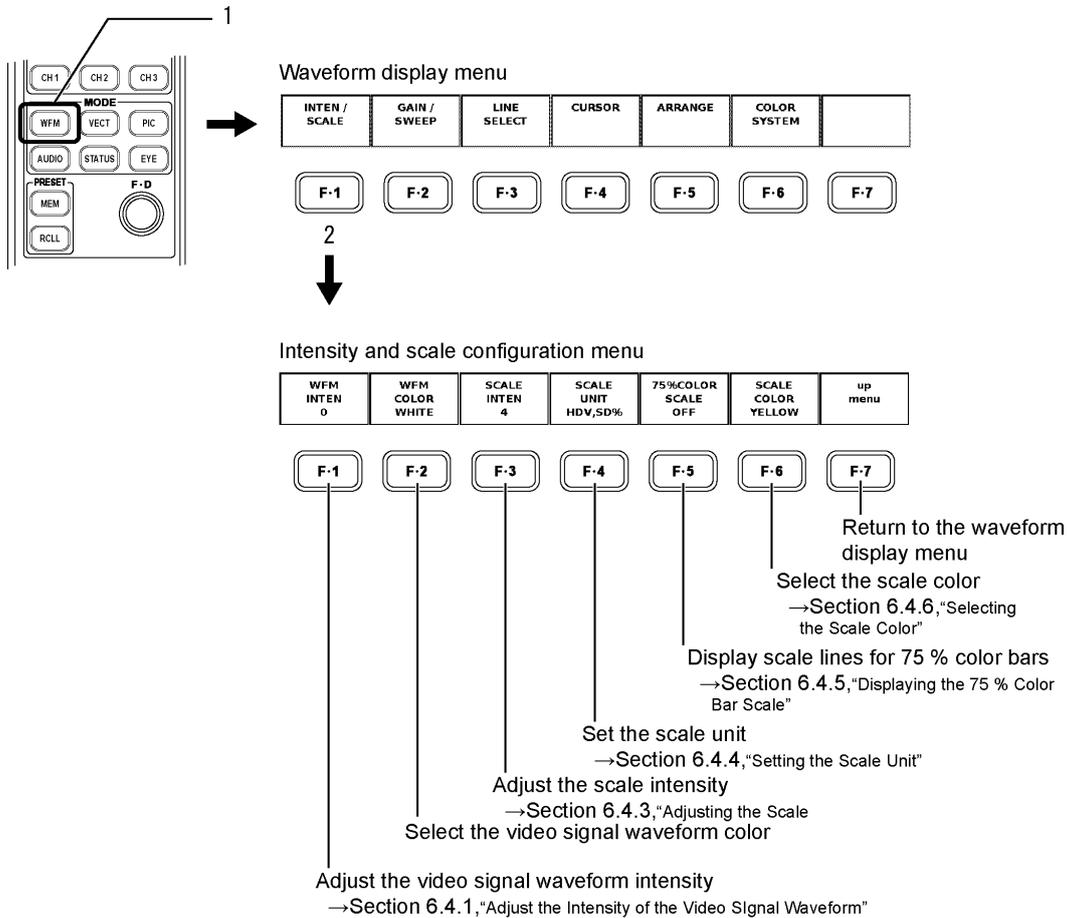


The waveform assignments to the CH1 to CH3 keys are shown in the table below according to the settings described in section 6.9.1, "Setting the Color Matrix of the Waveform Display" as shown below.

COLOR MATRIX	CH1	CH2	CH3
Y, Cb, Cr	Y	Cb	Cr
GBR	G	B	R
RGB	R	G	B
COMPOSITE	-	-	-

6.4 Intensity Adjustment

Carry out the procedure below to display the menu used to adjust the intensity of the video signal waveforms and the scale, the unit displayed on the scale, and the like.



6.4.1 Adjusting the Intensity of the Video Signal Waveforms

Carry out the procedure below to adjust the intensity of the video signal waveforms.
Adjustment range: -128 to 127

• **Procedure**

WFM → F-1 INTEN/SCALE → F-1 WFM INTEN : -128 to 0 to 127

After carrying out the procedure above, turn the function dial (F•D). Press the function dial (F•D) to return to the default value (0).

6.4.2 Selecting the Video Signal Waveform Color

Carry out the procedure below to select the video signal waveform color from one of the following:

WHITE

GREEN

MULTI: Assign the following YCbCr or GBR colors to the waveform display:
Y: Yellow, Cb: Cyan, Cr: Magenta, G: Green, B: Blue, R: Red
Waveforms are displayed in white for the pseudo-composite, timing, and 4Y parade displays.
This option is not selectable when the multi display is in use.

● **Procedure**

WFM → F•1 INTEN/SCALE → F•2 WFM COLOR : WHITE / GREEN / MULTI

6.4.3 Adjusting the Scale Intensity

Carry out the procedure below to adjust the intensity of the scale.
Adjustment range: -8 to 7

● **Procedure**

WFM → F•1 INTEN/SCALE → F•3 SCALE INTEN : -8 to 4 to 7

After carrying out the procedure above, turn the function dial (F•D). Press the function dial (F•D) to return to the default value (4).

6.4.4 Setting the Scale Unit

Carry out the procedure below to change the scale unit according to the input video signal format. This setting is valid when COLOR MATRIX is not set to COMPOSITE.
You can select from one of the following scale unit settings.

HDV, SD%: The scale unit is V (volts) for the HDTV format and % for the SDTV format.

HDV, SDV: The scale unit is V (volts) for both the HDTV and SDTV formats.

HD%, SD%: The scale unit is % for both the HDTV and SDTV formats.

When COLOR MATRIX is not set to COMPOSITE, the following settings are also available:

150%: The scale unit is %, and the display starts at -50 %.

You cannot select this option when COLOR MATRIX is set to YCbCr.

1023: 0 to 100 % is displayed as 64 to 940 (for YGBR), 64 to 960 (for CbCr).

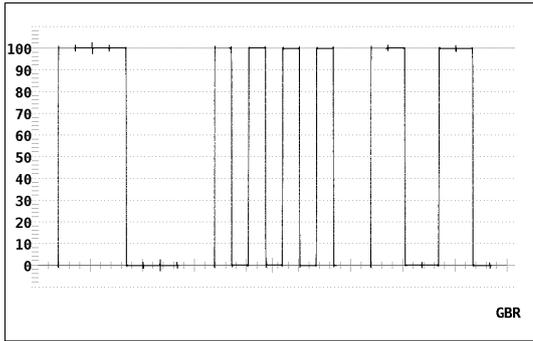
3FF: 0 to 100 % is displayed as 040 to 3AC (for YGBR), 040 to 3C0 (for CbCr).

1023,255: 0 to 100 % is displayed as 64 to 940 (for YGBR), 16 to 235 (for YGBR).

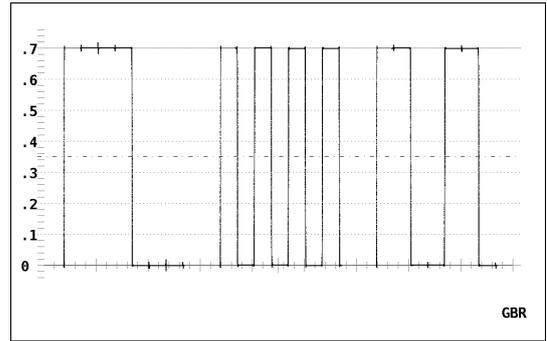
A white 100 % video signal falls on the scale line for 0.7 on the volt scale and on the scale line for 100 on the % scale. A black 0 % video signal falls on the scale line for zero on both the volt and % scales.

6. VIDEO SIGNAL WAVEFORM DISPLAY

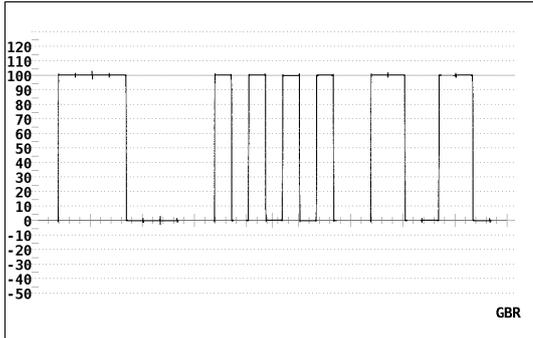
% scale



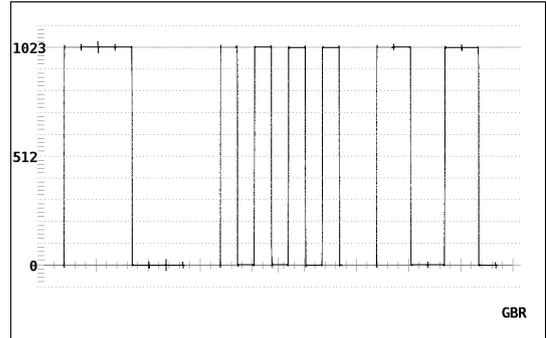
V scale



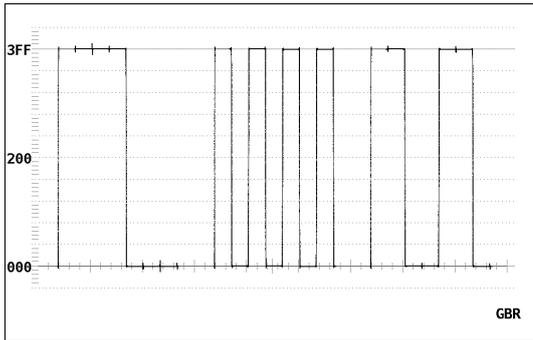
150 % scale



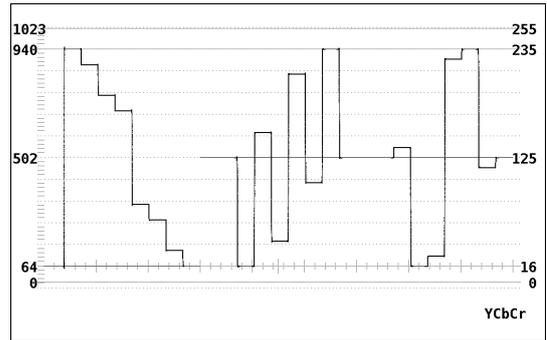
1023 scale



3FF scale



1023,255 scale



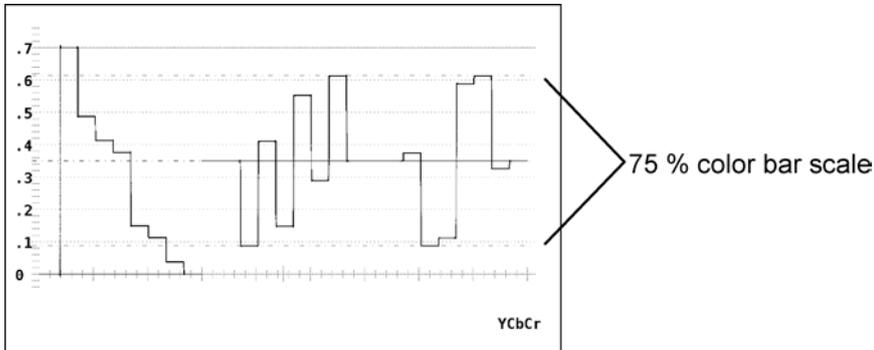
●Procedure

- When COLOR MATRIX is set to YCbCr
 $\boxed{\text{WFM}} \rightarrow \boxed{\text{F}\cdot\text{1}} \text{ INTEN/SCALE} \rightarrow \boxed{\text{F}\cdot\text{4}} \text{ SCALE UNIT : HDV,SD\% / HDV,SDV / HD\%,SD\% / 1023 / 3FF / 1023,255}$
- When COLOR MATRIX is set to GBR or RGB
 $\boxed{\text{WFM}} \rightarrow \boxed{\text{F}\cdot\text{1}} \text{ INTEN/SCALE} \rightarrow \boxed{\text{F}\cdot\text{4}} \text{ SCALE UNIT : HDV,SD\% / HDV,SDV / HD\%,SD\% / 150\% / 1023 / 3FF / 1023,255}$

6.4.5 Displaying the 75 % Color Bar Scale

Carry out the procedure below to display a scale that matches the peak level of the chroma difference signal in case the 75 % color bar is displayed as a waveform. If ON is specified, the 75 % color bar scale is displayed.

This menu is displayed only when the color matrix setting of the waveform display is YCbCr.



● Procedure

WFM → **F•1** INTEN/SCALE → **F•5** 75%COLOR SCALE : ON / OFF

6.4.6 Selecting the Scale Color

Select the scale color from the following seven colors.

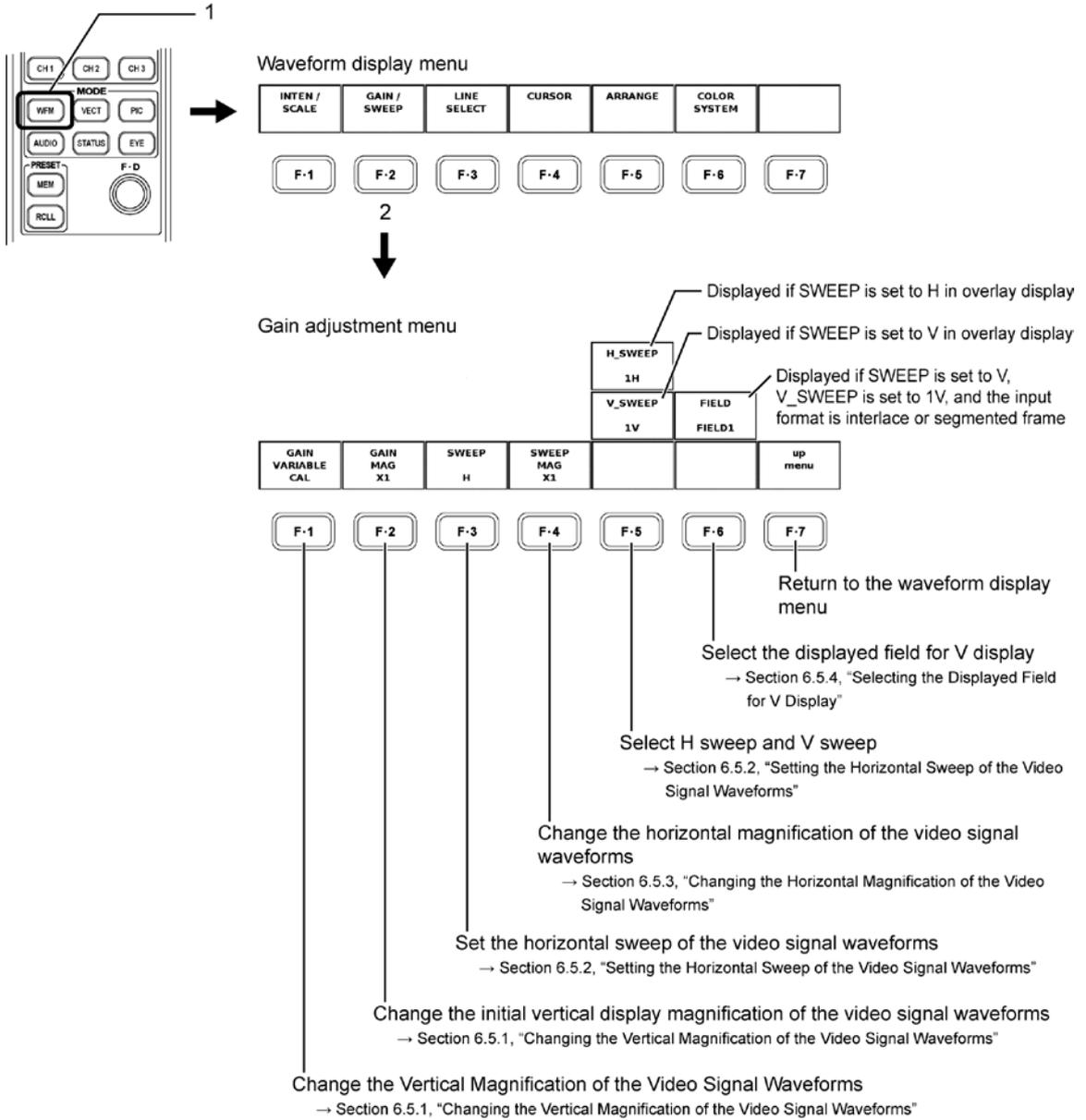
WHITE
 YELLOW
 CYAN
 GREEN
 MAGENTA
 RED
 BLUE

● Procedure

WFM → **F•1** INTEN/SCALE → **F•6** SCALE COLOR : WHITE / YELLOW / CYAN / GREEN
 / MAGENTA / RED / BLUE

6.5 Adjusting the Gain

Carry out the procedure below to display the menu used to set the vertical/horizontal magnification of the video signal waveforms.



6.5.1 Changing the Vertical Magnification of the Video Signal Waveforms

Carry out the procedure below to change the vertical magnification of the video signal waveforms.

Magnification is decided by combination of **[F•1]** GAIN VARIABLE and **[F•2]** GAIN MAG.

- **GAIN VARIABLE**

CAL: x1

VARIABLE: x0.200 to x2.000

Turn the function dial to change the vertical magnification. Press the function dial to reset the vertical magnification to the default value (x1.00).

- **GAIN MAG**

x1: x1

x5: x5

The table below shows the variable range of the vertical magnification of the waveform by combination of **[F•1]** GAIN VARIABLE and **[F•2]** GAIN MAG.

	CAL	VARIABLE
x1	x1	x0.200 to x2.000
x5	x5	x1.000 to x10.000

- **Procedure**

-
-
- **[WFM]** → **[F•2]** GAIN/SWEEP → **[F•1]** GAIN VARIABLE : CAL / VARIABLE
 - **[WFM]** → **[F•2]** GAIN/SWEEP → **[F•2]** GAIN MAG : x1 / x5
-
-

Turn the function dial (F•D) with **[F•1]** GAIN set to VARIABLE to change the vertical magnification in the range of x0.200 to x10.000. Press the function dial to reset the vertical magnification to the default value (x1.000 if **[F•2]** GAIN MAG is set to x1 or x5.000 if **[F•2]** GAIN MAG is set to x5).

6.5.2 Setting the Horizontal Sweep of the Video Signal Waveforms

Carry out the procedure below to change the horizontal sweep setting of the video signal waveforms.

- **Sweep Selection**

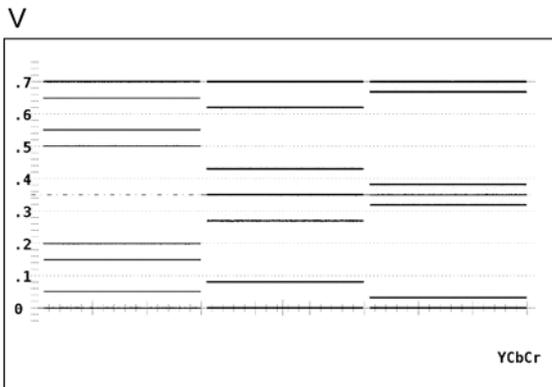
Carry out the procedure below to select from the following available settings.

H: Line display

V: For interlace/segmented frames — Field Display
For progressive — Frame display

- **Procedure**

-
-
- **[WFM]** → **[F•2]** GAIN/SWEEP → **[F•3]** SWEEP : H / V
-
-



● **H Sweep Selection**

If you set the sweep to H (line display) and the display mode is overlay, carry out the procedure below to select the display method.

- 1H: 1 line display
- 2H: 2 line display

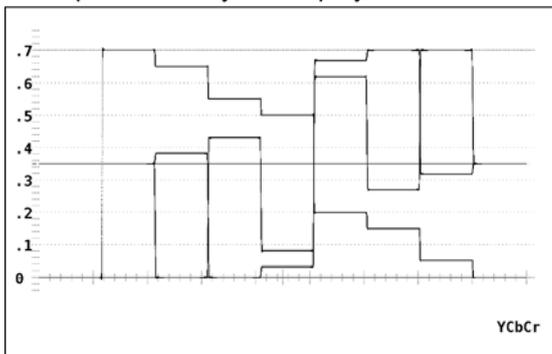
If the display mode is parade, the display method is fixed to 1H. In this case, this menu does not appear.

● **Procedure**

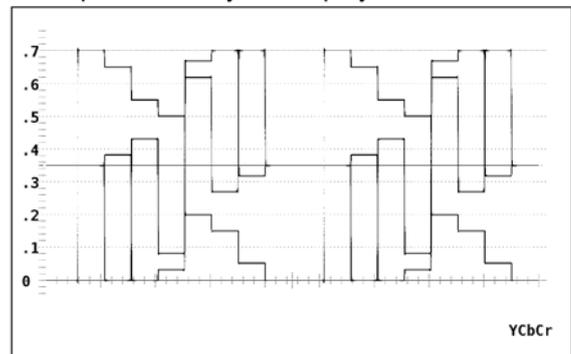
If **F•3** SWEEP is H and the waveform display mode is set to overlay

WFM → **F•2** GAIN/SWEEP → **F•5** H_SWEEP:1H / 2H

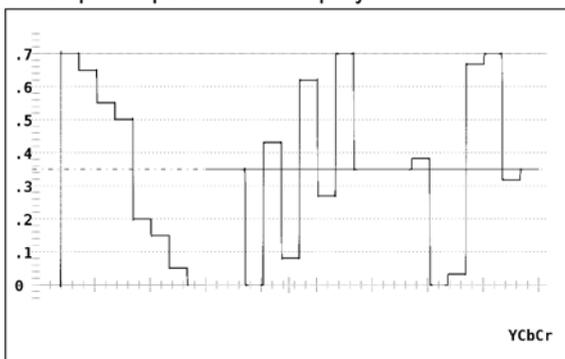
Example of overlay 1H display



Example of overlay 2H display



Example of parade 1H display



● **V Sweep Selection**

If you set the sweep to V (field/frame display) and the display mode is overlay, carry out the procedure below to select the display method. However, if the input signal is progressive, the display method is fixed to 1V, and this menu does not appear.

- 1V: 1 frame display (if the input signal is progressive)
 1 field display (if the input signal is interlace or segmented frame)
- 2V: 1 frame display

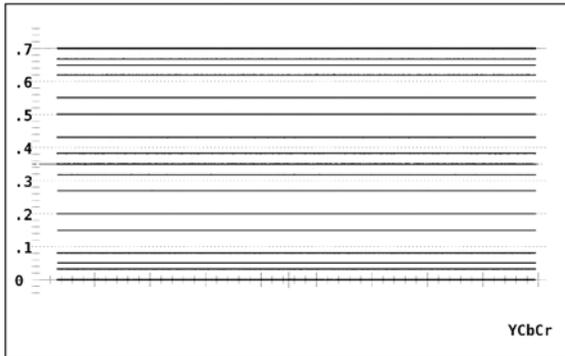
If the display mode is parade, the display method is fixed to 1V. In this case, this menu does not appear.

● **Procedure**

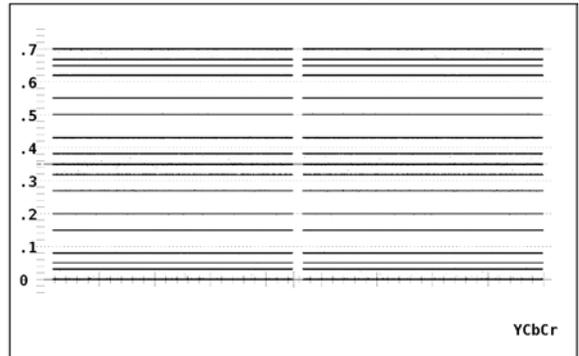
If **[F•3]** SWEEP is V, the input signal is interlace or segmented frame, and the waveform display mode is set to overlay

[WFM] → **[F•2]** GAIN/SWEEP → **[F•5]** V_SWEEP : 1V / 2V

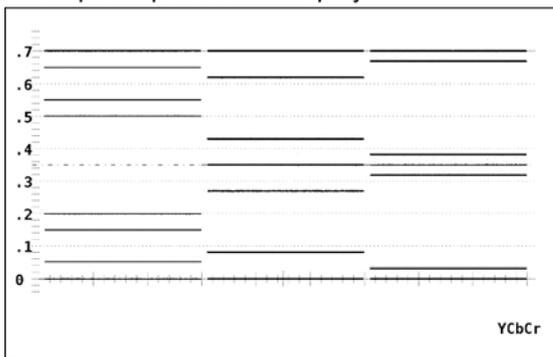
Example of overlay 1V display



Example of overlay 2V display



Example of parade 1V display



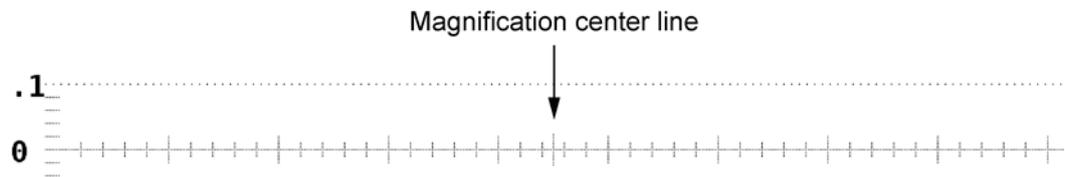
6.5.3 Changing the Horizontal Magnification of the Video Signal Waveforms

You can change the horizontal sweep magnification of the video signal waveforms.

● If **F•3** SWEEP is H

Carry out the procedure below to select the magnification from the following:

- ×1: Display the waveform so that the video signal waveform fits on the screen
- ×10 / ×20: Magnify the video signal waveform with respect to the ×1 sweep length.
The waveform is magnified around the magnification reference line on the 0-V scale line. This menu does not appear if the color matrix of the waveform display is set to COMPOSITE.



- ACTIVE: Magnify the waveform other than the H blanking period of the input video signal.
This item does not appear if H sweep is set to 2H.
- BLANK: Magnify the waveform in the H blanking period of the input video signal. This item does not appear if the color matrix of the waveform display is set to COMPOSITE.

● Procedure

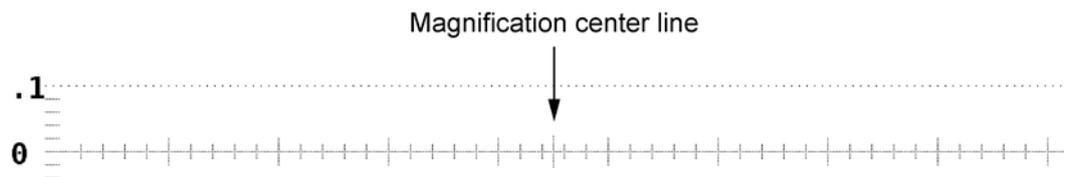
If **F•3** SWEEP is H

WFM → **F•2** GAIN/SWEEP → **F•4** SWEEP MAG : ×1 / ×10 / ×20 / ACTIVE / BLANK

● If **F•3** SWEEP is V

Carry out the procedure below to select the magnification from the following:

- ×1: Display the waveform so that the video signal waveform fits on the screen
- ×20 / ×40: Magnify the video signal waveform with respect to the ×1 sweep length. The waveform is magnified around the magnification reference line on the 0-V scale line.



● Procedure

If **F•3** SWEEP is V

WFM → **F•2** GAIN/SWEEP → **F•4** SWEEP MAG : $\times 1$ / $\times 20$ / $\times 40$

6.5.4 Selecting the Displayed Field for V Display

Carry out the procedure below to select the field for V display (field/frame display).

FIELD1: Display the video signal waveform of field 1.

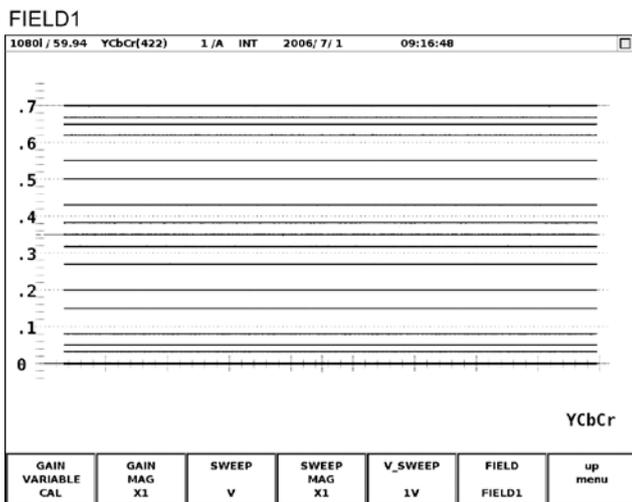
FIELD2: Display the video signal waveform of field 2.

This menu appears if the input signal is set to interlace or segmented frame and V_SWEEP is 1V.

● Procedure

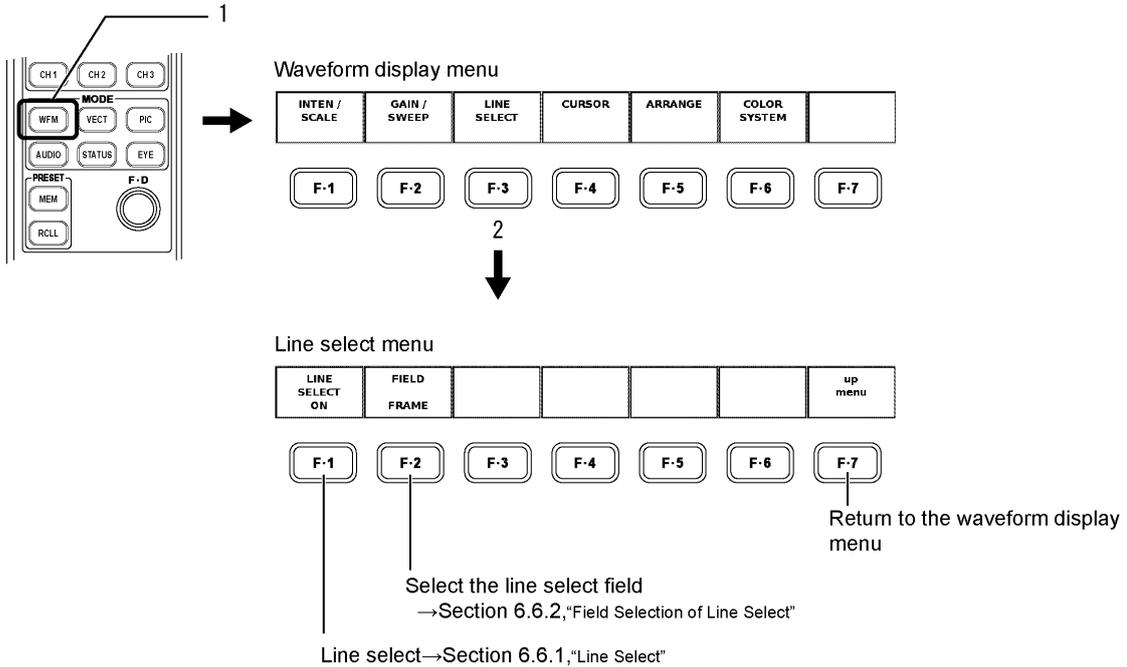
If **F•3** SWEEP is V, **F•5** V_SWEEP is 1V, and the input video format is not progressive

WFM → **F•2** GAIN/SWEEP → **F•6** FIELD : FIELD1 / FIELD2



6.6 Line Select

Carry out the procedure below to display the menu used to select a line. This menu does not appear during V display.



6.6.1 Line Select

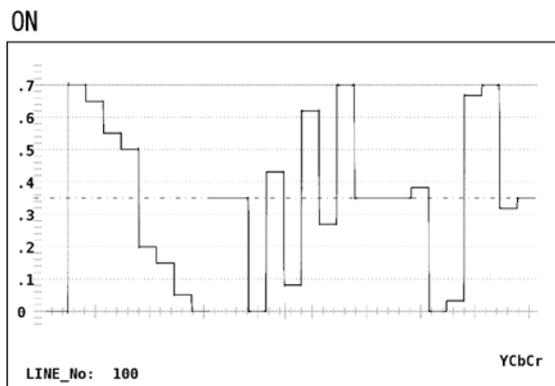
Carry out the procedure below to select the line number of the video signal waveform during the line display.

In internal synchronization mode, the line number of the input video signal is used as a reference. In external synchronization mode, the line number of the external sync signal is used as a reference. The displayed line may be off if the line select function is used in external synchronization mode depending on the phase of the external sync signal.

● Procedure

WFM → **F-3** LINE SELECT → **F-1** LINE SELECT : OFF / ON

Select the line number by selecting ON and turning the function dial (F•D).



6.6.2 Field Selection of Line Select

Carry out the procedure below to select the line selection range from the following list. This menu does not appear if the input signal is progressive.

- FIELD1: Limit the line select range to FIELD1 of the reference signal.
- FIELD2: Limit the line select range to FIELD2 of the reference signal.
- FRAME: Place no limits to the line select range.

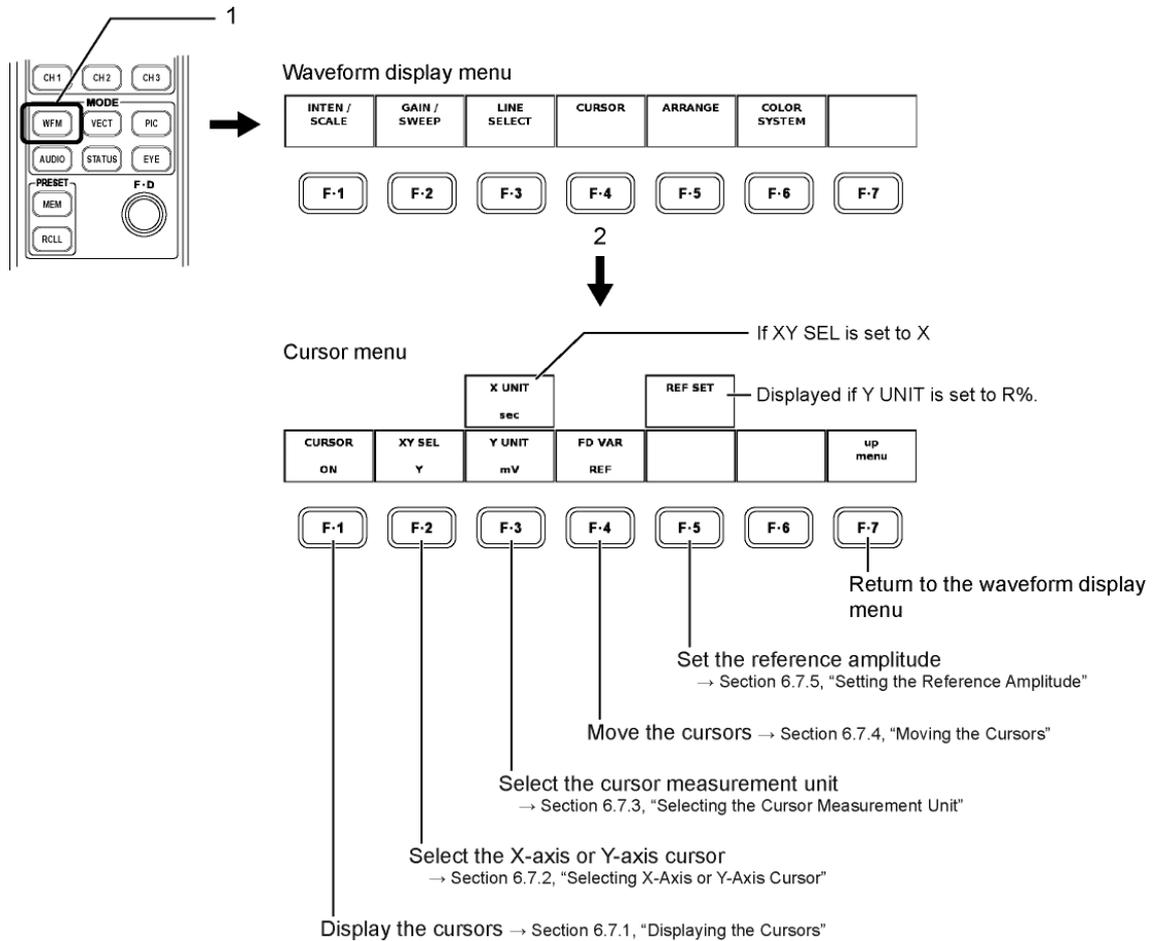
● Procedure

If the input video format is not progressive

WFM → F•3 LINE SELECT → F•2 FIELD : FIELD1 / FIELD2 / FRAME

6.7 Cursor Measurement

Carry out the procedure below to display the setup menu for the cursors used in the voltage and time measurements.



6.7.1 Displaying the Cursors

Select ON according to the procedure below to display the cursors. The REF and DELTA cursors are displayed in blue and green, respectively. Select OFF to clear the cursors.

● **Procedure**

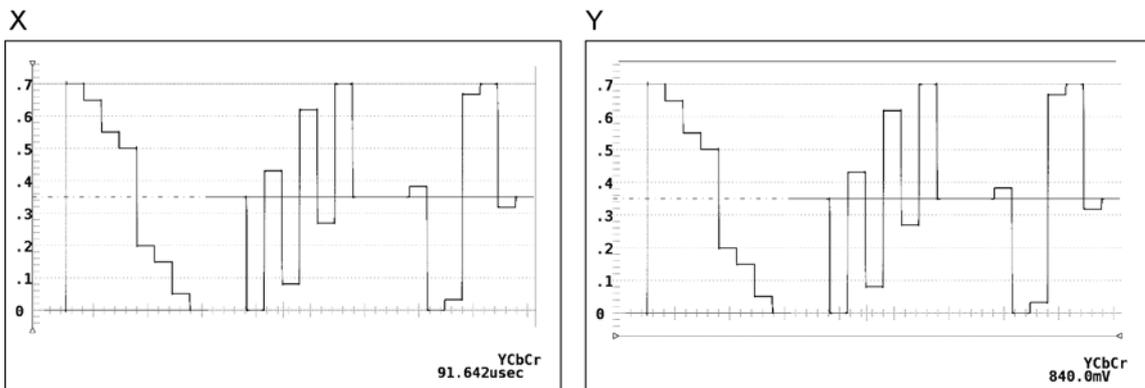
WFM → F•4 CURSOR → F•1 CURSOR : ON / OFF

6.7.2 Selecting X-Axis or Y-Axis Cursor

Carry out the procedure to set the measurement axis to X (time) or Y (amplitude). The axis is fixed to Y if the color matrix of the waveform display is set to COMPOSITE. Even if you select X, it will be invalid.

● **Procedure**

WFM → F•4 CURSOR → F•2 XY SEL : X / Y



6.7.3 Selecting the Cursor Measurement Unit

Carry out the procedure below to select the cursor unit from the following:

● **Y-Axis Unit**

- mV: Displayed in terms of a voltage.
- %: Display using a ratio where 700 mV is taken to be 100 % during component display.
Display using a ratio where 714 mV is taken to be 100 % during pseudo-composite display.
- R%: Display using a ratio where the measured value when you press REF SET in the reference amplitude setting is taken to be 100 %.
- DEC: The scale shows 0 to 100 % in decimal as 64 to 940.
- HEX: The scale shows 0 to 100 % in hexadecimal as 040 to 3AC.

The unit is fixed to % if the color matrix of the waveform display is set to COMPOSITE.

- **X-Axis Unit**

- sec: Display in terms of time
 Hz: Display the frequency taking the interval between the cursors to be 1 period.

The measured value between the REF and DELTA cursor is displayed at the lower right of the screen according to the specified unit.

- **Procedure**

-
-
- If XY SEL is set to Y and COLOR MATRIX is set to YCbCr, GBR, or RGB
 WFM → F•4 CURSOR → F•3 Y UNIT : mV / % / R% / DEC / HEX
 - If XY SEL is set to Y and COLOR MATRIX is set to COMPOSITE
 WFM → F•4 CURSOR → F•3 Y UNIT : %
 - If XY SEL is set to X
 WFM → F•4 CURSOR → F•3 X UNIT : sec / Hz
-
-

6.7.4 Moving the Cursors

Carry out the procedure below to select and move the cursor.

- REF: Select the REF cursor.
 DELTA: Select the DELTA cursor.
 TRACK: Select the REF and DELTA cursors simultaneously.

You can also select the cursor by pressing the function dial (F•D). Each time you press the function dial (F•D), the cursor is selected in the following order: REF, DELTA, and TRACK.

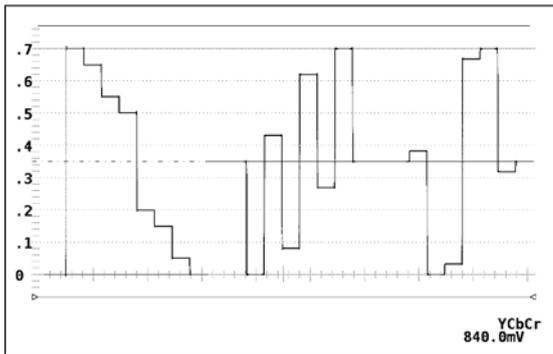
- **Procedure**

-
-
- WFM → F•4 CURSOR → F•4 FD VAR : REF / DELTA / TRACK
-
-

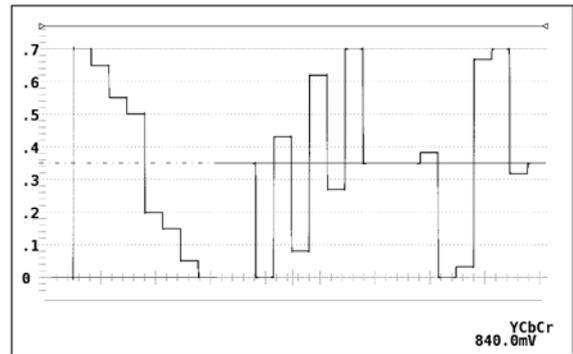
A triangle is displayed at either end of the selected cursor. Turn the function dial (F•D) to move the cursor.

6. VIDEO SIGNAL WAVEFORM DISPLAY

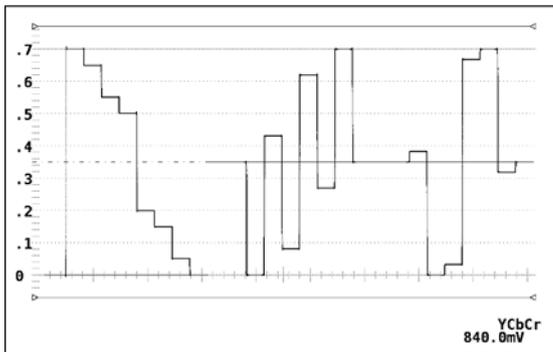
REF



DELTA



TRACK

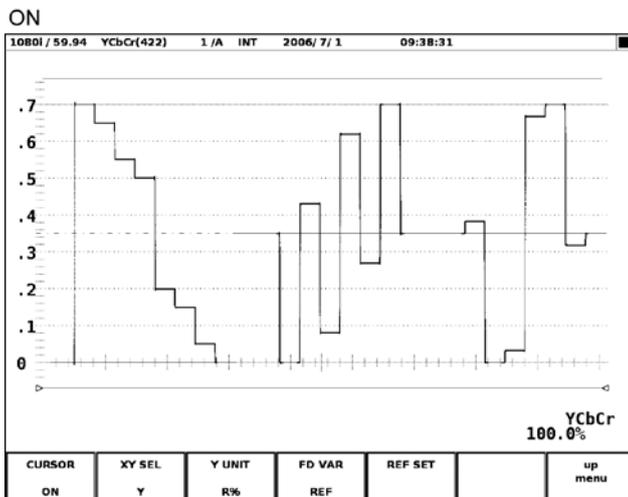


6.7.5 Setting the Reference Amplitude

Carry out the procedure below to specify 100 % amplitude if the Y-axis cursor unit is set to R%. This menu does not appear if XY SEL is set to X or if Y UNIT is set to R%.

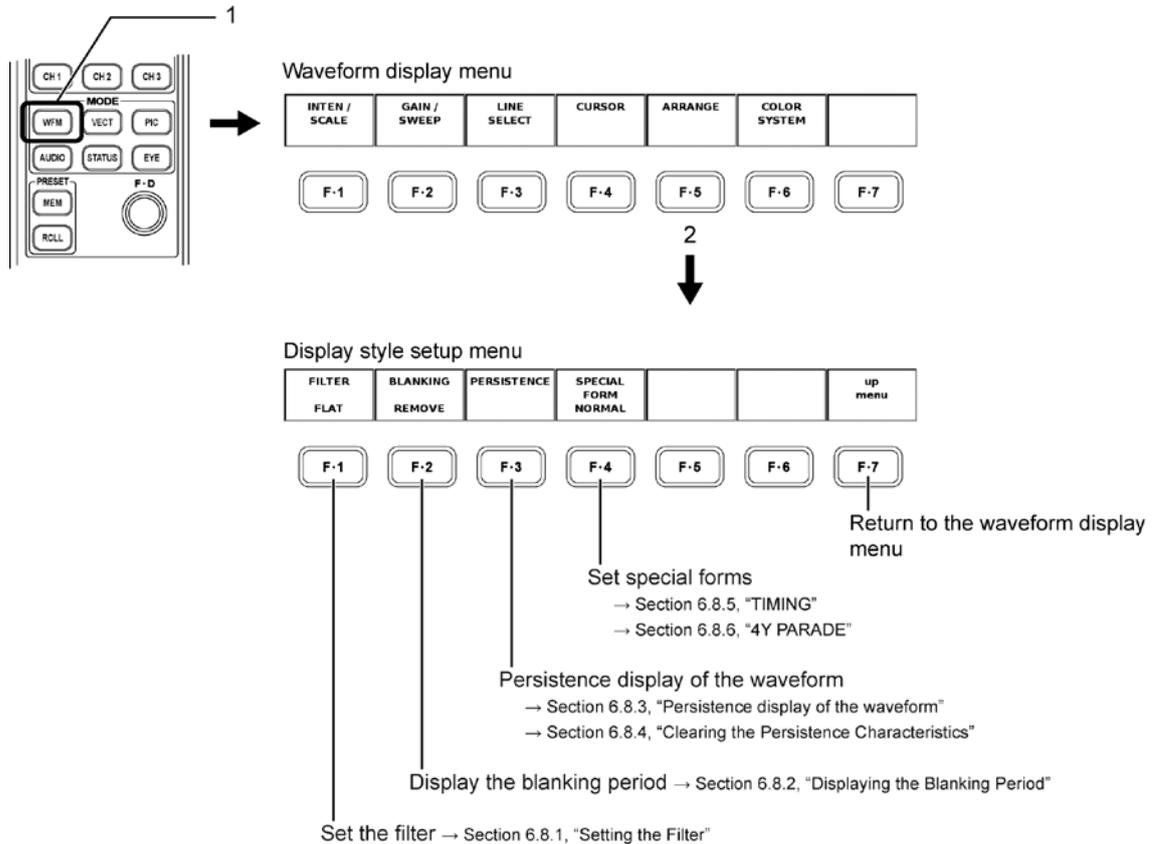
• Procedure

WFM → F•4 CURSOR → F•5 REF SET



6.8 Setting the Display Style

Carry out the procedure below to display the menu used to set the filter, blanking period display, and persistence display of the waveform.



6.8.1 Setting the Filter

● **If the Color Matrix of the Waveform Display Is Not Set to COMPOSITE**

Carry out the procedure below to select the filter for the displayed video signal.

FLAT: Filter with flat frequency characteristics over the entire bandwidth of the input signal.

LOW PASS: Filter with the following filter characteristics.

Filter Characteristics

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.)

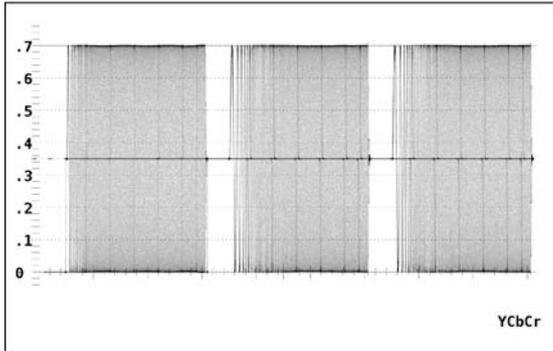
Attenuation of 20 dB or more at 3.8 MHz (When the input signal is SD-SDI.)

● **Procedure**

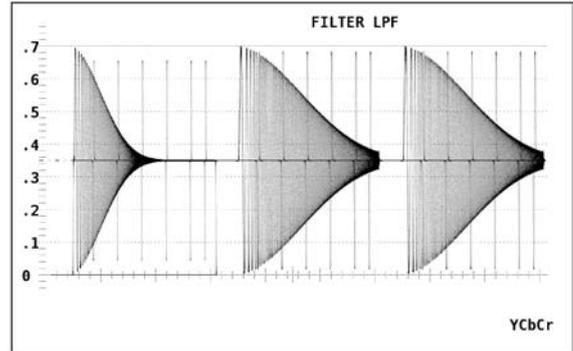
If COLOR MATRIX is not COMPOSITE

WFM → F-5 ARRANGE → F-1 FILTER : FLAT / LOW PASS

FLAT



LOW PASS



● If the Color Matrix of the Waveform Display Is Set to **COMPOSITE**

The luminance signal of the pseudo-composite signal or the luminance and color signals of the pseudo-composite signal can be displayed by the pseudo-composite waveform. Carry out the procedure below to select the mode from the following:

- FLAT: Only the pseudo-composite signal waveform display
- FLAT+LUM: Parade display of the pseudo-composite signal waveform and the luminance signal. A filter that has the frequency characteristics shown below is applied to the luminance signal.
- LUM+CHROMA: Parade display of the luminance and color signals of the pseudo-composite signal. A filter that has the frequency characteristics shown below is applied to the luminance signal.

Filter Characteristics

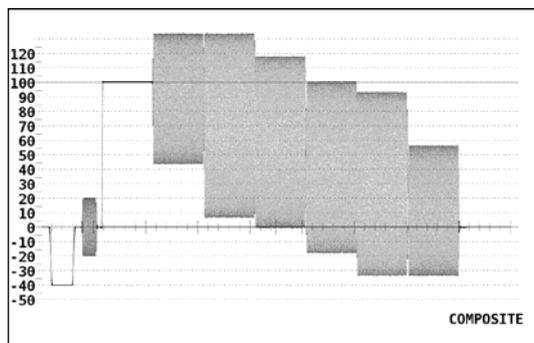
- HD: Attenuation of 20 dB or more at 20 MHz
- SD: Attenuation of 20 dB or more at 3.8 MHz

● **Procedure**

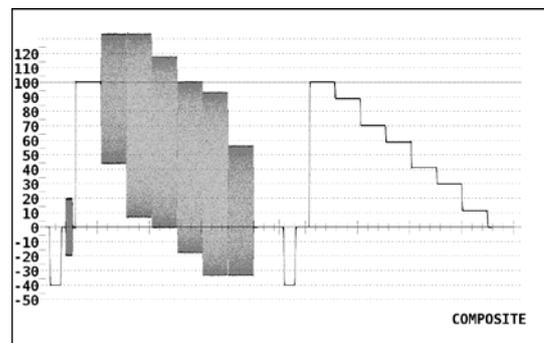
If COLOR MATRIX is COMPOSITE

WFM → **F.5** ARRANGE → **F.1** FILTER : FLAT / FLAT+LUM / LUM+CHROMA

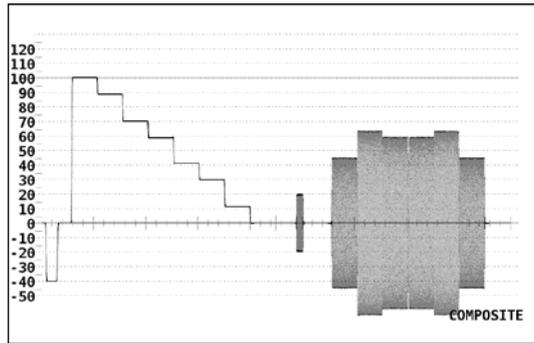
FLAT



FLAT+LUM



LUM+CHROMA



6.8.2 Displaying the Blanking Period

Carry out the procedure below to change the waveform display setting for the blanking period.

- REMOVE: Display only the waveform in the active period of the input video signal.
- H VIEW: Display only the waveform in the active period and the horizontal blanking period of the input video signal. Not displayed if the color matrix of the waveform display is set to COMPOSITE.
- V VIEW: Display only the waveform in the active period and the vertical blanking period of the input video signal.
- ALL VIEW: Display the entire input video signal. Not displayed if the color matrix of the waveform display is set to COMPOSITE.

● Procedure

-
-
- If COLOR MATRIX is not COMPOSITE
`[WFM] → [F.5] ARRANGE → [F.2] BLANKING : REMOVE / H VIEW / V VIEW / ALL VIEW`
 - If COLOR MATRIX is COMPOSITE
`[WFM] → [F.5] ARRANGE → [F.2] BLANKING : REMOVE / V VIEW`
-
-

6.8.3 Persistence Display of the Waveform

You can change the persistence characteristics of the displayed waveform. This feature allows the current waveform to be displayed simultaneously with past waveforms (overlaid). Carry out the procedure below to select the persistence from the following:

- ON: Enable the persistence characteristics of the waveform display.
- OFF: Disable the persistence characteristics of the waveform display.
- INFINIT: Overlay the waveforms until the persistence is cleared or until the display mode is changed.

● Procedure

-
-
- `[WFM] → [F.5] ARRANGE → [F.3] PERSISTENCE → [F.1] PERSISTENCE : ON / OFF / INFINIT`
-
-

6.8.4 Clearing the Persistence Characteristics

If the persistence display of the waveform is set to INFINIT, you can clear the waveforms that were displayed using the persistence feature to stop overlaying of the waveforms. Once you clear the waveforms, the overlay display starts again.

● **Procedure**

If PERSISTENCE is set to INFINIT

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

6.8.5 TIMING

Carry out the procedure below to select TIMING to measure the time and amplitude differences between channels with respect to CH1 (Y/G). A bowtie signal is used as a signal source (authorized by Tektronix, Inc.). Two timing displays are displayed side by side. The CH1 to CH3 and OVLAY key statuses are ignored.

* Bowtie signal waveform measurement

If you set the LV 5800(A) to TIMING display, CH1 (Y/G) and CH2 (CB/B) are displayed on the left and CH1 (Y/G) and CH3 (CR/R) are displayed on the right. The vertical lines of bowtie signals are marker signals. The long marker at the center is the reference marker (no time difference).

The interval between markers represents a timing difference of 1 ns (when LEADER's LT 443D is used). The timing difference is read from the interval between the null and the reference marker. If the null is positioned to the left of the reference marker, this indicates that C_B/B or C_R/R is advanced relative to Y/G.

If there is an amplitude difference between channels, the depth of the null is decreased.

● **Procedure**

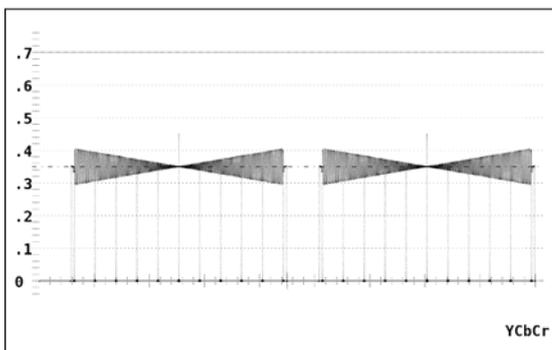
-
-
- During 2- or 4-screen multi display

WFM → **F•5** ARRANGE → **F•4** SPECIAL FORM : NORMAL / TIMING

- During 1-screen display

WFM → **F•5** ARRANGE → **F•4** SPECIAL FORM : NORMAL / TIMING / 4Y PARADE

TIMING



6.8.6 4Y PARADE

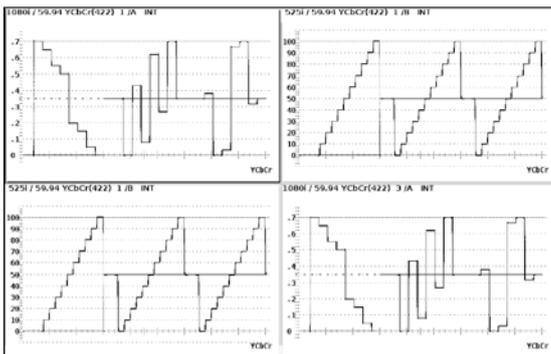
Select 4Y PARADE by carrying out the procedure below to display the luminance signals of areas 1 to 4 in order from the left on the 4-screen multi display. The four inputs of the 4Y parade must be of the same format and must be synchronized with each other.

- Valid only during 1-screen display. 4Y PARADE does not appear under SPECIAL FORM during 2- or 4-screen multi display.
- If areas 1 to 4 are set to a mode other than WFM, its corresponding section is not displayed.
- The CH1 to CH3 keys are invalid.
- The OVLAY keys are invalid.
- The frame_captured waveform is not displayed.
- Cannot switch the input channel A/B during 4Y PARADE display.

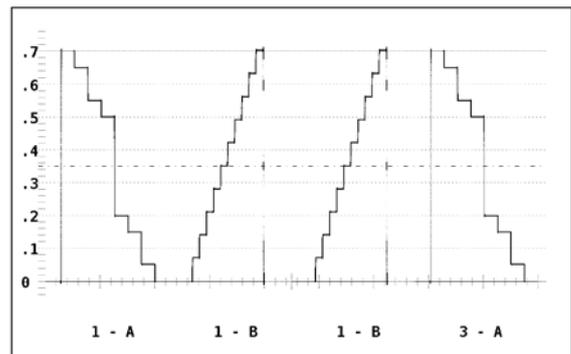
● Procedure

-
-
- During 2- or 4-screen multi display
 [WFM] → [F•5] ARRANGE → [F•4] SPECIAL FORM : NORMAL / TIMING
 - During 1-screen display
 [WFM] → [F•5] ARRANGE → [F•4] SPECIAL FORM : NORMAL / TIMING / 4Y PARADE
-
-

NORMAL

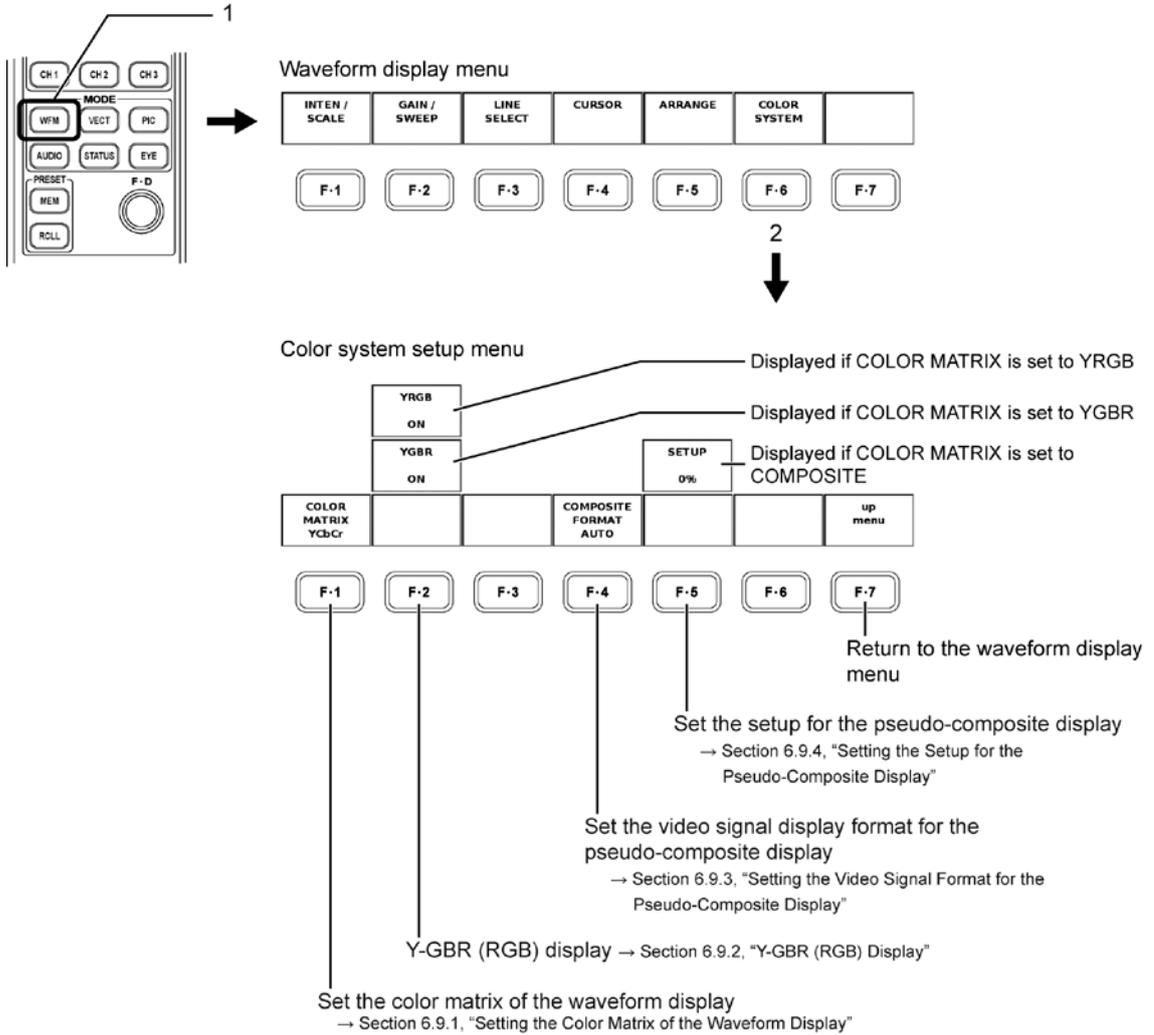


4Y PARADE



6.9 Setting the Color System of the Waveform Display

Carry out the procedure below to display the menu used to set the color system such as the color matrix of the waveform display.



6.9.1 Setting the Color Matrix of the Waveform Display

When the luminance and chroma difference are being applied to this unit, it can display the YCbCr signals through matrix conversion as GBR signals or RGB signals. Each signal is assigned to CH1 to CH3 keys and can be turned ON/OFF.

[See Also] Signal Assignments to the CH1 to CH3 keys → Section 6.3, "Setting the Waveform Display Channels"

In addition, component signals can be displayed artificially as composite signals. Carry out the procedure below to select the display format. The selected display format is displayed at the lower right of the screen.

- YCbCr: Display the waveforms using luminance and chroma difference signals.
- GBR: Convert Y, C_B, C_R signals into G, B, R and display the waveform
- RGB: Convert Y, C_B, C_R signals into R, G, B and display the waveform
- COMPOSITE: Artificially convert the component signal into a pseudo-composite signal such as NTSC or PAL and display the waveform.

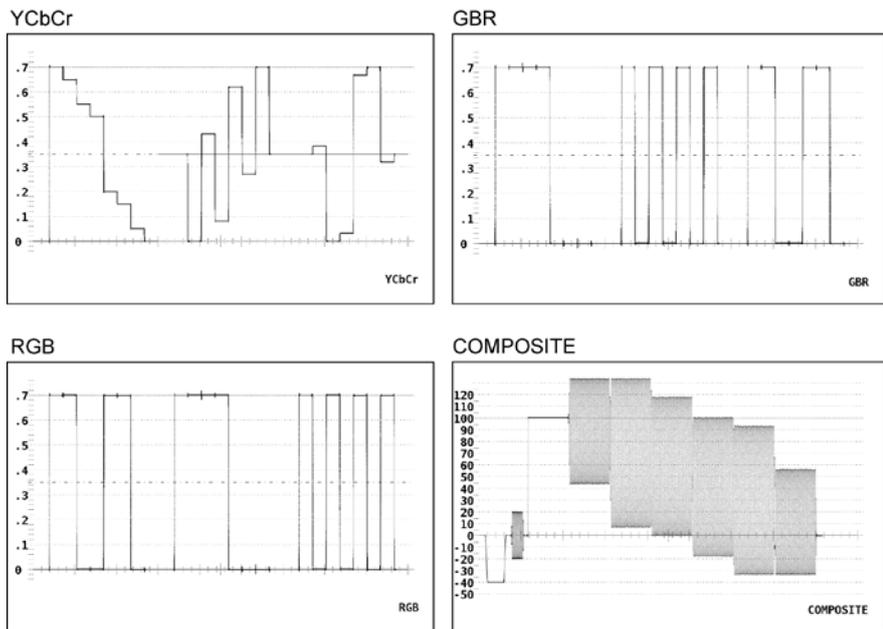
* When the link format is a dual link and a color system is GBR (4:4:4), YCbCr cannot select.

Notes on the COMPOSITE setting

- The frequency of the color burst does not match the frequency of PAL or NTSC.
- The width and position of the color burst and synchronization signal are different from those of PAL and NTSC.
- The signal bandwidth is the bandwidth of the original signal.
- The CH1 to CH3 keys are invalid.

● Procedure

WFM → F.6 COLOR SYSTEM → F.1 COLOR MATRIX : YCbCr / GBR / RGB / COMPOSITE



6.9.2 Y-GBR (RGB) Display

If the color matrix is set to G, B, R or R, G, B and you select ON by carrying out the procedure below, the luminance signal (Y) is displayed simultaneously with the G, B, R or R, G, B signal that is calculated through matrix conversion. Y-GBR display is activated if G, B, R is selected; Y-RGB display is activated if R, G, B is selected. If Y-GBR display or Y-RGB display is selected, the CH1 to CH3 keys are invalid.

• Procedure

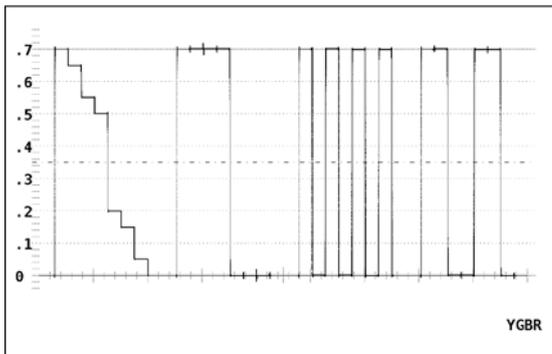
- If GBR is selected

WFM → **F.6** COLOR SYSTEM → **F.2** YGBR : ON / OFF

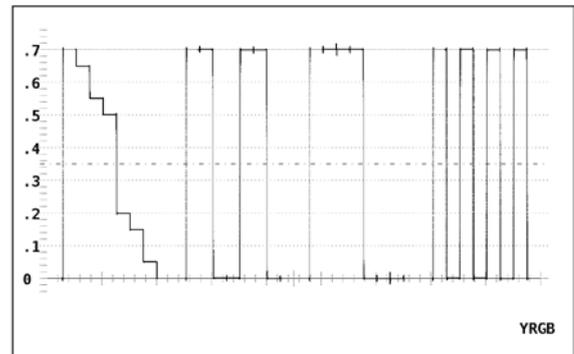
- If RGB is selected

WFM → **F.6** COLOR SYSTEM → **F.2** YRGB : ON / OFF

YGBR



YRGB



6.9.3 Setting the Video Signal Display Format for the Pseudo-Composite Display

Carry out the procedure below to select NTSC or PAL for the pseudo-composite display. You can also select auto.

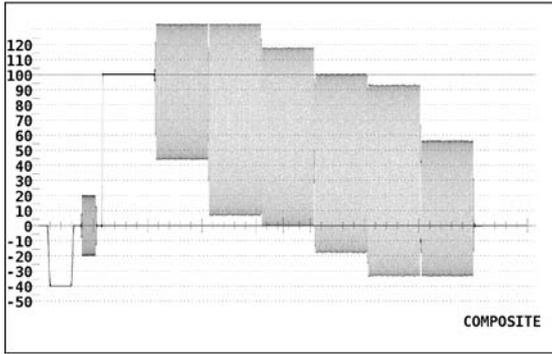
- NTSC: Artificially convert all video signal formats into NTSC composite signal. The scale is set to % regardless of the SCALE UNIT setting.
- PAL: Artificially convert all video signal formats into PAL composite signal. The scale is set to V regardless of the SCALE UNIT setting.
- AUTO: Convert to PAL composite signal for a video format with the field frequency set to 50 Hz or the frame frequency set to 25 Hz or 50 Hz. Convert to NTSC composite signal for all other cases.

• Procedure

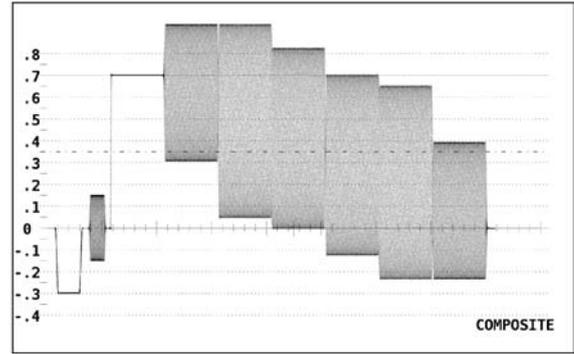
WFM → **F.6** COLOR SYSTEM → **F.4** COMPOSITE FORMAT : NTSC / PAL / AUTO

6. VIDEO SIGNAL WAVEFORM DISPLAY

NTSC



PAL



6.9.4 Setting the Setup for the Pseudo-Composite Display

Carry out the procedure below to select the setup level for the pseudo-composite display from the following. This menu does not appear if the composite display format is PAL.

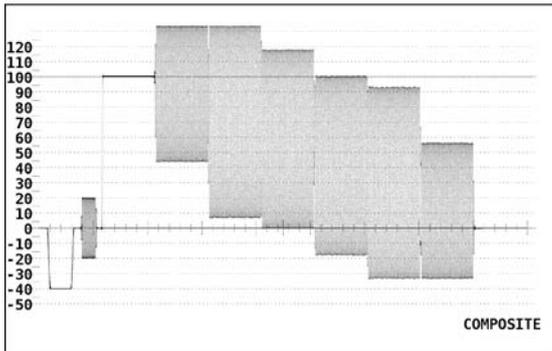
0%: Not include a setup.

7.5%: Pseudo-composite waveform display with a 7.5-% setup included.

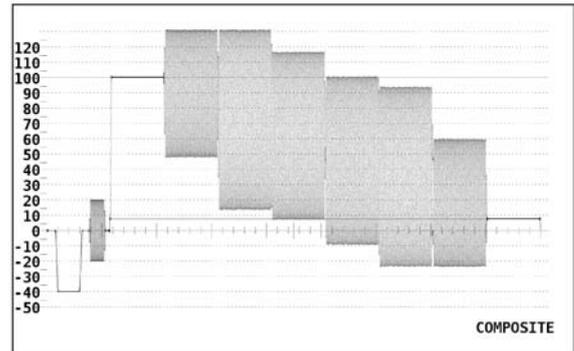
● Procedure

WFM → F.6 COLOR SYSTEM → F.5 SETUP : 0% / 7.5%

0 %



7.5 %

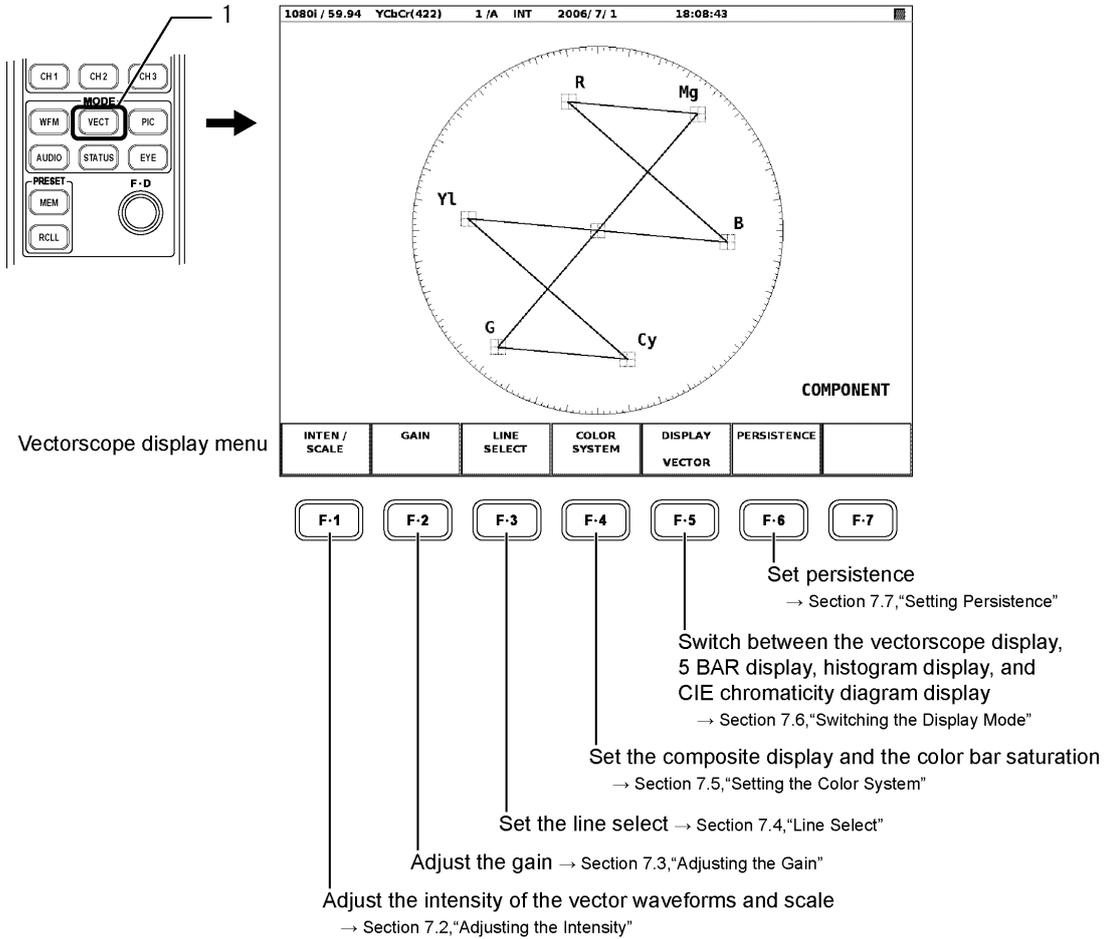


7. VECTORSCOPE DISPLAY

7.1 Displaying Vector Waveforms

Press the VECT (vector) key on the front panel to display the vector waveform, scale, vector display menu, and the like.

The vector waveform display of the component signal is achieved using X-Y display of C_B (horizontal) and C_R (vertical) signals.

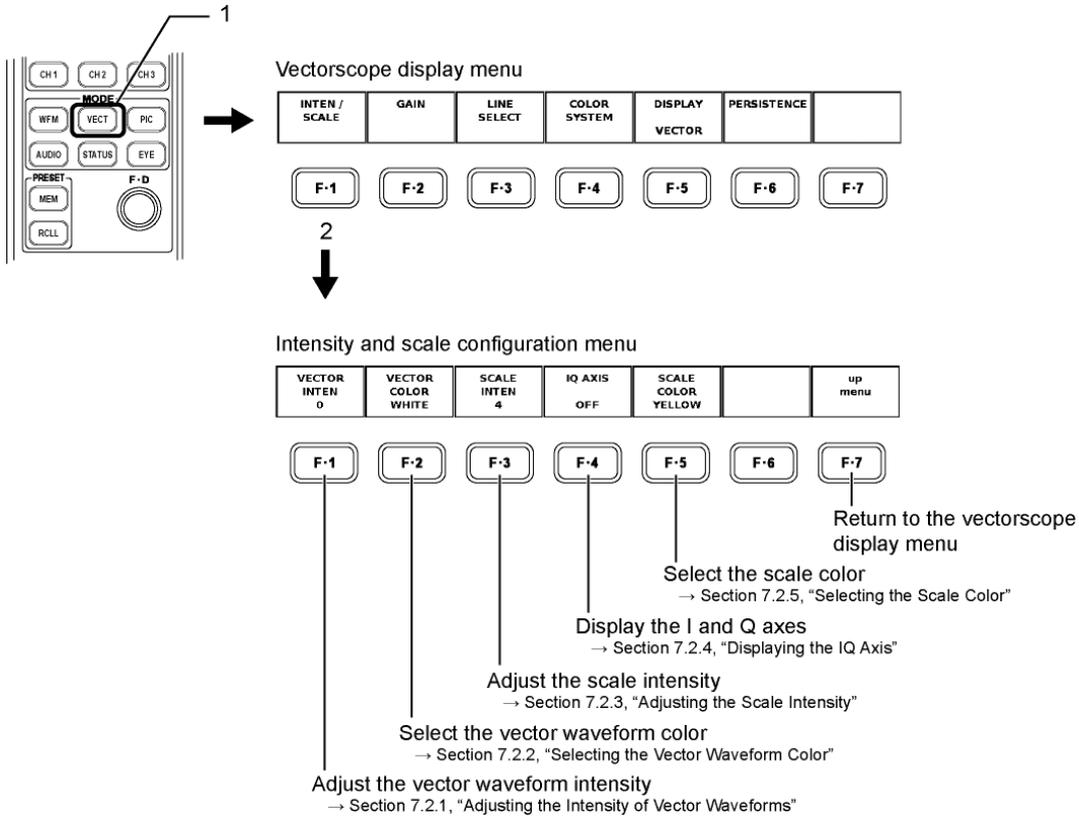


- Frame: Amplitude ± 3 % of full scale (0.7 V)
- Circle: ± 20 % with respect to green (HD-SDI)
 ± 20 % with respect to red (SD-SDI)

7.2 Adjusting the Intensity

Carry out the procedure below to display the menu used to adjust the intensity of the vector waveforms and the scale, the scale color, and turn ON/OFF the IQ axis display.

If DISPLAY is set to an option other than VECTOR, the INTEN/SCALE menu does not appear.



7.2.1 Adjusting the Intensity of Vector Waveforms

Carry out the procedure below to adjust the intensity of vector waveforms and CIE chromaticity diagram waveforms.

• Procedure

VECT → **F•1** INTEN/SCALE → **F•1** VECTOR INTEN : -128 to 0 to 127

After pressing **F•1** VECTOR INTEN above, turn the function dial (F•D). Press the function dial (F•D) to return to the reference value (0).

Adjustment range: -128 to 127

7.2.2 Selecting the Vector Waveform Color

Carry out the procedure below to select the vector color and CIE chromaticity diagram waveform color from one of the following:

- WHITE
- GREEN

● Procedure

VECT → **F•1** INTEN/SCALE → **F•2** VECTOR COLOR : WHITE / GREEN

7.2.3 Adjusting the Scale Intensity

Carry out the procedure below to adjust the intensity of the scale.

● Procedure

VECT → **F•1** INTEN/SCALE → **F•3** SCALE INTEN : -8 to 4 to 7

After pressing **F•3** SCALE INTEN above, turn the function dial (F•D). Press the function dial (F•D) to return to the reference value (4).

Adjustment range: -8 to 7 (16 levels)

7.2.4 Displaying the IQ Axis

Carry out the procedure below to turn ON/OFF the IQ axis display.

The IQ axis cannot be displayed for 625/50i.

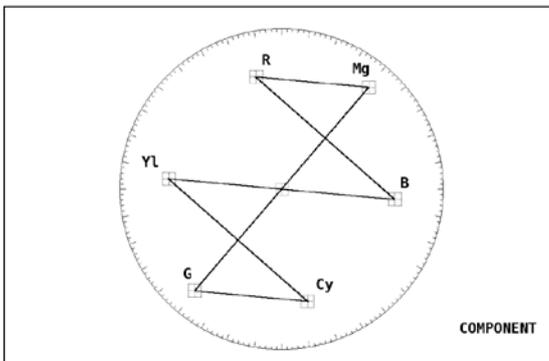
IQ axis for HDTV (if the full scale value, 0.7 V, is set to 100 %) is displayed using the values below.

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

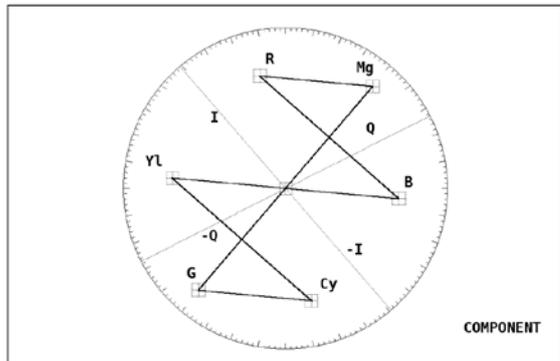
● Procedure

VECT → **F•1** INTEN/SCALE → **F•4** IQ AXIS : ON / OFF

OFF



ON



7.2.5 Selecting the Scale Color

Carry out the procedure below to select the scale color for the vector waveform display from the following seven colors.

- WHITE
- YELLOW
- CYAN
- GREEN
- MAGENTA
- RED
- BLUE

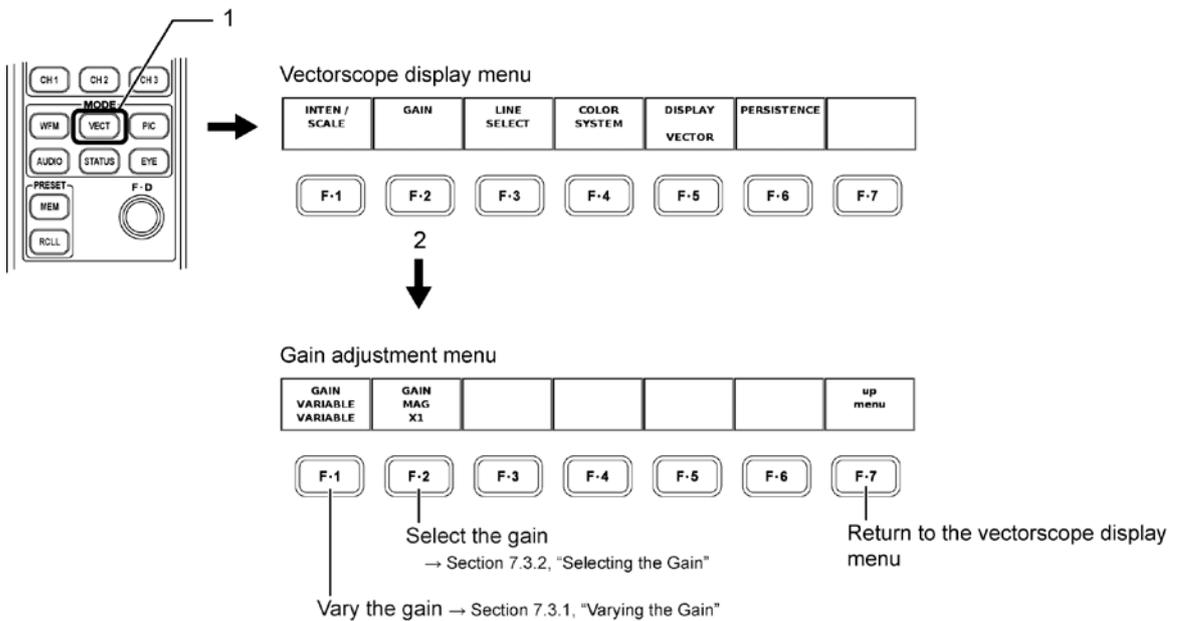
● Procedure

VECT → **F·1** INTEN/SCALE → **F·5** SCALE COLOR : WHITE / YELLOW / CYAN / GREEN / MAGENTA / RED / BLUE

7.3 Adjusting the Gain

Carry out the procedure below to display the menu used to set the gain of the vector waveform.

If DISPLAY is set to an option other than VECTOR, the GAIN menu does not appear.



7.3.1 Varying the Gain

You can continuously vary the gain of the vector waveform.

Carry out the procedure below to select from the following available settings and adjust the gain.

CAL: x1

VARIABLE: x0.200 to x2.000

Turn the function dial (F•D) to adjust the gain.

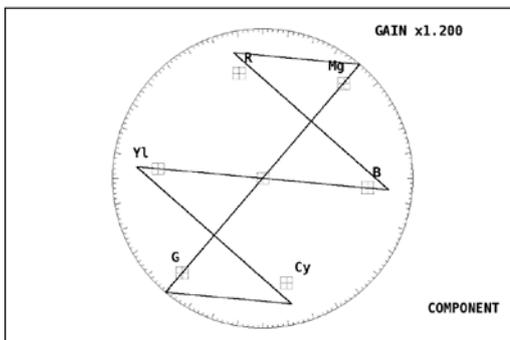
The specified gain is displayed at the upper right of the screen.

Press the function dial (F•D) to the reference value (x1).

● Procedure

VECT → **F•2** GAIN → **F•1** GAIN VARIABLE : CAL / VARIABLE

VARIABLE



7.3.2 Selecting the Gain

Carry out the procedure below to select the gain from the following:

X1: 1 time

X5: 5 times

IQ-MAG: Set the gain so that the IQ signal is positioned at the circumference of the vector scope graticule when the NTSC SMPTE color bar is up-converted to HDTV.

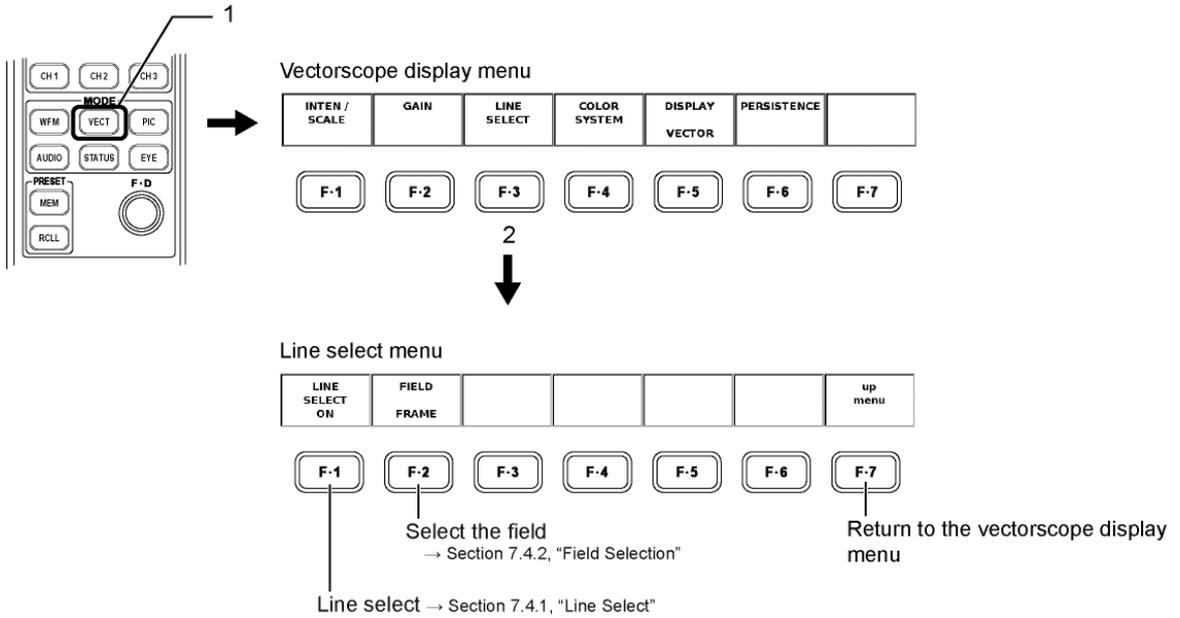
(The gain is approximately x3.1 when the SMPTE Color Bar is applied.)

● Procedure

VECT → **F•2** GAIN → **F•2** GAIN MAG : X1 / X5

7.4 Line Select

You can monitor a particular line by using the line select function of the vectorscope display. Carry out the procedure below to display the line select menu and specify the settings. If DISPLAY is set to HISTOGRAM, the LINE SELECT menu does not appear.



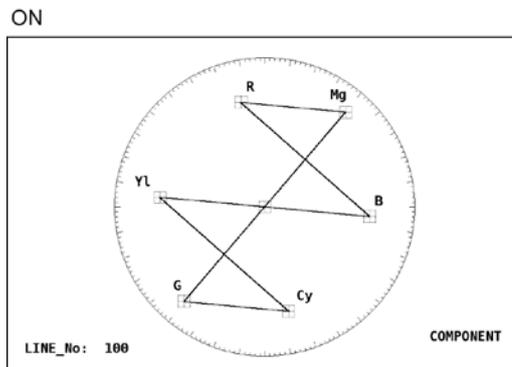
7.4.1 Line Select

Select ON by carrying out the procedure below to select a line on the vector scope display and display the result. Select OFF to clear the line select function and display all the lines.

• Procedure

VECT → **F•3** LINE SELECT → **F•1** LINE SELECT : ON / OFF

After selecting ON above, turn the function dial (F•D) to select the line number. The selected line number is displayed at the lower left of the screen.



7.4.2 Field Selection

Carry out the procedure below to select the variable range of the function dial (F•D) for the line select display on the vector scope display.

You cannot select the field if the video signal format is progressive.

- FIELD1: Limit the range to field 1.
- FIELD2: Limit the range to field 2.
- FRAME: Vary over the entire frame.

● Procedure

VECT → F•3 LINE SELECT → F•2 FIELD : FIELD1 / FIELD2 / FRAME

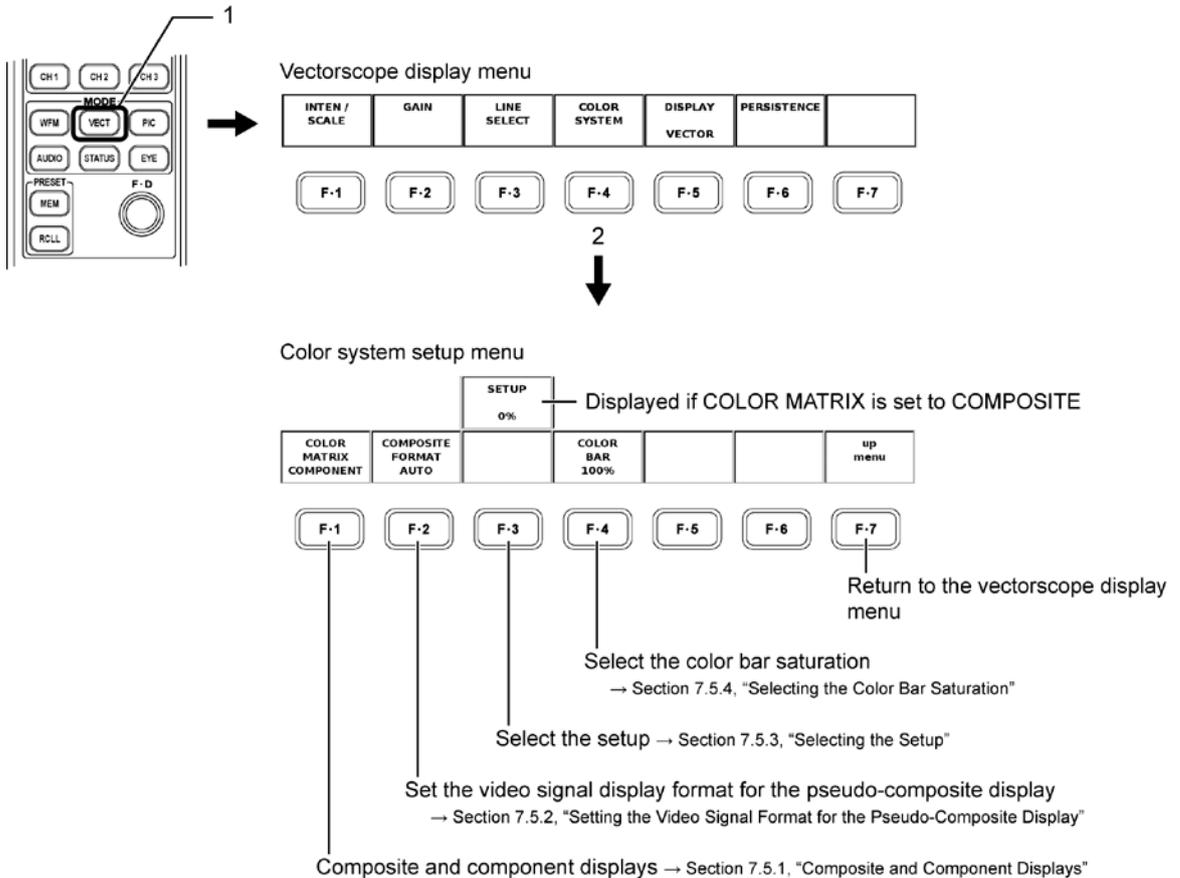
7.5 Setting the Color System

The vector scope display of component signals is X-Y display of chroma difference signals. However, you can also convert the signal into pseudo-composite signal to be displayed on the vector scope.

You can also set the setup and the color bar saturation.

Carry out the procedure below to display the color system setup menu and specify the settings.

If DISPLAY is set to an option other than VECTOR, the COLOR SYSTEM menu does not appear.



7.5.1 Composite and Component Displays

Carry out the procedure below to select whether to display the component signal artificially as a composite signal or display the vector scope display using chroma signals for the vector scope display. The selected display format is displayed at the lower right of the screen.

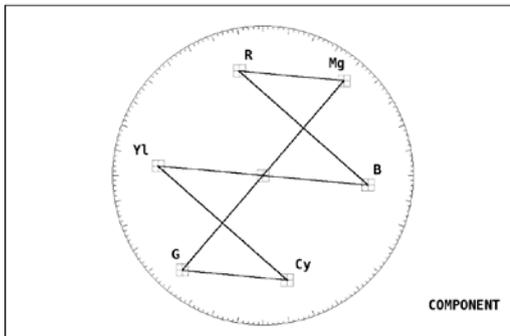
COMPONENT: Display the chroma difference signals of the component signal on the X-Y vector scope display.

COMPOSITE: Artificially convert the component signal into a composite signal and display the result on the vector scope display.

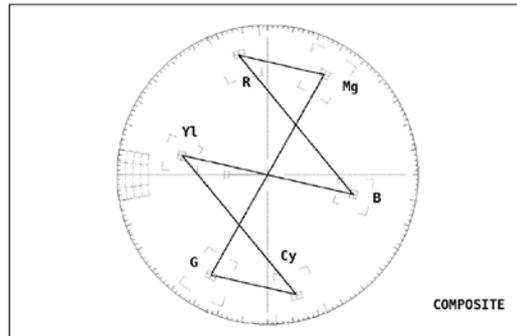
● Procedure

VECT → **F•4** COLOR SYSTEM → **F•1** COLOR MATRIX : COMPONENT / COMPOSITE

COMPONENT



COMPOSITE



7.5.2 Setting the Video Signal Display Format for the Pseudo-Composite Display

Carry out the procedure below to select NTSC or PAL for the pseudo-composite display. You can also select auto.

NTSC: Artificially convert all video signal formats into NTSC composite signal.

PAL: Artificially convert all video signal formats into PAL composite signal.

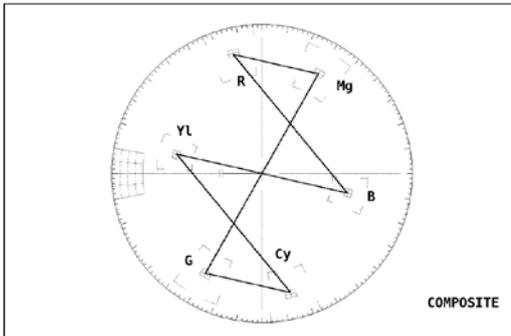
AUTO: Convert to PAL composite signal for a video format with the field frequency set to 50 Hz or the frame frequency set to 25 Hz or 50 Hz. Convert to NTSC composite signal for all other cases.

● Procedure

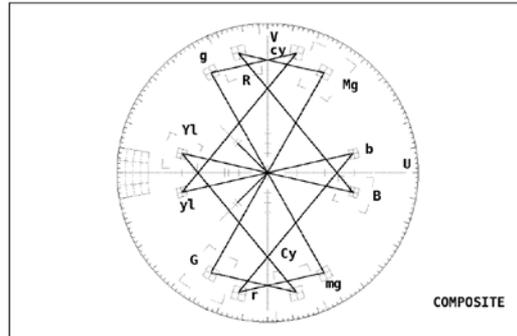
VECT → **F•4** COLOR SYSTEM → **F•2** COMPOSITE FORMAT : AUTO / NTSC / PAL

7. VECTORSCOPE DISPLAY

NTSC



PAL



7.5.3 Selecting the Setup

Carry out the procedure below to select the setup level for the vector scope display of the pseudo-composite display from the following:

- 0%: Not include a setup.
- 7.5%: Include a 7.5 % setup.

You can select the setup level only during the pseudo-composite display when the display format is NTSC. The menu does not appear during the component display or during the pseudo-composite display when the display format is PAL.

• Procedure

VECT → **F•4** COLOR SYSTEM → **F•3** SETUP : 0% / 7.5%

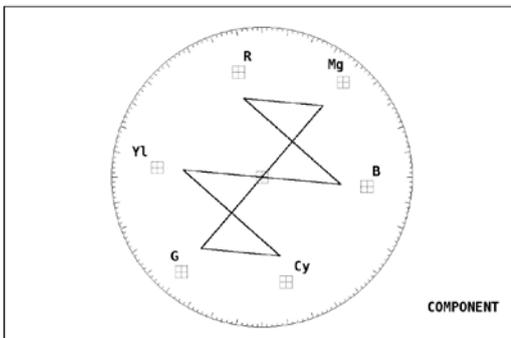
7.5.4 Selecting the Color Bar Saturation

Select 75 % by carrying out the procedure below to display a scale that matches the peak level of the chroma difference signal if the 75 % color bar is displayed.

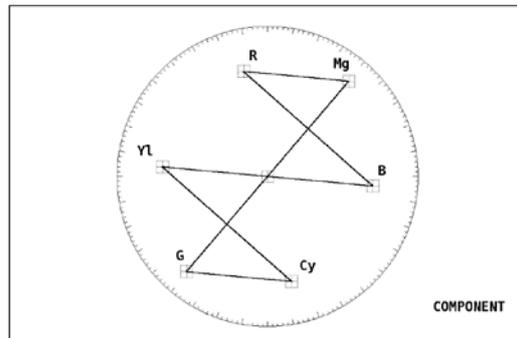
• Procedure

VECT → **F•4** COLOR SYSTEM → **F•4** COLOR BAR : 100% / 75%

100 %

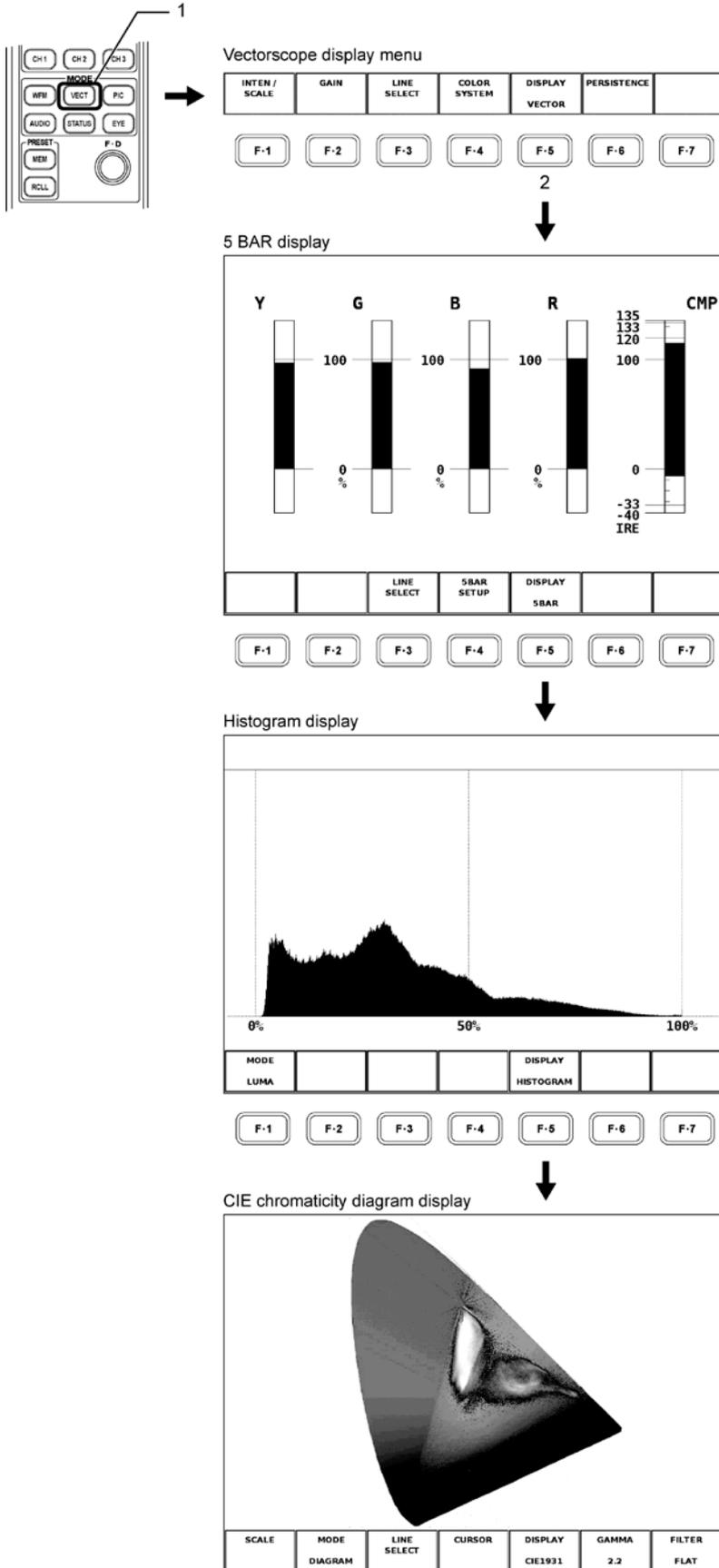


75 %



7.6 Switching the Display Mode

Carry out the procedure below to switch between the vectorscope display, 5 BAR display, histogram display, and CIE chromaticity diagram display.



- **5 BAR display**

The $Y_C B_C R_C$ signal is converted into GBR and pseudo-composite signals, and the peak levels of the converted signal's Y, G, B, R, and CMP (composite) components are displayed simultaneously using five bars.

[See Also] Section 7.8, "Configuring the 5 BAR Display"

- **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.

[See Also] Section 7.9, "Setting the Histogram Display"

- **CIE Chromaticity Diagram Display**

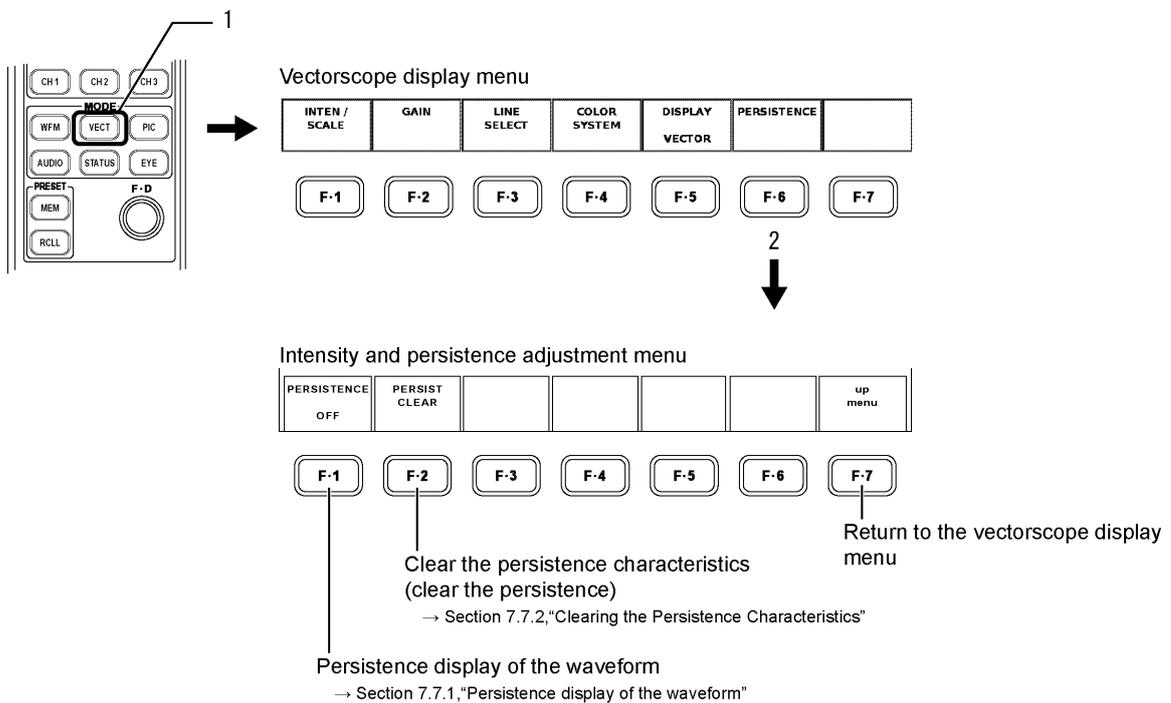
$Y_C B_C R_C$ signals and GBR signals are converted into CIE1931xy chromaticity coordinates and displayed on a CIE chromaticity diagram.

[See Also] Section 7.10, "Configuring the CIE Chromaticity Diagram Display"

7.7 Setting Persistence

Carry out the procedure below to display the intensity/persistence menu used to set the persistence characteristics of the vector scope display.

If DISPLAY is set to an option other than VECTOR, the PERSISTENCE menu does not appear.



7.7.1 Persistence Display of the Waveform

You can change the persistence characteristics of the vector waveform. This feature allows the current waveform to be displayed simultaneously with past waveforms (overlaid). Carry out the procedure below to select the persistence from the following:

- ON: Enable the persistence characteristics of the waveform display.
- OFF: Disable the persistence characteristics of the waveform display.
- INFINIT: Overlay the waveforms until the persistence is cleared or until the display mode is changed.

● Procedure

VECT → **F•6** PERSISTENCE → **F•1** PERSISTENCE : ON / OFF / INFINIT

7.7.2 Clearing the Persistence Characteristics

If the persistence display of the waveform is set to INFINIT, you can clear the waveforms that were displayed using the persistence feature to stop overlaying of the waveforms. Once you clear the waveforms, the overlay display starts again.

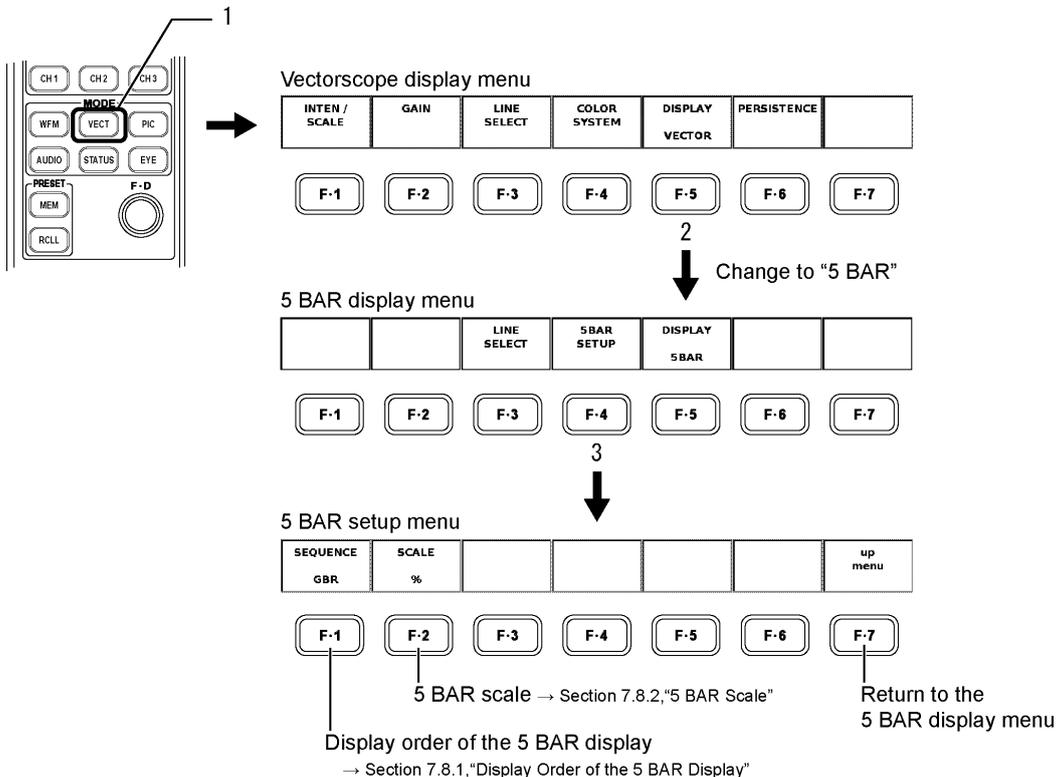
● Procedure

If PERSISTENCE is set to INFINIT

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

7.8 Configuring the 5 BAR Display

Use the 5 BAR setup menu to set the 5 BAR display.



7.8.1 Display Order of the 5 BAR Display

Select the displayed order of the five bars for the 5 BAR display from the following:

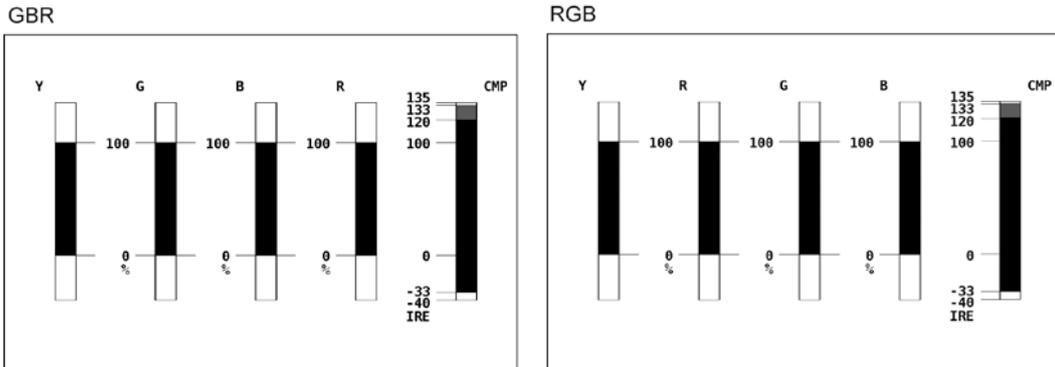
GBR: Display in the following order from the left: Y, G, B, R, and CMP.

RGB: Display in the following order from the left: Y, R, G, B, and CMP.

● Procedure

During 5 BAR display

VECT → **F•4** 5BAR SETUP → **F•1** SEQUENCE : GBR / RGB



7.8.2 5 BAR Scale

You can set the 5 BAR scale to % or mV. If you select mV, the scale varies depending on the input signal as follows:

NTSC: 100IRE = 700 mV (Y, G, B, R), 714 mV (CMP)

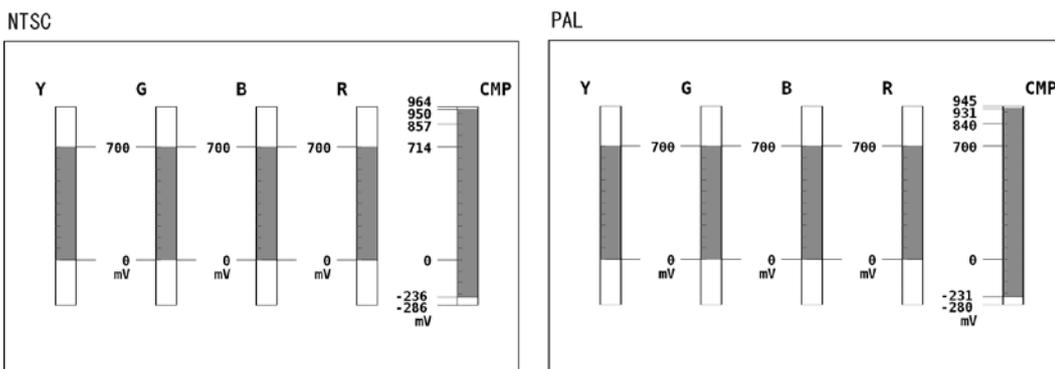
PAL: 100IRE = 700 mV

The input signal setting is synchronized to the setting described in section 7.5.2, “Setting the Video Signal Display Format for the Pseudo-Composite Display.”

● Procedure

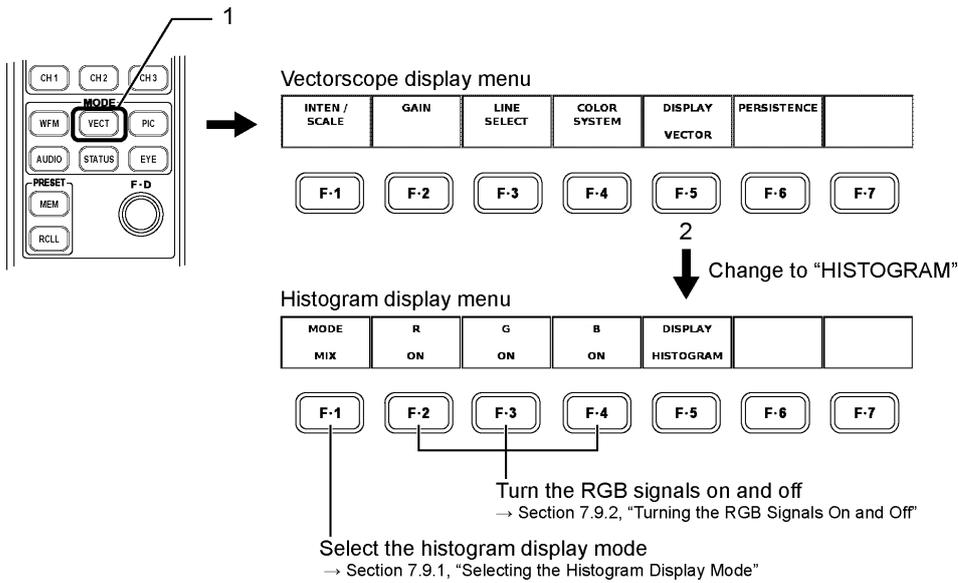
During 5 BAR display

VECT → **F•4** 5BAR SETUP → **F•2** SCALE : % / mV



7.9 Setting the Histogram Display

Use the histogram display menu to configure the histogram settings.



7.9.1 Selecting the Histogram Display Mode

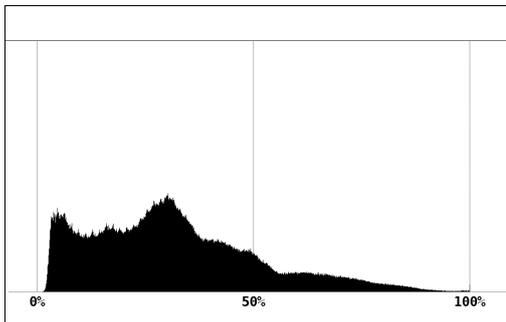
Carry out the procedure below to select the display mode.

- LUMA: The histogram of the Y (luminance) signal is displayed.
- 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.

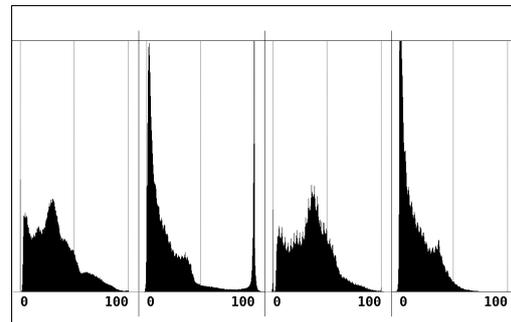
● Procedure

VECT → F-4 MODE : LUMA / ALIGN / MIX

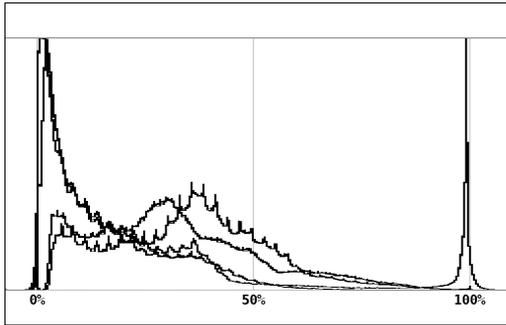
LUMA



ALIGN



MIX



7.9.2 Turning the RGB Signals On and Off

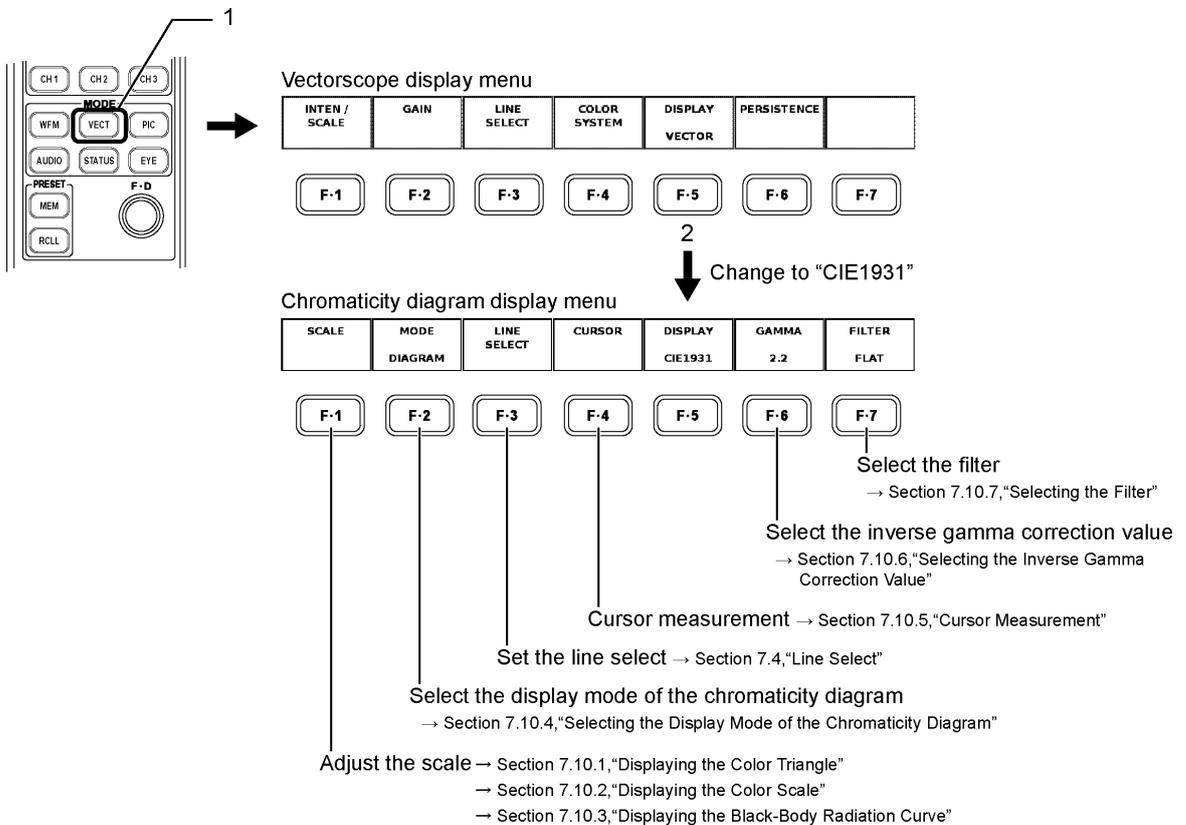
When **F•1** MODE is set to MIX, carry out the procedure below to turn the R, G, and B signals on and off separately.

● **Procedure**

-
- VECT** → **F•2** R : ON / OFF
 → **F•3** G : ON / OFF
 → **F•4** B : ON / OFF
-

7.10 Configuring the CIE Chromaticity Diagram Display

Use the chromaticity diagram display menu to configure CIE chromaticity diagram settings.



7.10.1 Displaying the Color Triangle

Carry out the procedure below to display a color triangle that has R, G, and B at its three vertices.

- NTSC: A triangle that corresponds to the ITU-R BT.470-6 NTSC specifications is displayed.
- EBU: A triangle that corresponds to the ITU-R BT.470-6 EBU specifications is displayed.
- ITU-R 709: A triangle that corresponds to ITU-R BT.709-5 is displayed.
- DCI: A triangle that corresponds to SMPTE EG 432-1 is displayed.
- OFF: The color triangle is not displayed.

The x and y coordinates of CIE chromaticity diagrams based on the selected standard are shown below.

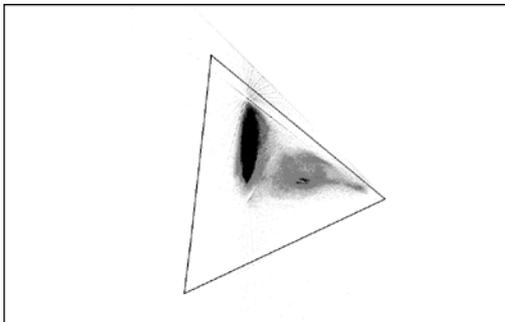
[F•1] TRIANGLE	R		G		B	
	x	y	x	y	x	y
NTSC	0.670	0.330	0.210	0.710	0.140	0.080
EBU	0.640	0.330	0.290	0.600	0.150	0.060
ITU-R 709	0.640	0.330	0.300	0.600	0.150	0.060
DCI	0.680	0.320	0.265	0.690	0.150	0.060

● Procedure

```

VECT → [F•1] SCALE → [F•1] TRIANGLE : NTSC / EBU / ITU-R 709 / DCI / OFF
    
```

NTSC



7.10.2 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 : ON / OFF
    
```

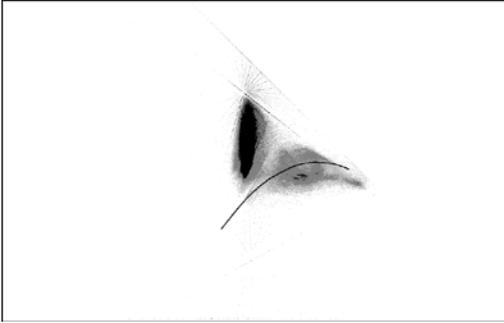
7.10.3 Displaying the Black-Body Radiation Curve

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 : ON / OFF

ON



7.10.4 Selecting the Display Mode of the Chromaticity Diagram

Carry out the procedure below to select the display mode. If you select “TEMP,” only the black-body radiation curve and the correlated color temperature lines will be displayed. **F•1** SCALE is not displayed.

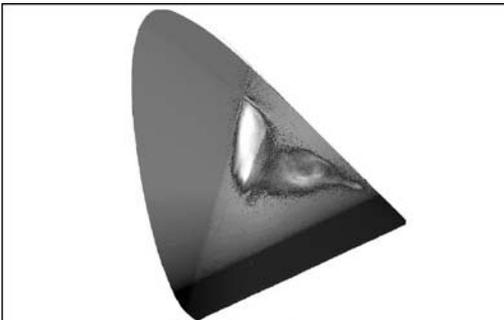
DIAGRAM: Nearly all of the CIE chromaticity diagram is displayed.

TEMP: The vicinity of the white point is magnified by a factor of two in the horizontal and vertical directions and displayed.

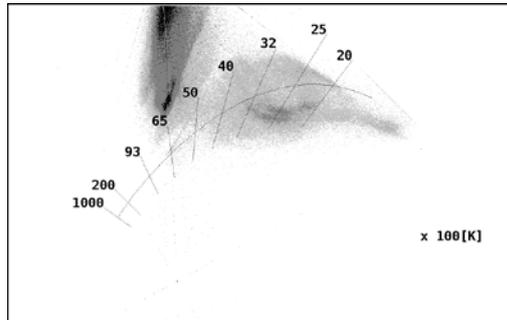
- Procedure

VECT → **F•2** MODE : DIAGRAM / TEMP

DIAGRAM



TEMP



7.10.5 Cursor Measurement

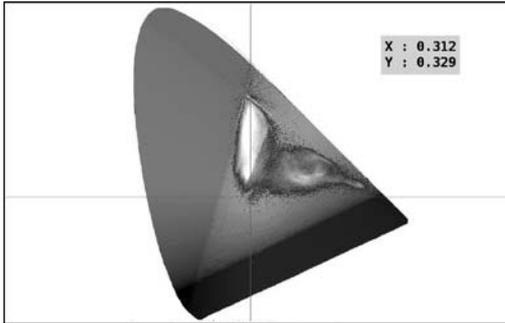
Carry out the procedure below to turn cursors on and off.

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.

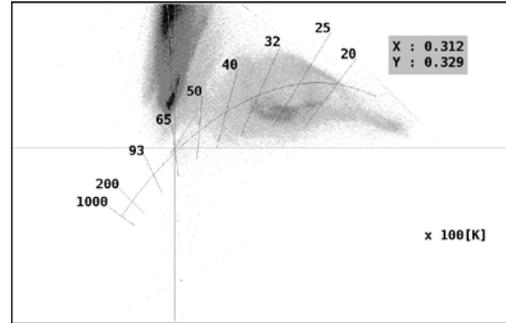
- Procedure

VECT → **F•4** CURSOR → **F•1** CURSOR : ON / OFF

ON (DIAGRAM)



ON (TEMP)



7.10.6 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.

2.2: A triangle that corresponds to ITU-R BT.1361 is displayed.

2.6: A triangle that corresponds to SMPTE EG 432-1 is displayed.

- Procedure

VECT → **F•6** GAMMA : 2.2 / 2.6

7.10.7 Selecting the Filter

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

For the low-pass filter characteristics, see section 6.8.1, "Setting the Filter."

LOW PASS: A low-pass filter is applied.

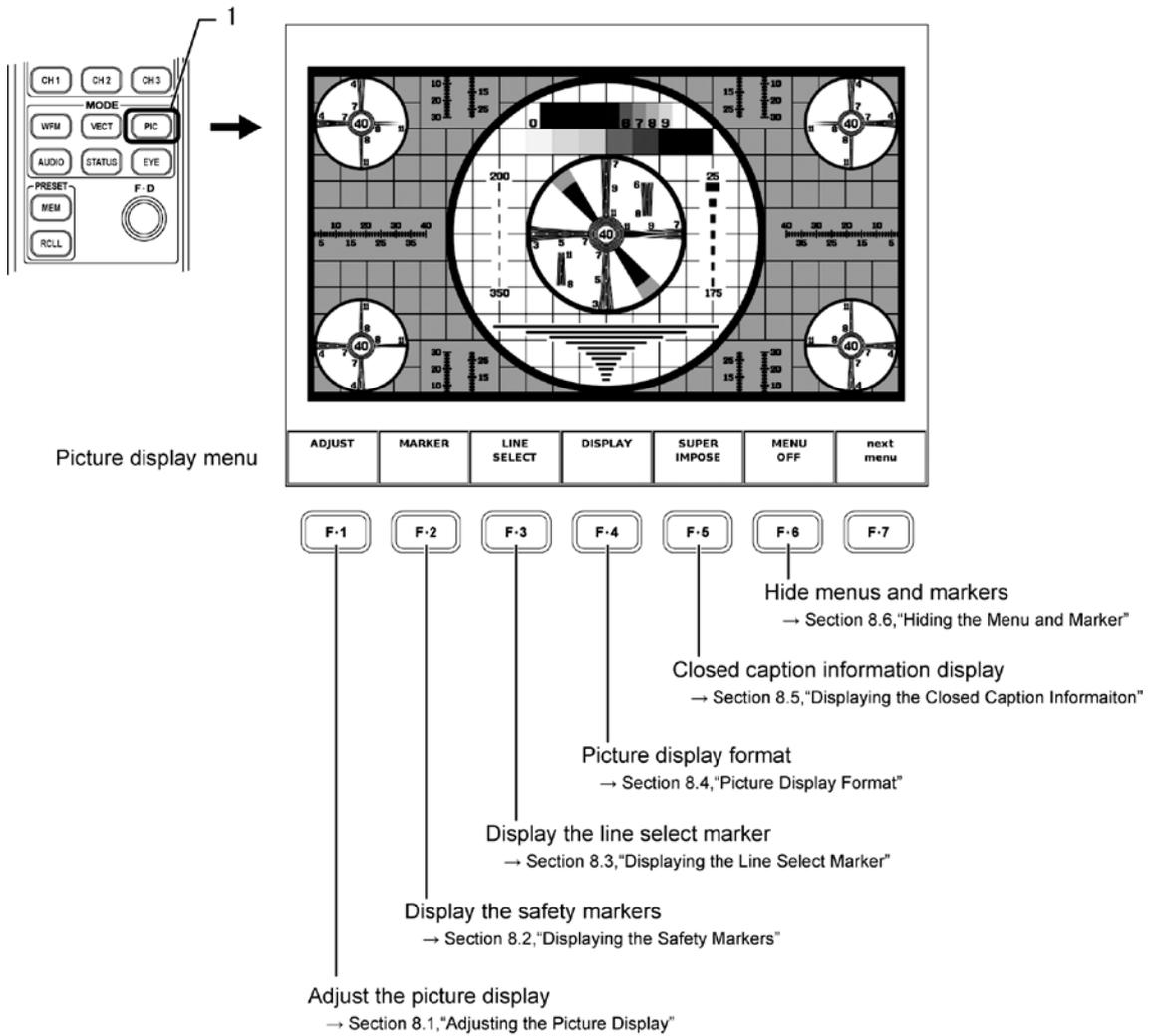
FLAT: A flat filter is applied.

- Procedure

VECT → **F•7** FILTER : LOW PASS / FLAT

8. PICTURE DISPLAY

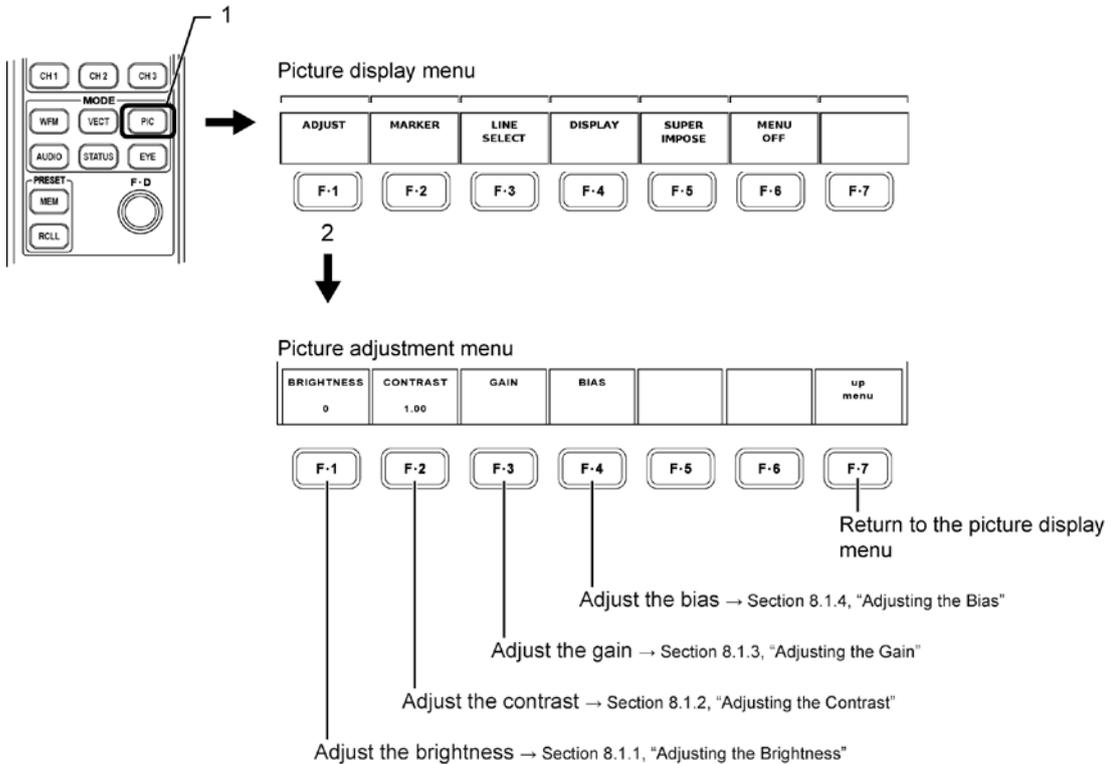
Press the PIC (picture display) key on the front panel to display the picture, picture display menu, and the like.



* The picture display may not display 2 pixels of data around the edges due to the specifications of the image processing.

8.1 Adjusting the Picture Display

The available adjustment functions on the picture display are brightness, contrast, RGB gain, and RGB bias. To perform these adjustments, display the picture adjustment menu by carrying out the procedure below.



8.1.1 Adjusting the Brightness

Carry out the procedure below to adjust the brightness of the picture display.
 Brightness adjustment range: -30 to 30 %

● **Procedure**

PIC → F-1 ADJUST → F-1 BRIGHTNESS : -30 to 0 to 30

After carrying out the procedure above, turn the function dial (F•D) to adjust the brightness. Press the function dial (F•D) to return to the default value (0).

8.1.2 Adjusting the Contrast

Carry out the procedure below to adjust the contrast of the picture display.
 Contrast adjustment range: $\times 0.70$ to $\times 1.30$

● **Procedure**

PIC → F•1 ADJUST → F•2 CONTRAST : 0.70 to 1.00 to 1.30

After carrying out the procedure above, turn the function dial (F•D) to adjust the contrast.
 Press the function dial (F•D) to return to the default value (1.00).

8.1.3 Adjusting the Gain

Carry out the procedure below to select the color to be adjusted. Then, adjust the gain of the picture display.
 Gain adjustment range of R, G, and B: $\times 0.70$ to $\times 1.30$

● **Procedure**

-
-
- PIC → F•1 ADJUST → F•3 GAIN → F•1 R GAIN : 0.70 to 1.00 to 1.30
 - PIC → F•1 ADJUST → F•3 GAIN → F•2 G GAIN : 0.70 to 1.00 to 1.30
 - PIC → F•1 ADJUST → F•3 GAIN → F•3 B GAIN : 0.70 to 1.00 to 1.30
-
-

After carrying out the procedure above, turn the function dial (F•D) to adjust the gain.
 Press the function dial (F•D) to return to the default value (1.00).

8.1.4 Adjusting the Bias

Carry out the procedure below to select the color to be adjusted. Then, adjust the bias of the picture display.
 Bias adjustment range of R, G, and B: -0.30 (-30 %) to 0.30 (30 %)

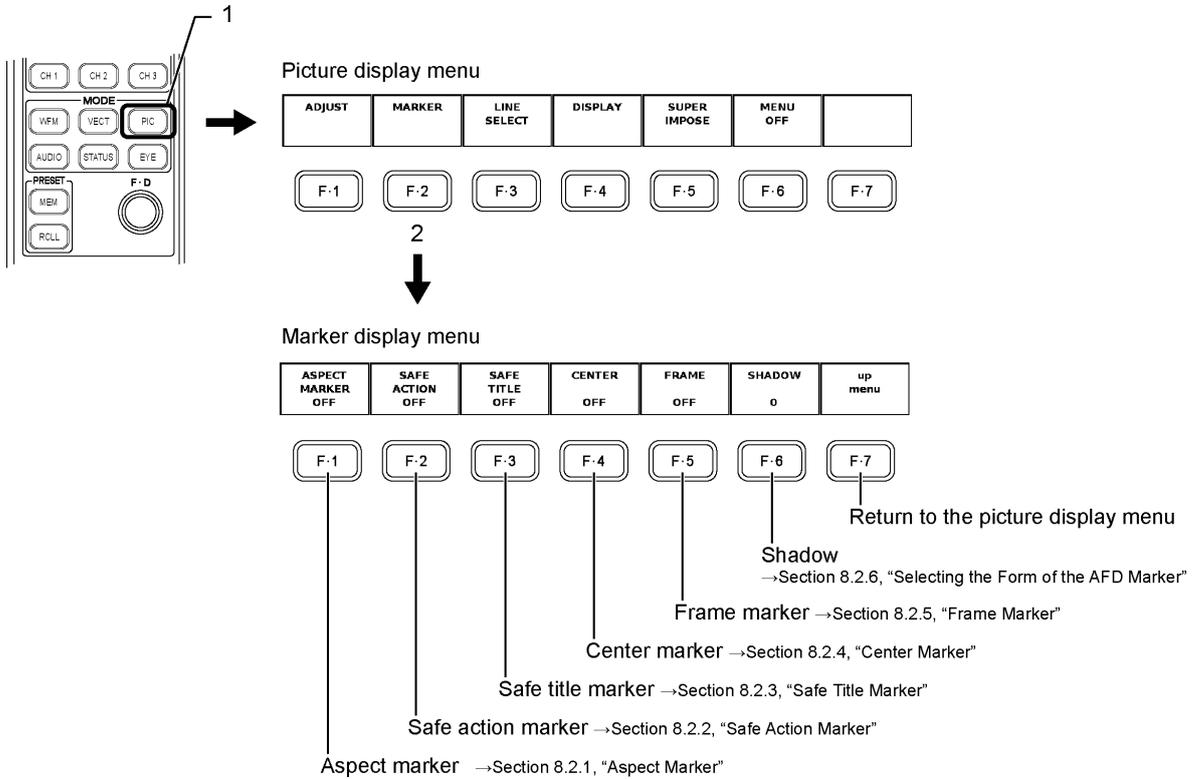
● **Procedure**

-
-
- PIC → F•1 ADJUST → F•4 BIAS → F•1 R BIAS : -0.30 to 0.00 to 0.30
 - PIC → F•1 ADJUST → F•4 BIAS → F•2 G BIAS : -0.30 to 0.00 to 0.30
 - PIC → F•1 ADJUST → F•4 BIAS → F•3 B BIAS : -0.30 to 0.00 to 0.30
-
-

After carrying out the procedure above, turn the function dial (F•D) to adjust the bias.
 Press the function dial (F•D) to return to the default value (0.00).

8.2 Displaying the Safety Markers

To display various markers such as the safety marker on the picture display, carry out the procedure below to display the marker display menu.



The safety marker is displayed if the picture size is set to FIT and the menu display OFF function is disabled.

8.2.1 Aspect Marker

Carry out the procedure below to display the aspect marker.

● **Procedure**

PIC → F•2 MARKER → F•1 ASPECT MARKER
 : OFF / 14:9 / 13:9 / 4:3 / 2.39:1 / AFD (HD-SDI)
 : OFF / 16:9 / 14:9 / 13:9 / AFD (SD-SDI)

If you use the following procedure to select AFD, the area around the active area that is written in the AFD (Active Format Description) is indicated with a shadow. Use SHADOW to select the darkness of the shadow.

- If there are no AFD packets embedded in the input signal, the AFD marker is not displayed.
- You cannot display the safe action marker, safe title marker, or center marker at the same time that the AFD marker is displayed.
- This setting is not available when the link format is set to dual (you cannot select AFD).

8.2.2 Safe Action Marker

When ASPECT MARKER is set to an option other than AFD, you can display a safe action marker in the picture display active area.

When an aspect marker is displayed, the safe action marker is displayed relative to the aspect marker.

To display the safe action marker, follow the procedure below.

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.

● **Procedure**

PIC → F•2 MARKER → F•2 SAFE ACTION : ARIB / SMPTE / OFF

8.2.3 Safe Title Marker

When ASPECT MARKER is set to an option other than AFD, you can display a safe title marker in the picture display active area.

When an aspect marker is displayed, the safe title marker is displayed relative to the aspect marker.

To display the safe title marker, follow the procedure below.

- 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.

- **Procedure**

PIC → F•2 MARKER → F•3 SAFE TITLE : ARIB / SMPTE / OFF

8.2.4 Center Marker

A center marker can be displayed at the center of the picture display.

Carry out the procedure below to turn ON/OFF the center marker.

- **Procedure**

PIC → F•2 MARKER → F•4 CENTER : ON / OFF

8.2.5 Frame Marker

You can display a marker around the outer edge of the picture.

Carry out the procedure below to turn ON/OFF the frame marker.

- **Procedure**

PIC → F•2 MARKER → F•5 FRAME : ON / OFF

8.2.6 Selecting the Form of the AFD Marker

When ASPECT MARKER is set to AFD, you can 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.

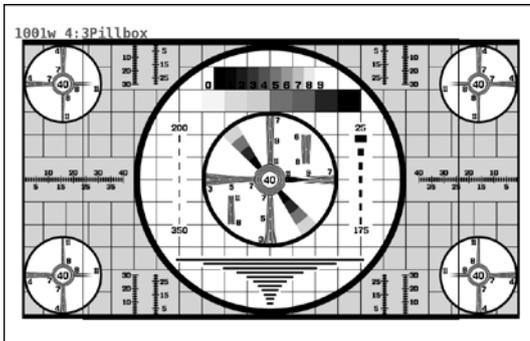
Adjustment range: 0 to 100

● Procedure

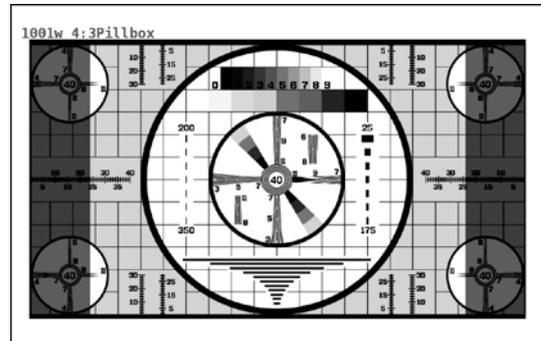
PIC → F•2 MARKER → F•6 SHADOW : 0 to 100

After carrying out the procedure above, turn the function dial (F•D). Press the function dial (F•D) to return to the default value (0).

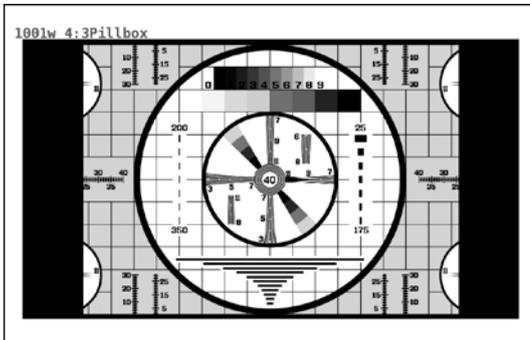
SHADOW = 0



SHADOW = 50



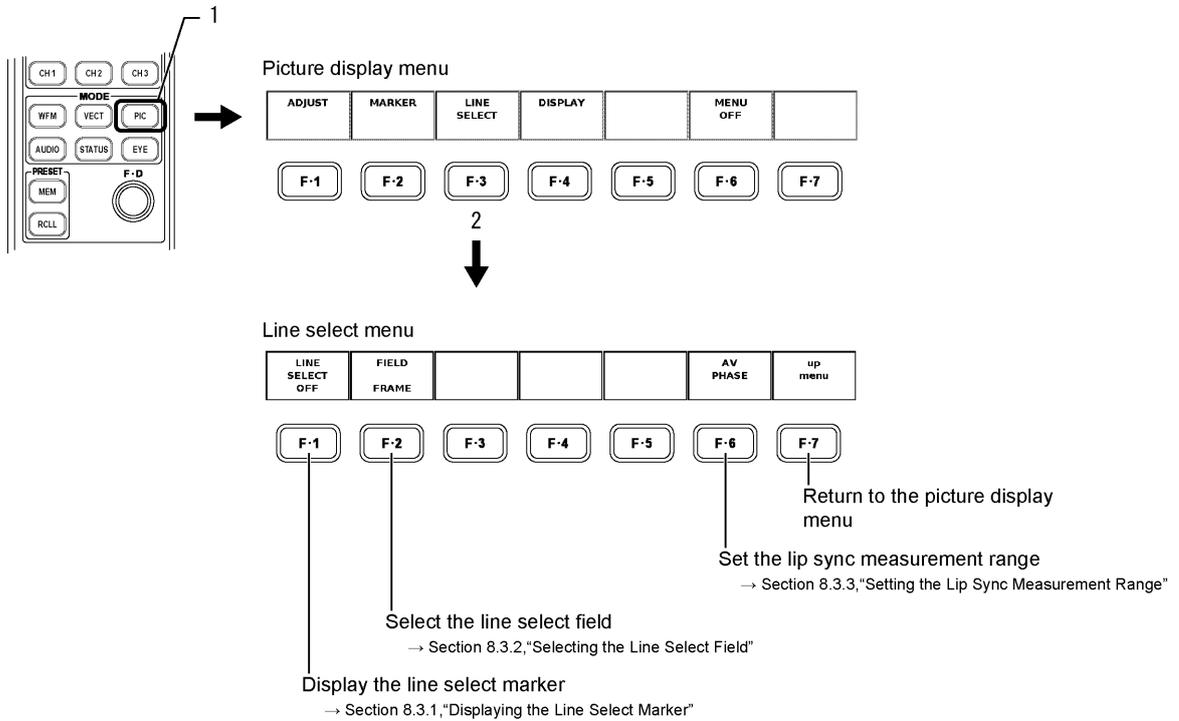
SHADOW = 100



8.3 Displaying the Line Select Marker

You can check the position of a particular line by using the line select function of the picture waveform.

Carry out the procedure below to display the line select menu and specify the settings.



The line select marker is displayed if the picture size is set to FIT and the menu display OFF function is disabled.

[See Also] Selecting the Picture Size → Section 8.4.1, "Selecting the Picture Size"
 Turning OFF the menu display → Section 8.6, "Hiding the Menu and Marker"

8.3.1 Displaying the Line Select Marker

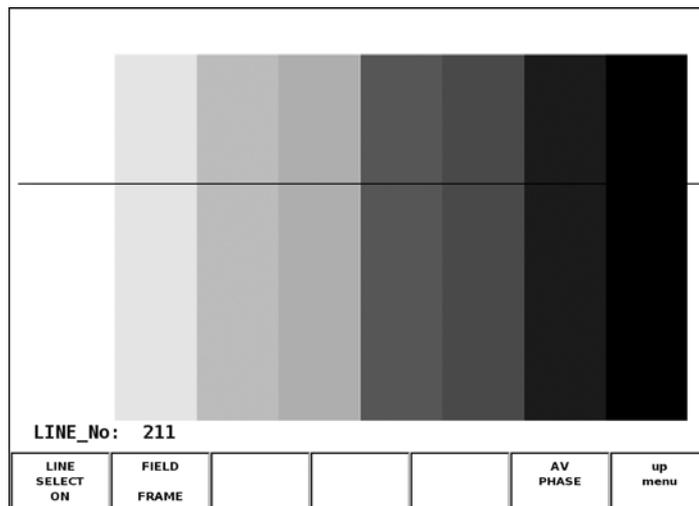
The line select function allows the selected line to be highlighted on the picture display. The selectable range of line select is within the active picture area; Line select is not displayed during the blanking period.

Carry out the procedure below to select the line.

● **Procedure**

PIC → F•3 LINE SELECT → F•1 LINE SELECT : ON / OFF

Carry out the procedure above to select ON. Then, turn the function dial (F•D) to select the line.



8.3.2 Selecting the Line Select Field

Carry out the procedure below to select the line selection range on the picture display from the following list.

- FIELD1: Limit the line select range to FIELD1 of the reference signal.
- FIELD2: Limit the line select range to FIELD2 of the reference signal.
- FRAME: Place no limits to the line select range (only the video period).

You cannot select the field if the video signal format is progressive.

- * If interlace format is displayed as a picture, each field is converted into the XGA rate to be displayed. Since the interlace display is not actually used, the marker position does not change even if you change the field with the line select function.

● **Procedure**

PIC → F•3 LINE SELECT → F•2 FIELD : FIELD1 / FIELD2 / FRAME

8.3.3 Setting the Lip Sync Measurement Range

To set the lip sync measurement range, follow the procedure below. Markers are displayed at the specified lines.

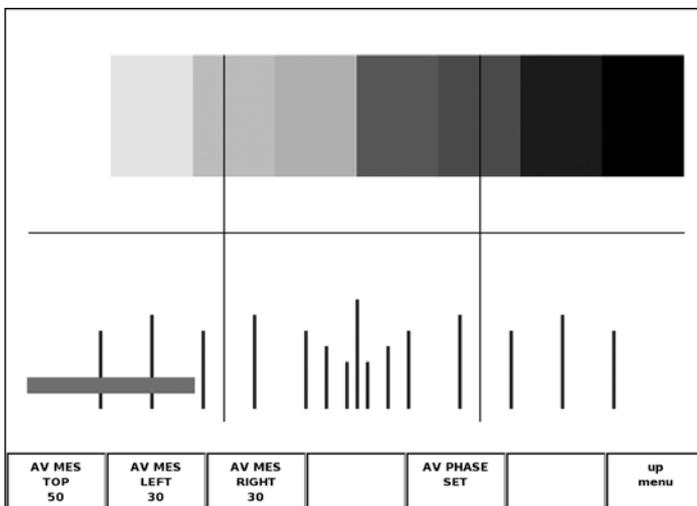
You can also set these on the AV PHASE SETUP page, but here you can set them while viewing the picture. For details on the settings, see section 5.7, "AV PHASE SETUP."

This menu is not displayed when the LV 58SER40(A) is not installed or when the link format is set to dual.

● Procedure

PIC → F.3 LINE SELECT → F.6 AV PHASE → F.1 AV MES TOP: 0 to 50 to 100
 → F.2 AV MES LEFT: 0 to 99
 → F.3 AV MES RIGHT: 0 to 99

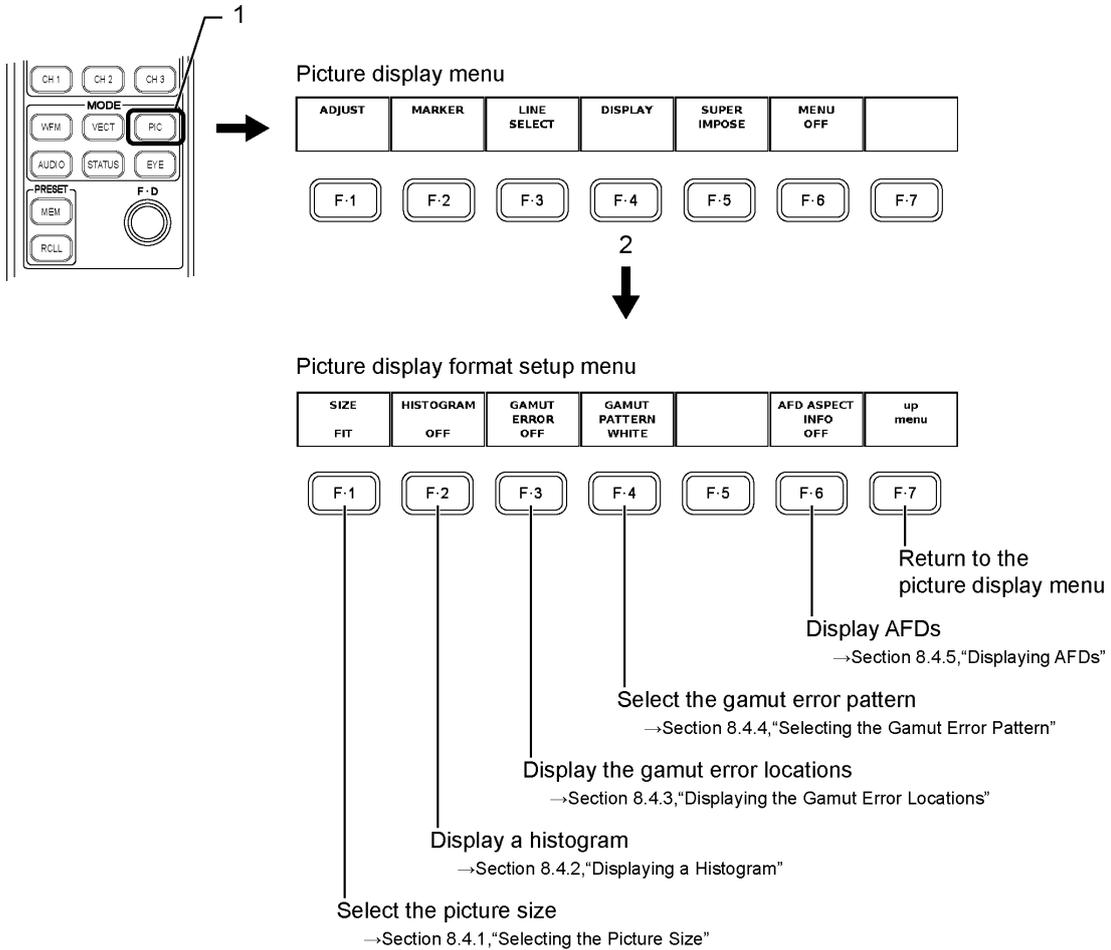
Select F.1 to F.3 by following the procedure above, and then set the lines using the function dial (F•D). Press F.5 AV PHASE SET to confirm the specified lines.



8.4 Picture Display Format

The picture display on this unit allows you to change the display size and overlay gamut errors on the picture. It can also be used to display AFDs.

To set these display formats, display the picture display format setup menu by carrying out the procedure below.



F•3 GAMUT ERROR is displayed if the gamut error function is turned ON in the system setup of this unit.

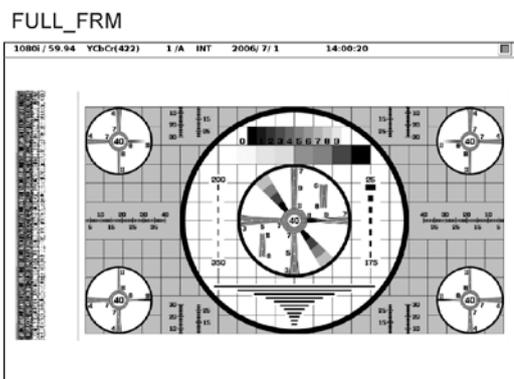
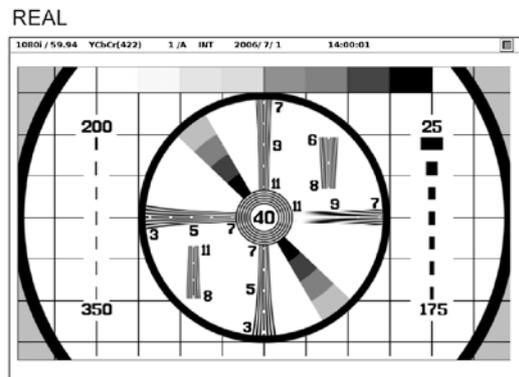
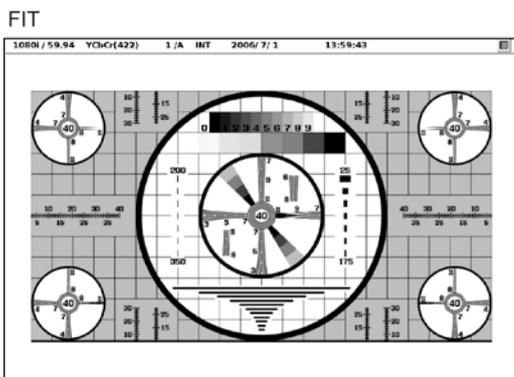
F•4 GAMUT PATTERN is displayed if the gamut error function is turned ON in the system setup of this unit.

[See Also] Setting the gamut error detection → Section 5.4, "ERROR SETUP3"

8.4.1 Selecting the Picture Size

There are three picture sizes that this unit can display. By default, the picture is displayed in a size optimized (FIT) for the screen. The unit can also display each pixel of the video signal as a pixel on the LCD or a single frame including the blanking period of the video signal. To select the video size, display the picture display format menu by carrying out the procedure below.

- FIT: Optimize the picture size to the screen.
A simple filter is applied to expand or reduce the size.
 - REAL: Display each pixel of the video signal as a pixel on the LCD.
No filtering is applied.
 - FULL_FRM: Display a frame including the blanking period
A simple filter is applied to expand or reduce the size.
- * The picture runs off the LCD if HDTV is displayed using REAL
If this happens, you can scroll the picture using the HPOS and VPOS controls.
 - * REAL mode cannot be selected when any of the following condition is satisfied
 - Link format is dual link.
 - Color system is YCbCr (4:2:2).
 - Quantization bit is 10 bits
 - Scan mode is 1080p.
 - * The picture display may not display 2 pixels of data around the edges due to the specifications of the image processing.



● Procedure

PIC → F•4 DISPLAY → F•1 SIZE : FIT / REAL / FULL_FRM

8.4.2 Displaying a Histogram

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

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 : ON / OFF

ON



8.4.3 Displaying the Gamut Error Locations

You can view the locations where gamut errors and level errors (Ych only) are present on the picture display.

Select ON by carrying out the procedure below to view the gamut errors and level errors (Ych only) on the picture display. Select OFF to not display gamut error and level error (Ych only) locations.

This menu appears if this unit is detecting gamut errors or level errors. The menu does not appear if the unit is not detecting gamut errors and level errors.

- **Procedure**

If gamut errors are being detected

PIC → F.4 DISPLAY → F.3 GAMUT ERROR : ON / OFF

To detect gamut errors and level errors, turn ON the Gamut Error and Level Error settings according to the reference below.

[See also] Description of Gamut Errors → Section 5.4, "ERROR SETUP3"
 Description of Level Errors → Section 5.6, "ERROR SETUP5"

8.4.4 Selecting the Gamut Error Pattern

You can change the pattern used to indicate the locations where gamut errors are occurring on the picture display. To indicate the error locations, you can reduce the brightness of the picture display by half and fill the error locations with white or red. Alternatively, you can leave the brightness of the picture display as it is and indicate the error locations using a scrolling mesh pattern.

Carry out the procedure below to select the gamut error pattern.

- WHITE: Reduce the brightness of the picture display by half and fill the gamut error locations with white.
- RED: Reduce the brightness of the picture display by half and fill the gamut error locations with red.
- MESH: Do not change the brightness of the picture display and indicate the gamut error locations using a scrolling mesh pattern.

This menu appears if this unit is detecting gamut errors. The menu does not appear if the unit is not detecting gamut errors.

● Procedure

If gamut errors are being detected.

PIC → **F.4** DISPLAY → **F.4** GAMUT PATTERN : WHITE / RED / MESH

To detect gamut errors, turn ON the Gamut Error setting according to the reference below.

[See also] Description of Gamut Errors → Section 5.4, “ERROR SETUP3”

8.4.5 Displaying AFDs

If you select ON when you carry out the following procedure, abbreviations for SMPTE 2016-1-2007 standard AFD (Active Format Description) codes are displayed in the upper left of the display.

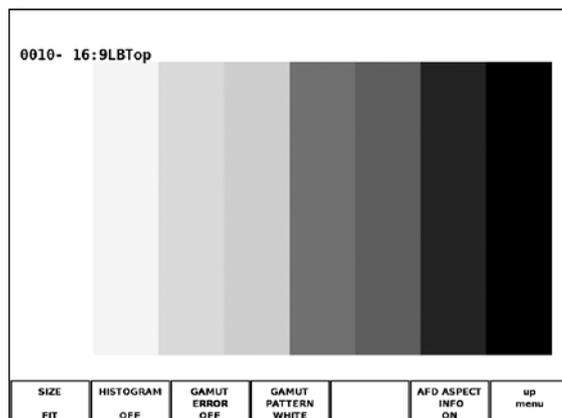
If there are no AFD packets embedded in the input signal, “-----” is displayed.

This feature is not supported for dual link. This menu does not appear.

● Procedure

PIC → **F.4** DISPLAY → **F.6** AFD ASPECT INFO : ON / OFF

ON



8. PICTURE DISPLAY

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

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, 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	1111wFul14:3Safe	Full frame 16:9 image, with alternative 4:3 center

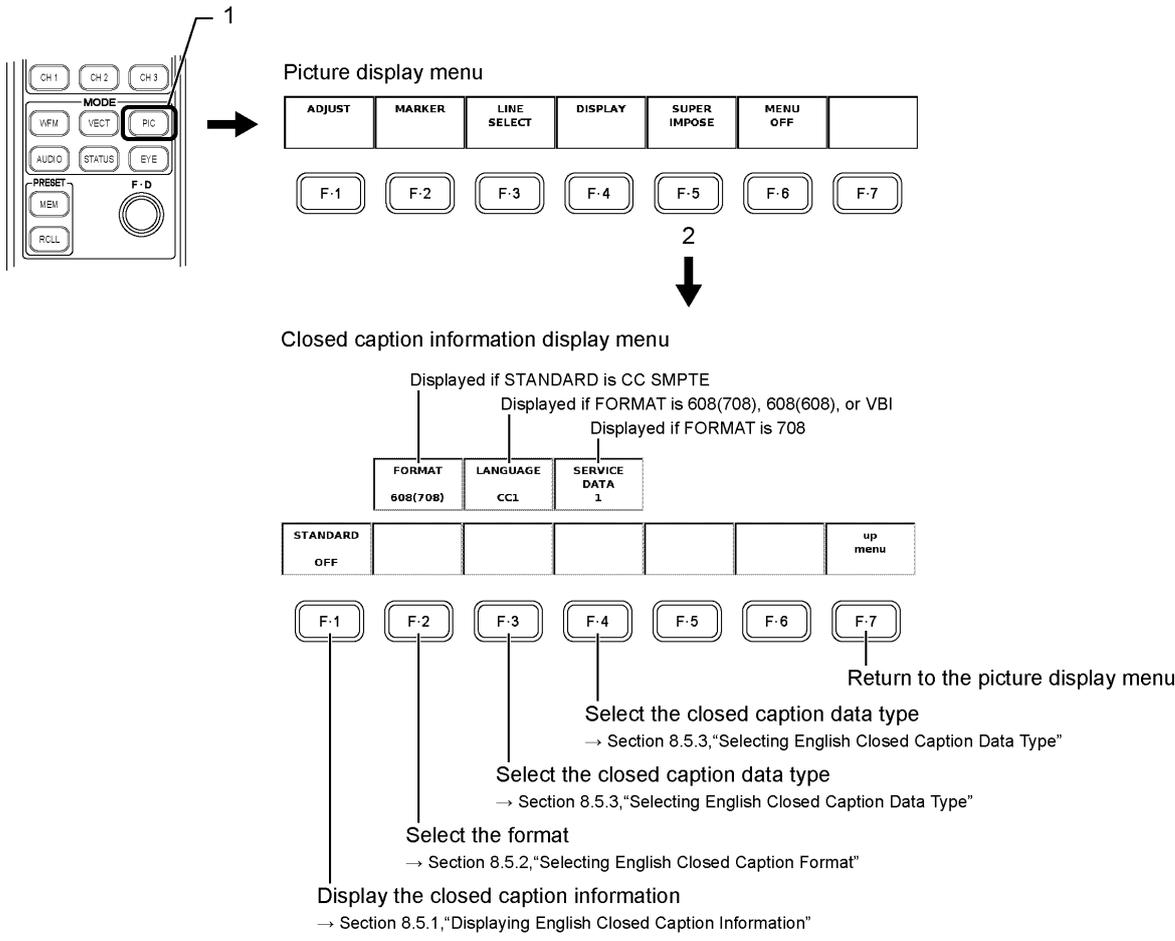
8.5 Displaying the Closed Caption Information

To display the closed caption information on the picture display, display the closed caption information display menu by carrying out the procedure below.

There are two separate closed caption display features, English and Japanese.

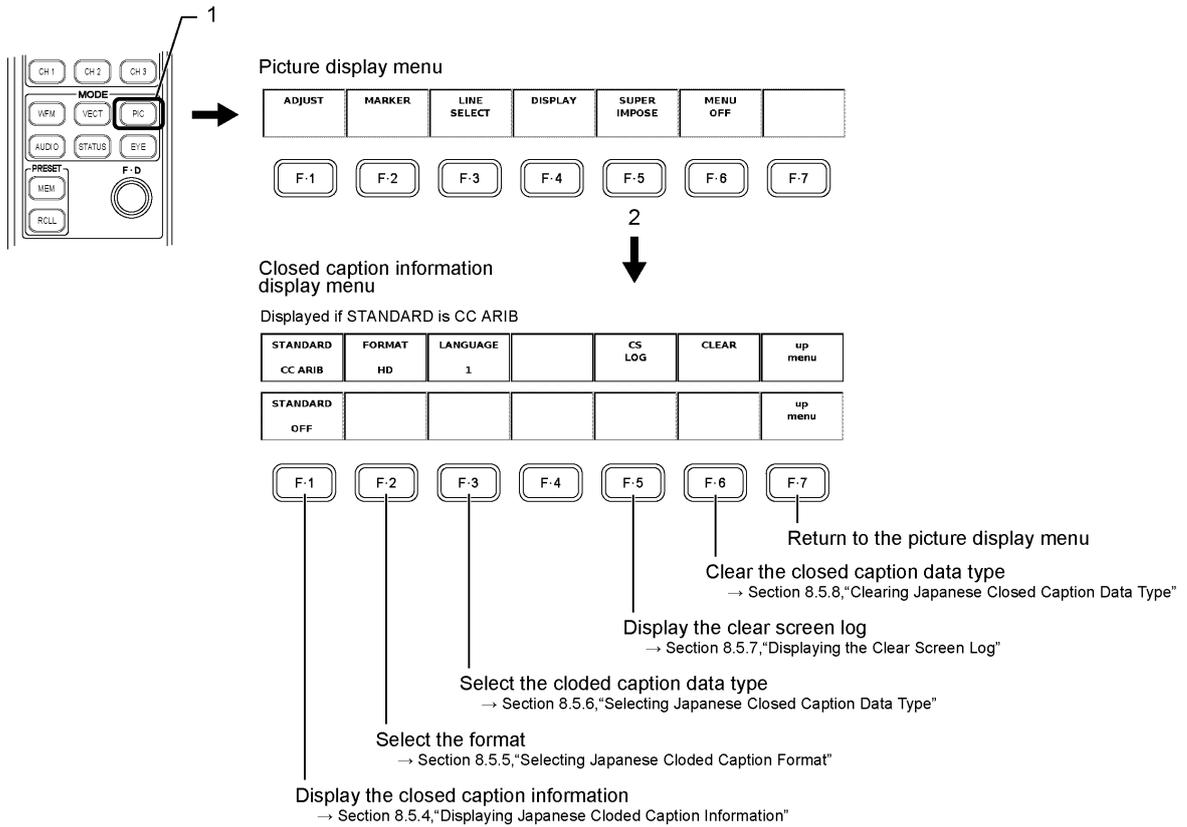
- * Closed captions will not be displayed when the SUPER IMPOSE submenu is closed.
- * The line select marker and safety marker are not displayed when the SUPER IMPOSE menu is open.
- * This setting is not available when the LV 5800(A) is in dual link mode. The SUPER IMPOSE menu does not appear.
- * In the multi display, you cannot display closed-caption information in multiple areas.

● Displaying English closed caption



8. PICTURE DISPLAY

• Displaying Japanese closed caption



8.5.1 Displaying English Closed Caption Information

You can display SMPTE closed caption information on the picture display by carrying out the procedure below to select "CC SMPTE". Does not display if "OFF" is selected.

• Procedure

PIC → **F-5** SUPER IMPOSE → **F-1** STANDARD : OFF / CC SMPTE / CC ARIB

8.5.2 Selecting English Closed Caption Format

Carry out the procedure below to select SMPTE closed caption information format from the following 4 types.

- 608(708): Displays the CEA/EIA-608-B closed caption data that is embedded in the CDP packet as defined EIA-708-B.
- 608(608): Displays the CEA/EIA-608-B closed caption data.
- VBI: Displays the CEA/EIA-608-B closed caption data that is embedded in the vertical blanking period.
- 708: Displays the EIA-708 closed caption data that is embedded in the CDP packet as defined EIA-708-B.

This menu is displayed when STANDARD is CC SMPTE.

● Procedure

If **F.1** STANDARD is set to CC SMPTE

PIC → **F.5** SUPER IMPOSE → **F.2** FORMAT : 608(708) / 608(608) / VBI / 708

8.5.3 Selecting English Closed Caption Data Type

Carry out the procedure below to select the closed caption data type.

The closed caption data type that can be selected varies on the format.

“LANGUAGE” is displayed when “FORMAT” is “608(708)”, “608(608)” or “VBI”, and “SERVICE DATA” is displayed at the time of “708”.

● Procedure

- If **F.2** FORMAT is set to 608(708)、608(608)、VBI

PIC → **F.5** SUPER IMPOSE → **F.3** LANGUAGE : CC1 / CC2 / CC3 / CC4 / TEXT1 / TEXT2 / TEXT3 / TEXT4

- If **F.2** FORMAT is set to 708

PIC → **F.5** SUPER IMPOSE → **F.4** SERVICE DATA : 1 to 63

8.5.4 Displaying Japanese Closed Caption Information

If you select CC ARIB using the following procedure, ARIB Japanese closed caption will appear on the picture display. The information will not appear if you select OFF.

On the Japanese closed caption display, if a clear screen command is received, “CS” is displayed in cyan for approximately 0.5 seconds in the upper right of the screen.

● Procedure

PIC → **F.5** SUPER IMPOSE → **F.1** STANDARD : OFF / CC SMPTE / CC ARIB

8.5.5 Selecting the Japanese Closed Caption Format

Using the procedure described below, you can select one of the following four ARIB Japanese closed caption data formats. is attached to the closed caption format name at the upper right of the screen, and the Japanese closed caption in which the selected one of four ARIB formats is embedded is displayed. Also, when the packet of each closed caption format to be embedded is received, its format name is displayed in green, and when not receiving the packet, it is displayed in white.

HD:	Display HD closed caption data.
SD:	Display SD closed caption data.
ANALOG:	Display analog closed caption data.
CELLULAR:	Display mobile phone closed caption data.

This menu appears when STANDARD is CC ARIB.

- **Procedure**

When **F•1** STANDARD is CC ARIB

PIC → **F•5** SUPER IMPOSE → **F•2** FORMAT : **HD** / SD / ANALOG / CELLULAR

8.5.6 Selecting the Japanese closed caption Data

You can choose the type of closed caption data using the procedure described below.

1: Language 1

2: Language 2

This menu appears when STANDARD is CC ARIB.

- **Procedure**

PIC → **F•5** SUPER IMPOSE → **F•3** LANGUAGE : **1** / 2

8.5.7 Displaying the Clear Screen Log

You can detect the clear screen commands that are embedded in the broadcasts of programs with closed captions and display a log of these commands. In addition, using specified timecodes, you can check whether closed captions in TV commercial materials are displayed during the closed caption prohibited time and also perform simultaneous loudness measurement. (To perform simultaneous loudness measurement, you need an LV 58SER40A.)

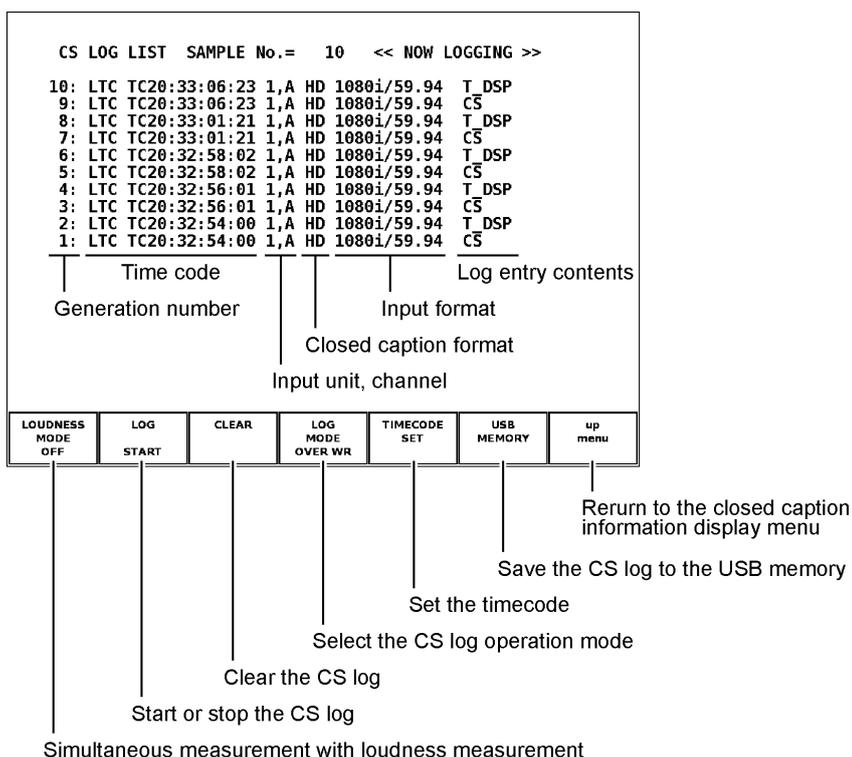
Carry out the procedure below to display the clear screen command log.

This menu appears when STANDARD is CC ARIB.

- **Procedure**

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

8. PICTURE DISPLAY



- * Even if there are multiple LV 58SER01(A) units installed in the instrument, there is only one log file.
- * The clear screen log can be recorded when the Japanese closed caption screen or the clear screen 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 clear screen log. On the clear screen log screen, press **[F•2]** LOG(START/STOP) or **[F•3]** CLEAR. On the Japanese closed caption screen, press **[F•6]** CLEAR.
- * The clear screen 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.

General Display Explanation

• Generation Number

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.

• Time Code

In the clear screen log, entries are recorded using the time code specified in GENERAL SETUP of the system setup menu. Set the time code to LTC or VITC. D-VITC is not supported.

[See also] Section 5.1, "GENERAL SETUP"

• Log Entry Contents

The meanings of the displayed log contents are shown below.

CS: Detection of a clear screen command
 T_DSP: Detection of closed caption display

Simultaneous Measurement with Loudness Measurement

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

Even if you select ON, if the Trigger setting on the loudness screen is changed, simultaneous measurement will be turned off.

ON: Closed caption checking and loudness measurement are performed simultaneously.

OFF: Only closed caption checking is performed.

• Procedure

PIC → **F•5** SUPER IMPOSE → **F•5** CS LOG → **F•1** LOUDNESS MODE : ON / OFF

Starting or Stopping the Clear Screen Log

Carry out the procedure below to start or stop the clear screen log.

• Procedure

PIC → **F•5** SUPER IMPOSE → **F•5** CS LOG → **F•2** LOG : START / STOP

Clearing the Clear Screen Log

Carry out the procedure below to clear the clear screen log.

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)

Log Operation Mode

The clear screen 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.

OVER WR: Discard the old log and overwrite.

STOP: Not record logs that occur after the 5,000th item.

• Procedure

PIC → **F•5** SUPER IMPOSE → **F•5** CS LOG → **F•4** LOG MODE : OVER WR / STOP

Configuring the Closed Caption Checking Function

Carry out the procedure below to check whether a closed caption is displayed during the closed caption prohibited time.

OFF: Closed caption checking is disabled (log will be recorded).

Timecode: Closed caption checking is enabled.

- **Procedure**

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

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. Under 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.

TIMECODE SETTING	
Trigger	<input type="checkbox"/> OFF <input checked="" type="checkbox"/> Timecode
Start Time	<input type="text" value="0"/> : <input type="text" value="0"/> : <input type="text" value="0"/> : <input type="text" value="0"/>
End Time	<input type="text" value="0"/> : <input type="text" value="0"/> : <input type="text" value="5"/> : <input type="text" value="0"/>
Non Caption Time	
Front	<input type="text" value="1.0"/> s
Rear	<input type="text" value="1.0"/> s

Saving to USB Memory

You can save the clear screen log to USB memory. The procedure is indicated below.

1. **Connect a USB memory device to the USB connector on the front panel.**
2. **Carry out the procedure below to display the USB memory save menu.**

- **Procedure**

PIC → **F•5** SUPER IMPOSE → **F•5** CS LOG → **F•6** USB MEMORY

3. **Carry out the procedure below to set the file name.**

- **Procedure**

PIC → **F•5** SUPER IMPOSE → **F•5** CS LOG → **F•6** USB MEMORY → **F•1** NAME INPUT

Use the **F•1** to **F•7** keys and the function dial (F•D) to set the file name on the file name setup screen that appears when you carry out the procedure above.

[See also] Entering the file name → Section 9.4.4, "Saving to USB Memory"

4. **Save the clear screen log to the USB memory.**

After assigning a clear screen log file name, quit the file name entry using **F•7** up menu. Press **F•2** STORE in the USB memory save menu to save a clear screen log to the USB memory.

If you press **F•2** STORE and a text file with the same file name already exists in the USB memory **F•1** OVER WR YES and **F•3** OVER WR NO appear.

Press the **F•1** key to overwrite the file. Press the **F•3** key to not save the file and return to the USB memory save menu.

If the saving of the clear screen log is completed, a list of files in the USB memory is displayed. The file list displays clear screen log and event log text files.

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

```

├─ USB memory
  └─ LOG
     └─ *.TXT ..... Clear screen 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 ..... Clear screen log file (with check result)
     ├── LO_*.TXT ..... Loudness setup file (with check result)
     └─ LO_*.CSV ..... Loudness log file
  
```

Deleting a Clear Screen Log File

Carry out the procedure below to delete a clear screen log file.

• Procedure

PIC → F.5 SUPER IMPOSE → F.5 CS LOG → F.6 USB MEMORY → Select the file to be deleted using the function dial (F•D) → F.4 FILE DELETE

Press F.6 USB MEMORY to display a list of clear screen log files. Turn the function dial (F•D) to select the file to be deleted.

Pressing F.4 FILE DELETE causes F.1 DELETE YES and F.3 DELETE NO to be displayed.

Press F.1 DELETE YES to delete the selected clear screen file. Press F.3 DELETE NO to not delete the clear screen log file and return to the USB memory save menu.

Auto Generation of File Names

Select ON by carrying out the procedure below to automatically add a 2-digit number to the end of the specified file name. The number that is automatically added is reset to 00 when the power is turned ON.

• Procedure

PIC → F.5 SUPER IMPOSE → F.5 CS LOG → F.6 USB MEMORY → F.5 FILENAME
AUTO INC : ON / OFF

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 58SER01(A) 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 clear screen log screen or Japanese closed caption screen.

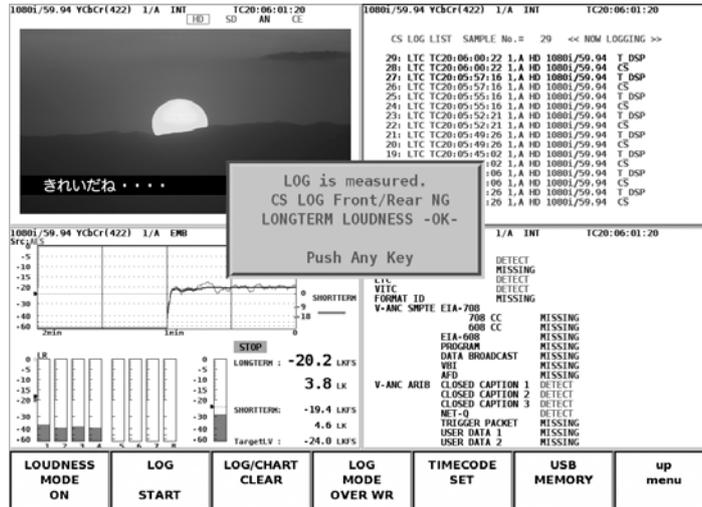
8. Start the TV commercial material.

Closed caption checking and loudness measurement will start at the specified time.

On the clear screen 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.



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

The clear screen log file, loudness setup file, and loudness log file are saved simultaneously.

8.5.8 Clearing the Japanese Closed Caption Data

If you press CLEAR using the following procedure, displayed Japanese closed caption can be cleared. This menu is displayed when STANDARD is CC ARIB.

• Procedure

PIC → **F•5** SUPER IMPOSE → **F•6** CLEAR

8.6 Hiding the Menu and Marker

You can hide the function menu, line select marker, and safety marker by pressing MENU OFF according to the procedure below.

Pressing any key in this condition causes the function menu to reappear.

This menu is displayed if 1-screen display is enabled.

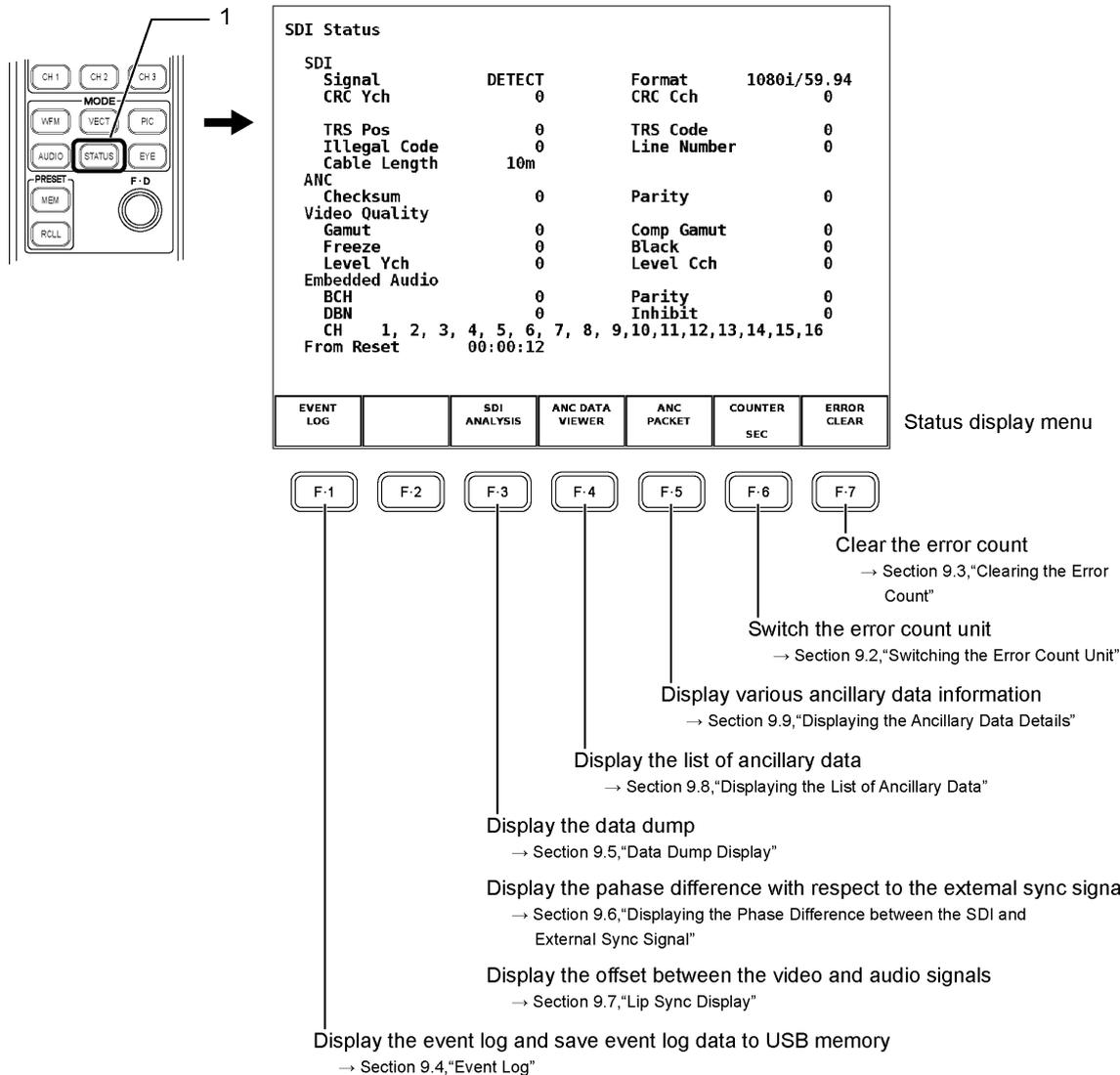
• Procedure

If 1-screen display is enabled.

PIC → **F•6** MENU OFF

9. STATUS DISPLAY

Press the STATUS key to display the status display screen that allows you to view various parameters of the SDI signal and the status display menu.



The status display screen displays the individual error detection, equivalent cable length meter, embedded audio channels, etc. Error detection is enabled after the video format of the received SDI signal is determined.

Note that when the video format is switched, the signal is distorted and errors may be displayed.

9.1 Status Display Screen

This section explains the items displayed on the status display screen. You can display the status display screen by pressing the STATUS key.

9.1.1 Description of the Status Display

A summary of the items displayed on the status display screen is given below.

Status Name	Description
Signal	Detects the presence or absence of SDI signals.
Format	Auto detection items of video signal format.
CRC Ych	Detects transmission errors in the Y video signal (displayed only for HDTV).
CRC Cch	Detects transmission errors in the CB, CR video signal (displayed only for HDTV).
EDH	Detects transmission errors in the SD-SDI signal (displayed only for SDTV).
A/B Delay	Detects phase difference error between the link A and the B. (displayed only for dual link)
TRS Pos	Detects errors in the TRS header word position.
TRS Code	Detects parity errors in TRS protection bit.
Illegal Code	Detects data in the range of 000h to 003h and 3FC to 3FF outside the TRS or ADF header.
Line Number	Detects errors in the line number code (displayed only for HDTV).
Cable Length	Converts the SDI signal level into a coaxial cable length and displays the result. (displayed the Cable Length A or Cable Length B for dual link)
Checksum	Detects checksum errors in the ancillary data.
Parity	Detects parity errors in the ancillary data
Gamut	Detects gamut errors.
Comp Gamut	Detects level errors when the signal is converted into composite signal.
Freeze	Detects freezes in the video data. (not displayed for dual link)
Black	Detects errors if the Y video signal level is less than or equal to a specified value. (not displayed for dual link)
Level Ych	Detects Y video level errors. (not displayed for dual link)
Level Cch	Detects CB, CR video level errors. (not displayed for dual link)
BCH	Detects transmission errors in the embedded audio (displayed only for HDTV).
Parity	Detects parity errors in the embedded audio (displayed only for HDTV).
DBN	Detects discontinuities in the embedded audio packets.
Inhibit	Detects embedding of audio in the embedded prohibition line.
CH	Detects embedded audio channels.
From Reset	Elapsed time after the error display was cleared.

9.1.2 Details of the Status Display

- **Signal: SDI Signal Detection**

SIGNAL indicates whether the SDI signal exists at the input connector.

If the amplitude of the SDI signal is small or there is large amounts of jitter, NO SIGNAL may be indicated even when the signal is being applied.

Can carry out the DETECT function only when link A and link B are both detected during dual link.

Displayed Information:

DETECT:	Detected the presence of SDI signals.
NO SIGNAL:	Unable to detect SDI signals.

- **Format: Video Signal Format Detection**

Displays the format of SDI signals that the LV58SER01A can monitor.

Though the frame/field frequency is detected automatically during dual link, the item selected in the dual link format is displayed as the scan mode.

Displayed Information:

1080i/59.94:	SDI signal format (for HD-SDI 1080i/59.94)
----- :	SDI format that cannot be monitored using this unit.

[See also] Setting the scan mode → Section 5.1, “GENERAL SETUP”

- **CRC Ych, CRC Cch: CRC Error Detection**

CRC Ych and CRC Cch indicate whether the CRC multiplexed in the input HD-SDI signal matches the CRC result that is calculated internally by this unit for the luminance signal and the chroma difference signal separately.

CRC Y ch:	Error detection of the luminance signal
CRC C ch:	Error detection of the chroma difference signal

Because the CRC is multiplexed only in HD-SDI signals, it is not indicated for SD-SDI signals. In addition, if there is the error in either link A or B during dual link, the error detection is carried out.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the CRC error detection → Section 5.2, “ERROR SETUP1”

- **EDH: EDH Error Detection**

EDH indicates errors detected in EDH packets that are multiplexed in the input SD-SDI signal.

Because the EDH is multiplexed only in SD-SDI signals, it is not indicated for HD-SDI signal input.

The EDH packet includes ancillary data error flag, active picture error flag, full field error flag, CRC data of the full field data, and CRC data of the active field.

This unit displays an error if any of the above error flags are set or if the CRC calculated from the video data does not match the CRC data in the EDH packet.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.
- Displays “----” (yellow) if EDH packets are not embedded in the video data even if the error detection setting is ON.

[See also] Setting the EDH error detection → Section 5.2, “ERROR SETUP1”

● **A/B Delay: Detection of the phase difference error between link A and B during dual link.**

A/B Delay displays the detection of the phase difference error measured from the phase difference between links A/B of SDI signals (dual link) input to each Ach/Bch.

It will be made the error if phase difference exceeds 100 clocks.

Phase difference measurement includes the error of ± 1 clock.

Displayed Information:

- Displays the error detection count as a count value or error rate.

● **TRS Pos: TRS POS Error Detection**

TRS POS displays TRS (Timing Reference Signal) errors in the input SDI signal.

It detects errors if the position of the header word (3FFh, 000h, 000h) in the EAV (End of Active Video) and SAV (Start of Active Video) within the SDI signal is incorrect or if the F, V, and H TRS protection bits do not comply with the video standards (such as the blanking interval not matching). In addition, if there is the error in either link A or B during dual link, the error detection is carried out.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the TRS POS error detection → Section 5.2, “ERROR SETUP1”

● **TRS Code: TRS Code Error Detection**

Displays detected errors in the TRS (Timing Reference Signal) protection bits in the input SDI signal.

An error is detected if F, V, or H in the EAV (End of Active Video) and SAV (Start of Active Video) protection bits (XYZ) and the error correction flags P3, P2, P1, and P0 in the SDI signal do not comply with the video standard. In addition, if there is the error in either link A or B during dual link, the error detection is carried out.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Displays blank if the error detection is turned OFF.

[See also] Setting the TRS Code error detection → Section 5.2, “ERROR SETUP1”

● **Illegal code: Illegal Code Error Detection**

An error is indicated if the input SDI signal data is in the timing identification data (TRS) area or the area defined by the ancillary data flag (ADF).

In SDI signals, the 10 bit data from 000h to 003h and 3FCh to 3FFh is defined to be used by the timing identification code and ancillary data flag (ADF) and cannot be used as video signal data or ancillary data. An illegal code error occurs if data other than the timing identification signal or ancillary data flag exists in these areas. In addition, if there is the error in either link A or B during dual link, the error detection is carried out.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the illegal code error detection → Section 5.2, "ERROR SETUP1"

● **Line Number: Line Number Error Detection**

Indicates whether the line number multiplexed in the input HD-SDI signal and the line number counted within the unit match.

Because the line number is multiplexed only in HD-SDI signals, it is not indicated for the SD-SDI signal input. In addition, if there is the error in either link A or B during dual link, the error detection is carried out.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the line number error detection → Section 5.2, "ERROR SETUP1"

● **Cable Length: Equivalent Cable Length Meter**

Indicates the attenuation by converting the attenuation of the input SDI signal to an equivalent cable length by assuming the SDI signal intensity reference to be 800 mV.

For HD-SDI signals

The signal attenuation is converted to a length in terms of the LS-5CFB, 1694A, or L-7CHD cable.

Select the cable type on the ERROR SETUP1 page in the system setup menu.

During dual link, cable length of Link A is indicated on Cable Length A, and Link B is indicated on Cable Length B.

[See also] Setting the cable length error → Section 5.2, "ERROR SETUP1"

The display range is as follows:

LS-5CFB, 1694A: <5m, 5m, ···, 125m, >130m (The display resolution is 5 m.)

L-7CHD: <10m, 10m, ···, 200m, >200m (The display resolution is 10 m.)

For SD-SDI signals

The signal attenuation is converted to a length in terms of the LS-5C2V, 8281, or 1505A cable.

Select the cable type on the ERROR SETUP1 page in the system setup menu.

[See also] Set the cable length error → Section 5.2, "ERROR SETUP1"

The display range is as follows:

< 50 m, 50 , ..., 295 m, > 300 m (The display resolution is 5 m.)

● **Checksum: Checksum Error Detection**

Indicates error detection in the checksum that is included in the ancillary data of the applied SDI signal. In addition, if there is the error in either link A or B during dual link, the error detection is carried out.

Displayed Information:

- The checksum display shows the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Set the checksum error detection → Section 5.3, "ERROR SETUP2"

● **(ANC) Parity: Ancillary Parity Bit Error Detection**

Indicates error detection in the parity bit that is included in the ancillary data header of the applied SDI signal. In addition, if there is the error in either link A or B during dual link, the error detection is carried out.

Displayed Information:

- The parity display shows the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the parity error detection → Section 5.3, "ERROR SETUP2"

● **Gamut: Gamut Error Detection**

Indicates whether a gamut error occurred.

You can set the upper and lower detection levels.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the Gamut Error Detection → Section 5.4, "ERROR SETUP3"

● **Comp Gamut: Composite Gamut Error Detection**

Indicates whether a level error occurred in the conversion into the composite signal.

Even if the individual Y, C_B, and C_R signals meet the prescribed levels, the signal may exceed the prescribed level when converted to a composite signal. Composite gamut error monitors the level using the signal converted to a composite signal.

You can set the upper and lower detection levels.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the Composite Gamut Error Detection → Section 5.4, "ERROR SETUP3"

● **Freeze: Freeze Error Detection**

Detects freezes in the video data and displays the errors.

Freezes in the video data are detected by performing signal processing on the video data to determine the check sum for single frames and comparing the checksum between frames.

You can set the area for detecting freezes and the consecutive occurrence range of freeze errors. Not displayed for dual link.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the Freeze error detection → Section 5.5, "ERROR SETUP4"

● **Black: Black Error Detection**

Detects an error if a given amount of Y video data less than or equal to the black level exists in a single frame.

You can set the black level and the percentage threshold of errors in the active picture area for activating the error. In addition, you can set the consecutive error occurrence range used to detect an error if such frames are detected consecutively.

Not displayed for dual link.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the black error detection → Section 5.5, "ERROR SETUP4"

● **Level Ych, Level Cch: Level Error Detection**

Detects whether the component video data is exceeding a specified level for the luminance signal and chroma signal, separately.

Level Ych: Error detection of the luminance signal.

Level Cch: Error detection of the chroma signal.

You can set the upper and lower limits for the level error detection values.

Not displayed for dual link.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the level error detection → Section 5.6, "ERROR SETUP5"

● **BCH: BCH Error Detection**

Indicates errors in the BCH code of the embedded audio in the SDI signal.

Because the BCH is multiplexed only in the embedded audio of HD-SDI signals, it is not indicated for SD-SDI signals. In addition, detected only error of link A during dual link.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the BCH error detection → Section 5.3, “ERROR SETUP2”

● **(Audio) Parity: Audio Parity Error Detection**

Indicates errors in the parity of the embedded audio data packet in the SDI signal. Only HD-SDI signals are supported. Detected only error of link A during dual link.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the parity error detection → Section 5.3, “ERROR SETUP2”

● **DBN: Audio DBN Error Detection**

Displays the continuity of embedded audio packets.

The embedded audio packets in the SDI signal contains a data block number word (DBN) that indicates the packet continuity. The number repeats in the range of 1 to 255. This function monitors whether the data block number word (DBN) is consecutive for each packet. Detected only error of link A during dual link.

Displayed Information:

- Displays the error detection count as a count value or error rate.
- Displays blank if the error detection is turned OFF.

[See also] Setting the DBN error detection → Section 5.3, “ERROR SETUP2”

● **Inhibit: Detection of Embedding to the Audio Embedded Prohibition Line**

Detects embedded audio packets multiplexed in the embedded prohibition line and displays an error. Detected only error of link A during dual link.

Displayed Information:

- The inhibit display shows the error detection count as a count value or error rate.
- Blank if the error detection is turned OFF.

[See also] Setting the inhibit line error detection → Section 5.3, “ERROR SETUP2”

● **CH: Embedded Audio Channel Detection**

Detects and displays embedded audio packet channels in the SDI signal.

If the audio control packet is embedded, the channel is detected from the ACT bit of the audio control packet. Otherwise, the channel is detected from the audio data packet. Detected only channel of link A during dual link.

● **From Reset: Elapsed Time Since Clearing the Error**

Displays the elapsed time since the error was cleared.

The built-in realtime clock is used to display the elapsed time.

9.2 Switching the Error Count Unit

Carry out the procedure below to switch the error count unit of the status display.

- **Procedure**

STATUS → **F•6** COUNTER : SEC / FIELD / %FIELD

SEC: The error count is updated in unit of seconds. Even if multiple field errors occur within a second, they are counted as one error.

FIELD: The error count is updated in unit of fields. The count value indicates the number of fields that contain errors.

%FIELD: The error count is displayed as a percentage. The error count indicates the percentage of fields that contain errors with respect to the total number of input fields since the start of the error count.

9.3 Clearing the Error Count

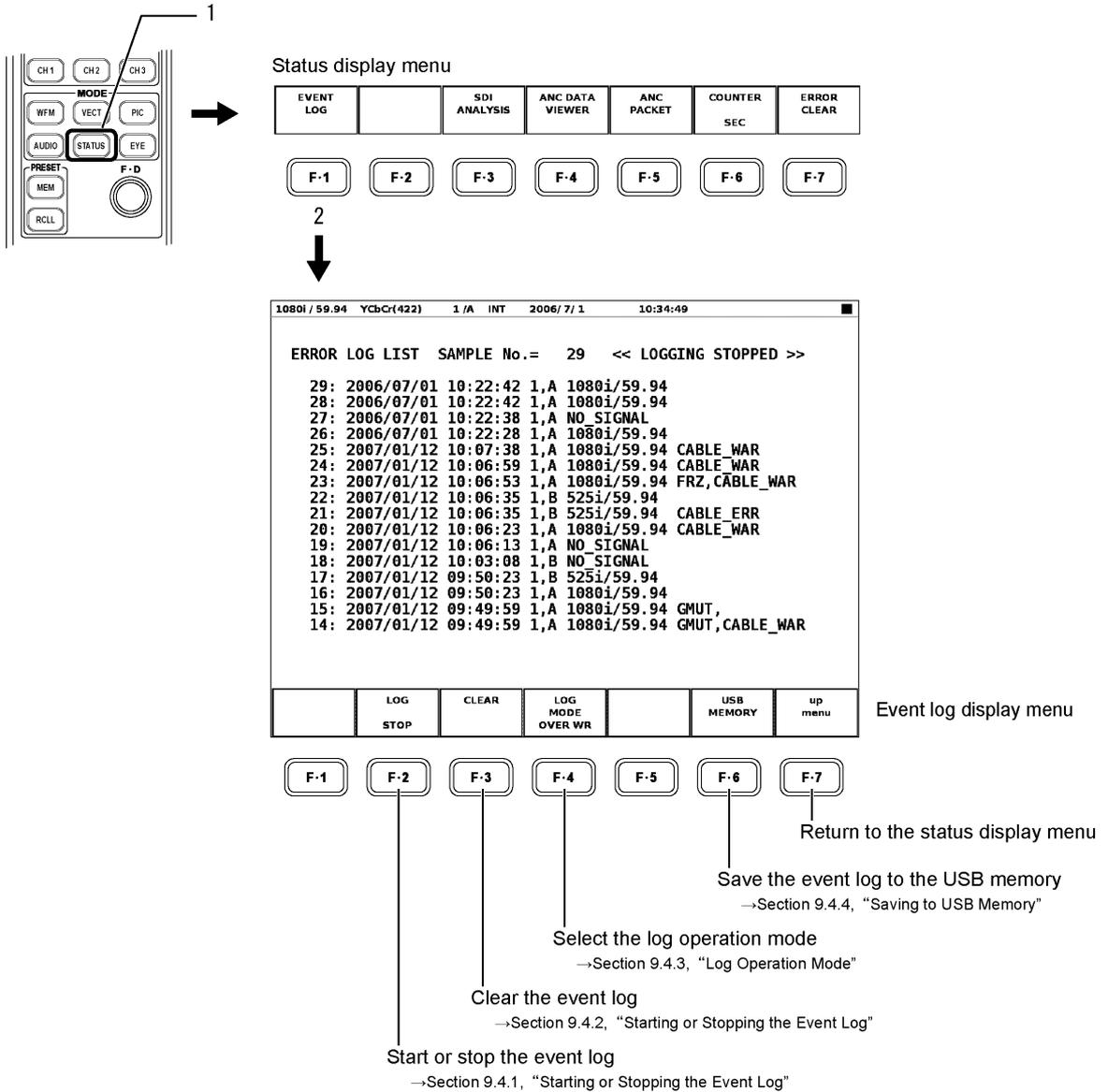
Carry out the procedure below to clear the error count of the status display and the From Reset value to zero.

- **Procedure**

STATUS → **F•7** ERROR CLEAR

9.4 Event Log

Carry out the procedure below to display the log of detected events.



* **F-6** USB MEMORY appears only if a USB memory device is connected to the USB connector on the front panel.

In the event log, the time of occurrence and recovery of events is recorded using the time code specified in GENERAL SETUP of the system setup menu.

[See also] Setting the time code → Section 5.1, "GENERAL SETUP"

Even if there are multiple LV 58SER01 or LV 58SER01A units installed in the instrument, there is only one log file.

● Event Log Display

The event 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 events in the log. Press the function dial (F•D) to display the latest events in the log.

If multiple errors occur at the same time, the LV 5800(A) may not be able to display all of them in a single entry. If this occurs, you can check them by saving the event log to USB memory.

The displayed event abbreviations indicate the following:

CRC_Y:	HD-SDI Y Channel CRC Error
CRC_C:	HD-SDI C Channel CRC Error
EDH:	SD-SDI EDH Error
TRS_P:	TRS POSITION Error
TRS_C:	TRS CODE Error
ILLEGAL:	ILLEGAL CODE Error
LINE:	LINE NUMBER Error
CABLE_ERR:	CABLE LENGTH Error
CABLE_WAR:	CABLE LENGTH Warning
CHK:	CHECKSUM Error
PRTY:	(ANC)PARITY Error
GMUT:	GAMUT Error
CGMUT:	COMPOSITE GAMUT Error
LVL_Y:	Y Channel LEVEL Error
LVL_C:	C Channel LEVEL Error
FRZ:	FREEZE Error
BLK:	BLACK Channel
A_BCH:	EMBEDDED AUDIO BCH Error
A_PRTY:	HD-SDI EMBEDDED AUDIO PARITY Error
A_DBN:	EMBEDDED AUDIO DBN Error
A_INH:	EMBEDDED AUDIO INHIBIT Error
SDI_DELAY:	DUAL LINK A/B DELAY Error

9.4.1 Starting or Stopping the Event Log

Carry out the procedure below to start or stop the event log.

- **Procedure**

STATUS → F•1 EVENT LOG → F•2 LOG : START / STOP

9.4.2 Clearing the Event Log

Carry out the procedure below to clear the event log.

- **Procedure**

STATUS → F•1 EVENT LOG → F•3 CLEAR

9.4.3 Log Operation Mode

The event log can record up to 5000 events. When the same event occurs successively, it is treated as a single event in the event log.

Carry out the procedure below to select the operation that is taken when 5,000 items are exceeded.

OVER WR: Discard the old log and overwrite.

STOP: Not record logs that occur after the 5,000th item.

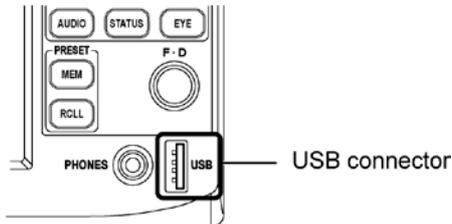
- **Procedure**

STATUS → F•1 EVENT LOG → F•4 LOG MODE : OVER WR / STOP

9.4.4 Saving to USB Memory

The event log can be saved to USB memory. The procedure is indicated below.

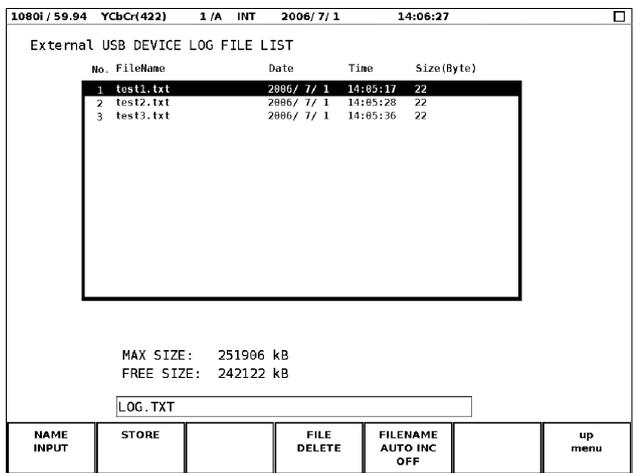
1. Connect a USB memory device to the USB connector on the front panel of the unit.



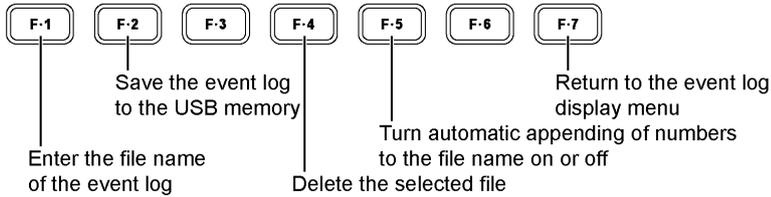
2. Carry out the procedure below to display the USB memory save menu.

● Procedure

STATUS → F-1 EVENT LOG → F-6 USB MEMORY



USB memory save menu



3. Carry out the procedure below to specify the name of the file you want to save the event log to.

● Procedure

STATUS → **F•1** EVENT LOG → **F•6** USB MEMORY → **F•1** NAME INPUT

The screenshot shows a screen with a character selection grid (0-9, A-Z, underscore) and a file name input field containing 'LOG .TXT'. A 'Character selection cursor' points to the '0' key, and a 'File name cursor' points to the first character 'L' in the input field. Below the screen is a 'File name setup menu' with buttons: CLEAR ALL, DELETE, INSERT, <=, =>, CHAR SET, and up menu. Below this menu are function keys F•1 through F•7 with arrows pointing to their respective actions:

- F•1**: Delete all characters of the file name
- F•2**: Delete the character at the file name cursor
- F•3**: Add an underscore at the file name cursor
- F•4**: Move the file name cursor to the left by a character
- F•5**: Move the file name cursor to the right by a character
- F•6**: Apply the character at the character selection cursor to the file name
- F•7**: confirm the file name and return to the USB memory save menu

Enter the file name in the file name setup screen that appears.

Use the **F•1** to **F•7** keys and the function dial (F•D) to set the characters of the file name. Carry out the procedure below to select characters.

Turn the function dial (F•D) to move the character selection cursor. Press **F•6** CHAR SET or the function dial (F•D) to apply the character at the character selection cursor to the file name.

Spaces are ignored when you press **F•7** up menu even if spaces are present in the middle of the file name.

A file name can also be copied from the already saved file name.

To copy the file name, move the cursor to the file that you want to copy in the file list display screen, and push a function dial (F•D). When the **F•5** FILE NAME AUTO INC is set to On, a 2-digit number is automatically added to the end of the copied file name.

4. Save the event log to the USB memory.

After assigning a file name to the event log, press **[F.7]** up menu to finish entering the file name. Press **[F.2]** STORE in the USB memory save menu to save the event log to the USB memory as a text file.

If you press **[F.2]** STORE and a text file with the same file name already exists in the USB memory **[F.1]** OVER WR YES and **[F.3]** OVER WR NO appear.

Press the **[F.1]** key to overwrite the file. Press the **[F.3]** key to not save the log file and return to the USB memory save menu.

After the event log is saved, the list of event log text files on the USB memory is displayed. The file list displays event log and clear screen log text files.

Deleting a Log File

Carry out the procedure below to delete an event log file.

• Procedure

[STATUS] → **[F.1]** EVENT LOG → **[F.6]** USB MEMORY → select the file to be deleted using the function dial (F•D) → **[F.4]** FILE DELETE

Press **[F.6]** USB MEMORY to display a list of log files. Turn the function dial (F•D) to select the file to be deleted.

Pressing **[F.4]** FILE DELETE causes **[F.1]** DELETE YES and **[F.3]** DELETE NO to be displayed.

Press **[F.1]** DELETE YES to delete the selected log file. Press **[F.3]** DELETE NO to not delete the log file and return to the USB memory save menu.

Auto Generation of File Names

Select ON by carrying out the procedure below to automatically add a 2-digit number to the end of the specified file name.

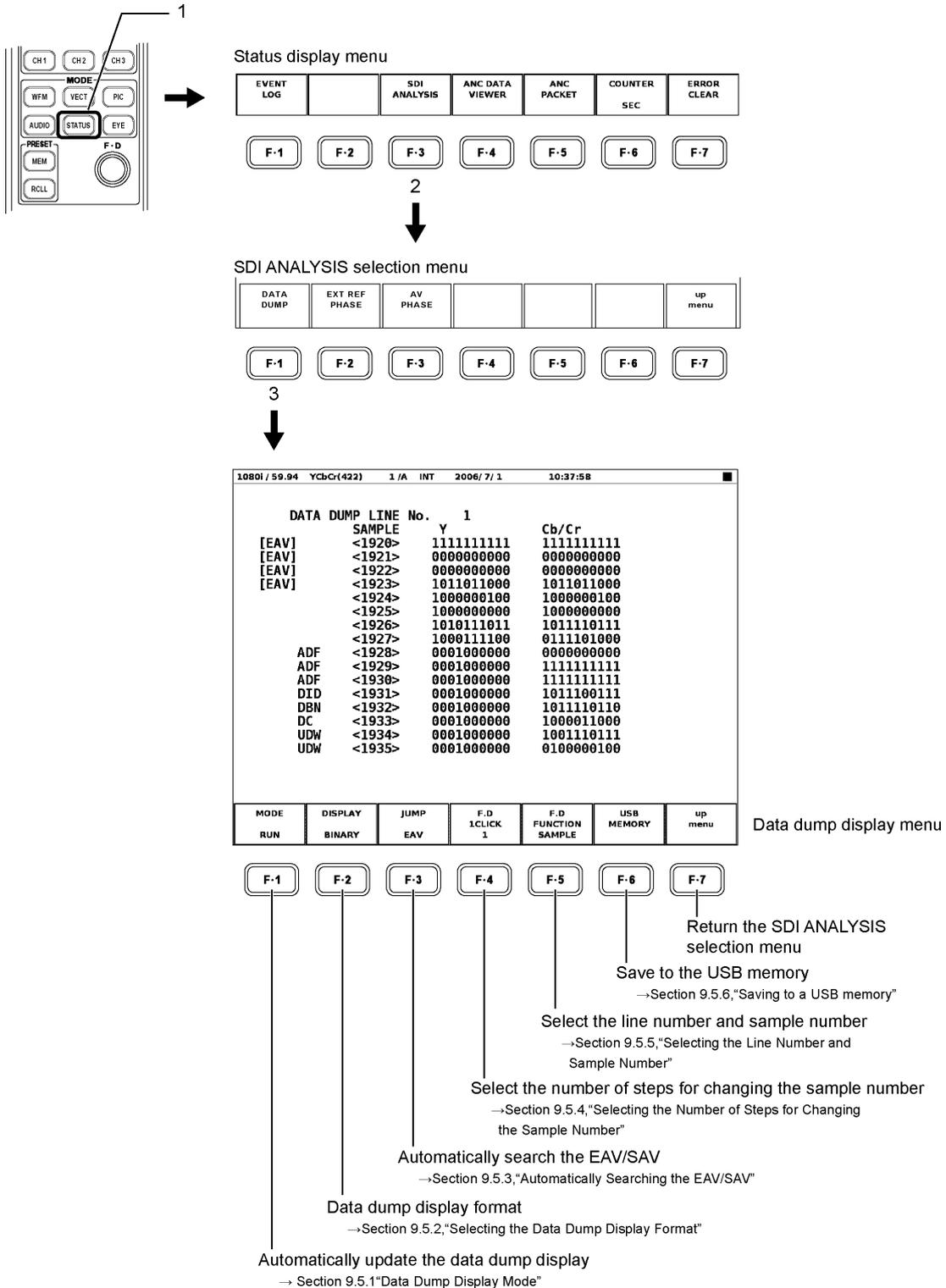
* The number that is automatically added is reset to 00 when the power is turned ON.

• Procedure

[STATUS] → **[F.1]** EVENT LOG → **[F.6]** USB MEMORY → **[F.5]** FILENAME AUTO INC : ON / OFF

9.5 Data Dump Display

Carry out the procedure below to display the data dump of the selected line and the data dump display menu. On the 4-screen multi display, a function can be assigned to each function key for each display.



* **F-6** USB MEMORY appears only if a USB memory device is connected to the USB connector on the front panel.

9.5.1 Data Dump Display Mode

The data dump display can automatically update or hold the current SDI input data display. In addition, data dump can be displayed for frame captured data.

[See also] Details of the frame capture function → Chapter 10, "FRAME CAPTURE FUNCTION"

RUN: Automatically update the current SDI input data.
 HOLD: Hold the current SDI input data.
 FRM CAP: Display the frame captured data.

* You cannot select FRM CAP if the frame capture data is not available or if the format of the frame capture data and that of the SDI signal being applied to the unit are different.

● Procedure

[STATUS] → [F•3] SDI ANALYSIS → [F•1] DATA DUMP → [F•1] MODE : RUN / HOLD / FRM CAP

9.5.2 Selecting the Data Dump Display Format

Carry out the procedure below to select the displayed format during single link.

SERIAL: Display the data dump using a serial data array after parallel conversion.
 COMPO: Display the data dump using a serial data array after parallel conversion that has been separated into Y, C_B, C_R.
 BINARY: Display the data dump using a serial data array after a parallel conversion in binary notation.

● Procedure

[STATUS] → [F•3] SDI ANALYSIS → [F•1] DATA DUMP → [F•2] DISPLAY : SERIAL / COMP / BINARY

In the serial data array method, the luminance signal (Y) and chroma difference signal (C_B, C_R) are displayed separately for HD-SDI signals.

Display example of HD-SDI and SERIAL

1080i / 59.94 YCbCr(422) 1/A INT 2006/7/1 10:37:20				
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	
[EAV]	<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	

Display example of SD-SDI and SERIAL

525i / 59.94 YCbCr(422) 1/B INT 2006/7/1 10:38:44				
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	

9. STATUS DISPLAY

Display example of HD-SDI and COMPONENT

1080i / 59.94 YCbCr(4:2:2) 1/A INT 2006/7/1 10:37:39					
DATA DUMP LINE No.	1				
	SAMPLE	Y	Cb	Cr	
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000		000	
[EAV]	<1922>	000	000		
[EAV]	<1923>	208		208	
	<1924>	204	204		
	<1925>	200		200	
	<1926>	2BB	2F7		
	<1927>	23C		1E8	
ADF	<1928>	040	000		
ADF	<1929>	040		3FF	
ADF	<1930>	040	3FF		
DTD	<1931>	040		2E7	
DBN	<1932>	040	152		
DC	<1933>	040		218	
UDW	<1934>	040	277		
UDW	<1935>	040		104	

Display example of SD-SDI and COMPONENT

525i / 59.94 YCbCr(4:2:2) 1/B INT 2006/7/1 10:39:02					
DATA DUMP LINE No.	4				
	SAMPLE	Y	C. ADR	Cb	Cr
[EAV]	< 720>	000	<360>	3FF	000
[EAV]	< 721>	208			
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			

Display example of HD-SDI and BINARY

1080i / 59.94 YCbCr(4:2:2) 1/A INT 2006/7/1 10:37:58			
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>	1000001000	1000001000
	<1925>	1000000000	1000000000
	<1926>	1010111011	1011101111
	<1927>	1000111100	0111101000
ADF	<1928>	0001000000	0000000000
ADF	<1929>	0001000000	1111111111
ADF	<1930>	0001000000	1111111111
DTD	<1931>	0001000000	1011100111
DBN	<1932>	0001000000	1011101110
DC	<1933>	0001000000	1000011000
UDW	<1934>	0001000000	1001110111
UDW	<1935>	0001000000	0100000100

Display example of SD-SDI and BINARY_

525i / 59.94 YCbCr(4:2:2) 1/B INT 2006/7/1 10:38:24			
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

If the link format is dual link, you can select the data dump display format by carrying out the procedure below. Note that binary display is not supported.

- LINK A: Display the data array obtained after the parallel conversion of link A.
- LINK B: Display the data array obtained after the parallel conversion of link B.
- LINK A/B: Display the parallel data array by combining link A and B.

If you select LINK A/B, the following is displayed depending on the input signal format.

- YCbCr(4:2:2) 10bit: Because the same line on the picture is overlapped alternately for each link A and B frame, the selected line is displayed by switching link A and B at irregular intervals. The line select function is picture based. If line 42 or line 1122 is selected, the blanking area and active area are displayed at irregular intervals.
- YCbCr(4:2:2) 12bit: The lowest 2 bits assigned to link B are added to channel Y and channel CbCr and displayed using 12 bits.
- GBR(4:4:4) 10bit: Link A and link B are combined and displayed as G, B, R, and A using 10 bits each.
- GBR(4:4:4) 12bit: The lowest 2 bits assigned to link B are added to channel GBR and displayed using 12 bits.

9. STATUS DISPLAY

● Procedure

If the link format is dual link.

[STATUS] → [F.3] SDI ANALYSIS → [F.1] DATA DUMP → [F.2] DISPLAY : LINK A / LINK B / LINK A/B

Display example of YCbCr(4:2:2), 10bits, and Link A

DATA DUMP	LTNE	No.	Y	1	Cb/Cr
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000	000		
[EAV]	<1922>	000	000		
[EAV]	<1923>	2D8	2D8		
[EAV]	<1924>	2C2	2C2		
[EAV]	<1925>	210	210		
[EAV]	<1926>	10B	147		
[EAV]	<1927>	149	290		
ADF	<1928>	040	000		
ADF	<1929>	040	3FF		
ADF	<1930>	040	3FF		
DID	<1931>	040	2E7		
DBN	<1932>	040	137		
DC	<1933>	040	218		
UDM	<1934>	040	282		
UDM	<1935>	040	203		

Display example of YCbCr(4:2:2), 10bits, and Link B

DATA DUMP	LTNE	No.	Y	1	Cb/Cr
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000	000		
[EAV]	<1922>	000	000		
[EAV]	<1923>	3C4	3C4		
[EAV]	<1924>	194	194		
[EAV]	<1925>	220	220		
[EAV]	<1926>	200	24C		
[EAV]	<1927>	150	284		
ADF	<1928>	040	000		
ADF	<1929>	040	3FF		
ADF	<1930>	040	3FF		
DID	<1931>	040	2E7		
DBN	<1932>	040	145		
DC	<1933>	040	218		
UDM	<1934>	040	2C3		
UDM	<1935>	040	101		

Display example of YCbCr(4:2:2), 10bits, and Link A/B

DATA DUMP	LTNE	No.	Y	1	Cb/Cr
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000	000		
[EAV]	<1922>	000	000		
[EAV]	<1923>	3C4	3C4		
[EAV]	<1924>	194	194		
[EAV]	<1925>	220	220		
[EAV]	<1926>	200	24C		
[EAV]	<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		
UDM	<1934>	040	2C3		
UDM	<1935>	040	101		

Display example of YCbCr(4:2:2), 12bits, and Link A

DATA DUMP	LTNE	No.	Y	1	Cb/Cr
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000	000		
[EAV]	<1922>	000	000		
[EAV]	<1923>	2D8	2D8		
[EAV]	<1924>	204	204		
[EAV]	<1925>	200	200		
[EAV]	<1926>	28B	2F7		
[EAV]	<1927>	23C	1E8		
[EAV]	<1928>	040	000		
ADF	<1929>	040	3FF		
ADF	<1930>	040	3FF		
DID	<1931>	040	2E7		
DBN	<1932>	040	28D		
DC	<1933>	040	218		
UDM	<1934>	040	241		
UDM	<1935>	040	205		

Display example of YCbCr(4:2:2), 12bits, and Link B

DATA DUMP	LTNE	No.	Y	1	Cb/Cr
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000	000		
[EAV]	<1922>	000	000		
[EAV]	<1923>	2D8	2D8		
[EAV]	<1924>	204	204		
[EAV]	<1925>	200	200		
[EAV]	<1926>	28B	2F7		
[EAV]	<1927>	23C	1E8		
[EAV]	<1928>	040	000		
ADF	<1929>	040	3FF		
ADF	<1930>	040	3FF		
DID	<1931>	040	2E7		
DBN	<1932>	040	224		
DC	<1933>	040	218		
UDM	<1934>	040	241		
UDM	<1935>	040	205		

Display example of YCbCr(4:2:2), 12bits, and Link A/B

DATA DUMP	LTNE	No.	Y	1	Cb/Cr	A
[EAV]	<1920>	FFF	FFF			3FF
[EAV]	<1921>	000	003			000
[EAV]	<1922>	000	000			000
[EAV]	<1923>	000	000			000
[EAV]	<1924>	B63	060			2D8
[EAV]	<1925>	000	010			204
[EAV]	<1926>	000	001			204
[EAV]	<1927>	AEE	0AF			2E7
[EAV]	<1928>	8F0	7A2			1E8
[EAV]	<1929>	101	000			000
[EAV]	<1930>	101	FFC			3FF
[EAV]	<1931>	101	000			2E7
[EAV]	<1932>	101	000			2E7
[EAV]	<1933>	101	000			218
[EAV]	<1934>	101	004			241
[EAV]	<1935>	101	014			205

Display example of GBR(4:4:4), 10bits, and Link A

DATA DUMP	LTNE	No.	G	1	B/R
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000	000		
[EAV]	<1922>	000	000		
[EAV]	<1923>	2D8	2D8		
[EAV]	<1924>	204	204		
[EAV]	<1925>	200	200		
[EAV]	<1926>	28B	2F7		
[EAV]	<1927>	23C	1E8		
[EAV]	<1928>	040	000		
ADF	<1929>	040	3FF		
ADF	<1930>	040	3FF		
DID	<1931>	040	2E7		
DBN	<1932>	040	179		
DC	<1933>	040	218		
UDM	<1934>	040	241		
UDM	<1935>	040	205		

Display example of GBR(4:4:4), 10bits, and Link B

DATA DUMP	LTNE	No.	A	1	B/R
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000	000		
[EAV]	<1922>	000	000		
[EAV]	<1923>	2D8	2D8		
[EAV]	<1924>	204	204		
[EAV]	<1925>	200	200		
[EAV]	<1926>	28B	2F7		
[EAV]	<1927>	23C	1E8		
[EAV]	<1928>	040	000		
ADF	<1929>	040	3FF		
ADF	<1930>	040	3FF		
DID	<1931>	040	2E7		
DBN	<1932>	040	1A1		
DC	<1933>	040	218		
UDM	<1934>	040	241		
UDM	<1935>	040	205		

Display example of GBR(4:4:4), 10bits, and Link A/B

DATA DUMP	LTNE	No.	G	1	B	R	A
[EAV]	<1920>	3FF	3FF		000	000	3FF
[EAV]	<1921>	000	000		000	000	000
[EAV]	<1922>	000	000		000	000	000
[EAV]	<1923>	2D8	000		000	000	2D8
[EAV]	<1924>	204	000		000	000	204
[EAV]	<1925>	200	000		000	000	200
[EAV]	<1926>	28B	000		000	000	28B
[EAV]	<1927>	23C	000		000	000	23C
[EAV]	<1928>	040	000		000	000	040
[EAV]	<1929>	040	3FF		000	000	3FF
[EAV]	<1930>	040	3FF		000	000	3FF
[EAV]	<1931>	040	2E7		000	000	2E7
[EAV]	<1932>	040	2E7		000	000	2E7
[EAV]	<1933>	040	2E7		000	000	2E7
[EAV]	<1934>	040	241		000	000	241
[EAV]	<1935>	040	241		000	000	241

Display example of GBR(4:4:4), 12bits, and Link A

DATA DUMP	LTNE	No.	G	1	B/R
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000	000		
[EAV]	<1922>	000	000		
[EAV]	<1923>	2D8	2D8		
[EAV]	<1924>	204	204		
[EAV]	<1925>	200	200		
[EAV]	<1926>	28B	2F7		
[EAV]	<1927>	23C	1E8		
[EAV]	<1928>	040	000		
ADF	<1929>	040	3FF		
ADF	<1930>	040	3FF		
DID	<1931>	040	2E7		
DBN	<1932>	040	138		
DC	<1933>	040	218		
UDM	<1934>	040	241		
UDM	<1935>	040	205		

Display example of GBR(4:4:4), 12bits, and Link B

DATA DUMP	LTNE	No.	A	1	B/R
[EAV]	<1920>	3FF	3FF		
[EAV]	<1921>	000	000		
[EAV]	<1922>	000	000		
[EAV]	<1923>	2D8	2D8		
[EAV]	<1924>	204	204		
[EAV]	<1925>	200	200		
[EAV]	<1926>	28B	2F7		
[EAV]	<1927>	23C	1E8		
[EAV]	<1928>	040	000		
ADF	<1929>	040	3FF		
ADF	<1930>	040	3FF		
DID	<1931>	040	2E7		
DBN	<1932>	040	26A		
DC	<1933>	040	218		
UDM	<1934>	040	241		
UDM	<1935>	040	205		

Display example of GBR(4:4:4), 12bits, and Link A/B

DATA DUMP	LTNE	No.	G	1	B	R	A
[EAV]	<1920>	FFF	FFF		000	000	000
[EAV]	<1921>	000	000		000	000	000
[EAV]	<1922>	000	000		000	000	000
[EAV]	<1923>	B63	001		000	000	B62
[EAV]	<1924>	000	010		000	000	001
[EAV]	<1925>	000	010		000	000	000
[EAV]	<1926>	AEE	00F		000	000	7A2
[EAV]	<1927>	8F0	00F		000	000	7A3
[EAV]	<1928>	101	000		000	000	FFC
[EAV]	<1929>	101	000		000	000	FFC
[EAV]	<1930>	101	000		000	000	B9C
[EAV]	<1931>	101	000		000	000	B9C
[EAV]	<1932>	101	000		000	000	B9C
[EAV]	<1933>	101	000		000	000	B9C
[EAV]	<1934>	101	004		000	000	814
[EAV]	<1935>	101	004		000	000	814

The data dump display detects ancillary data that is embedded in the SDI signal and displays the detected code.

Detected Code

- ADF: ANCILLARY DATA FLAGS
Displays the 000H, 3FFH, 3FFH (ADF) code from the DATA_DUMP data.
- DID: DATA IDENTIFICATION
The DID code is the next data after the ADF code.
- SDID: SECONDARY DATA IDENTIFICATION
If the DID code is less than 80H, SDID is displayed as data in the second format.
- DBN: DATA BLOCK NUMBERS
If the DID code is greater than or equal to 80H, DBN is displayed as data in the first format.
- DC: DATA COUNT
Displays the data count code (DC) following the SDID/DBN when the ADF code is detected.
- UDW: USER DATA WORDS
Displays the user data word (UDW) code for the data count following the ADF code.
The ADF, DID, SDID, DBN, DC, and UDW data is displayed using cyan for the character color.
- CS: CHECKSUM
Displays the CS code immediately after the UDW in magenta.
- AP: ACTIVE PICTURE
If the selected line is in the active picture area, the area between SAV and EAV are displayed as active picture AP area in yellow.

9.5.3 Automatically Searching the EAV/SAV

Carry out the procedure below to select whether to display the start sample number of the data dump display using the EAV sample number or SAV sample number.

- EAV: Display the data dump from the EAV sample number.
SAV: Display the data dump from the SAV sample number.

● Procedure

STATUS → **F•3** SDI ANALYSIS → **F•1** DATA DUMP → **F•3** JUMP : EAV / SAV

9.5.4 Selecting the Number of Steps for Changing the Sample Number

You turn the function dial (F•D) to change the sample number of the data dump display. Carry out the procedure below to select the amount of sample numbers to be varied for each click of the dial.

- 1: Vary by 1 sample.
- 10: Vary by 10 samples.
- 50: Vary by 50 samples.

* If the input signal is SD-SDI and DISPLAY is set to SERIAL or BINARY, the amount of sample numbers to be varied for each click is double the displayed number.

● **Procedure**

STATUS → F•3 SDI ANALYSIS → F•1 DATA DUMP → F•4 F.D 1CLICK : 1 / 10 / 50

9.5.5 Selecting the Line Number and Sample Number

You turn the function dial (F•D) to change the line number or sample number of the data dump display. Carry out the procedure below to select the item to be controlled.

- LINE: Use the function dial (F•D) to select the line over the entire frame.
- SAMPLE: Use the function dial (F•D) to select the sample number of the specified line.

* If the data dump mode is set to FRM CAP, the waveform, vector, or picture display on the screen disappears momentarily each time you change the selected line.

● **Procedure**

STATUS → F•3 SDI ANALYSIS → F•1 DATA DUMP → F•5 F.D FUNCTION : LINE /
SAMPLE

9.5.6 Saving to USB Memory

The data dump allows a line of data in text file format to be saved to USB memory. The procedure is indicated below.

1. **Connect a USB memory device to the USB connector on the front panel.**
2. **Carry out the procedure below to display the USB memory save menu.**

- **Procedure**

STATUS → F•3 SDI ANALYSIS → F•1 DATA DUMP → F•6 USB MEMORY

3. **Carry out the procedure below to set the file name.**

- **Procedure**

STATUS → F•3 SDI ANALYSIS → F•1 DATA DUMP → F•6 USB MEMORY → F•1
NAME INPUT

Use the F•1 to F•7 keys and the function dial (F•D) to set the file name on the file name setup screen that appears when you carry out the procedure above.

[See also] Entering the file name → Section 9.4.4, "Saving to USB Memory"

4. **Save the data dump to the USB memory.**

After assigning a data dump file name, quit the file name entry using F•7 up menu. Press F•2 STORE in the USB memory save menu to save a line of the data dump to the USB memory.

If you press F•2 STORE and a text file with the same file name already exists in the USB memory F•1 OVER WR YES and F•3 OVER WR NO appear.

Press the F•1 key to overwrite the file. Press the F•3 key to not save the file and return to the USB memory save menu.

If the saving of the data dump is completed, a list of files in the USB memory is displayed.

The file list only displays data dump text files.

In addition, the DUMP folder is automatically created in the USB memory, and the text file of the data dump is saved in the DUMP folder.

9.5.7 Deleting a Data Dump File

Carry out the procedure below to delete a data dump file.

● **Procedure**

[STATUS] → [F•3] SDI ANALYSIS → [F•1] DATA_DUMP → [F•6] USB MEMORY → Select the file to be deleted using the function dial (F•D) → [F•4] FILE DELETE

Press [F•6] USB MEMORY to display a list of data dump files. Turn the function dial (F•D) to select the file to be deleted.

Pressing [F•4] FILE DELETE causes [F•1] DELETE YES and [F•3] DELETE NO to be displayed.

Press [F•1] DELETE YES to delete the selected data dump file. Press [F•3] DELETE NO to not delete the data dump file and return to the USB memory save menu.

9.5.8 Auto Generation of File Names

Select ON by carrying out the procedure below to automatically generate the file name by adding a number between 00 and 99 in the order of storage to the file name of the currently selected data dump

● **Procedure**

[STATUS] → [F•3] SDI ANALYSIS → [F•1] DATA_DUMP → [F•6] USB MEMORY → [F•5] FILE NAME AUTO INC : ON / OFF

9.6 Displaying the Phase Difference between the SDI and External Sync Signal

The phase difference display function of the SDI and external sync signal (EXT REF) shows the horizontal and vertical phase differences between the SDI signal and EXT REF. By setting the phase difference between an arbitrary SDI and EXT REF to zero (user-defined reference), the relative phase difference between each SDI signal with respect to EXT REF can be displayed. Because up to eight phase differences of SDI signals can be stored, the phase data of eight systems of SDI signals from the switcher can be held.

To switch between internal synchronization mode and external synchronization mode, use the EXT key on the front panel. External synchronization mode is enabled when the EXT key is illuminated.

In addition, during dual link, the phase difference of link B to link A can be displayed. (link A mode)

If using the 4-screen multi display, the internal or external synchronization mode (moreover, during dual link, this mode becomes link A mode) as well as the function of each function key can be set separately for each screen.

• Supported SDI Formats

1080i/60,59.94,50
 1080p/30,29.97,25,24,23.98
 1080p/60,59.94,50 (dedicated dual link)
 1080PsF/30,29.97,25,24,23.98
 720p/60,59.94,50,30,29.97,25,24,23.98
 525i/59.94
 625i/50

• Supported External Sync Signals (B.B: Black Burst) Formats

1080i/60,59.94,50
 1080p/30,29.97,25,24,23.98
 1080PsF/30,29.97,25,24,23.98
 720p/60,59.94,50,30,29.97,25,24,23.98
 NTSC
 NTSC (with 10FIELD ID)
 PAL

If EXT REF is set to an HD tri-level sync signal, the frame and line frequencies between the EXT REF and SDI signal must be the same. In addition, 1080p/60, 59.94, and 50 cannot be used as external sync signal.

If B.B is specified as NTSC (with 10FIELD ID) and the frame rate of the SDI signal is 23.98 Hz, synchronization is performed automatically using the timing of the 10 field reference that is embedded in the NTSC with 10FIELD ID.

9. STATUS DISPLAY

● Phase Difference Display Range

In both the V direction and H direction, approximately up to +1/2 frame with respect to the center is shown by a Delay axis, on the other hand approximately up to -1/2 frame with respect to the center is shown by an Advance axis.

In addition, the phase difference display in the H direction may fluctuate in the range of ± 1 clock when the signal is switched.

The display range of a Delay axis and an Advance axis is as follows.

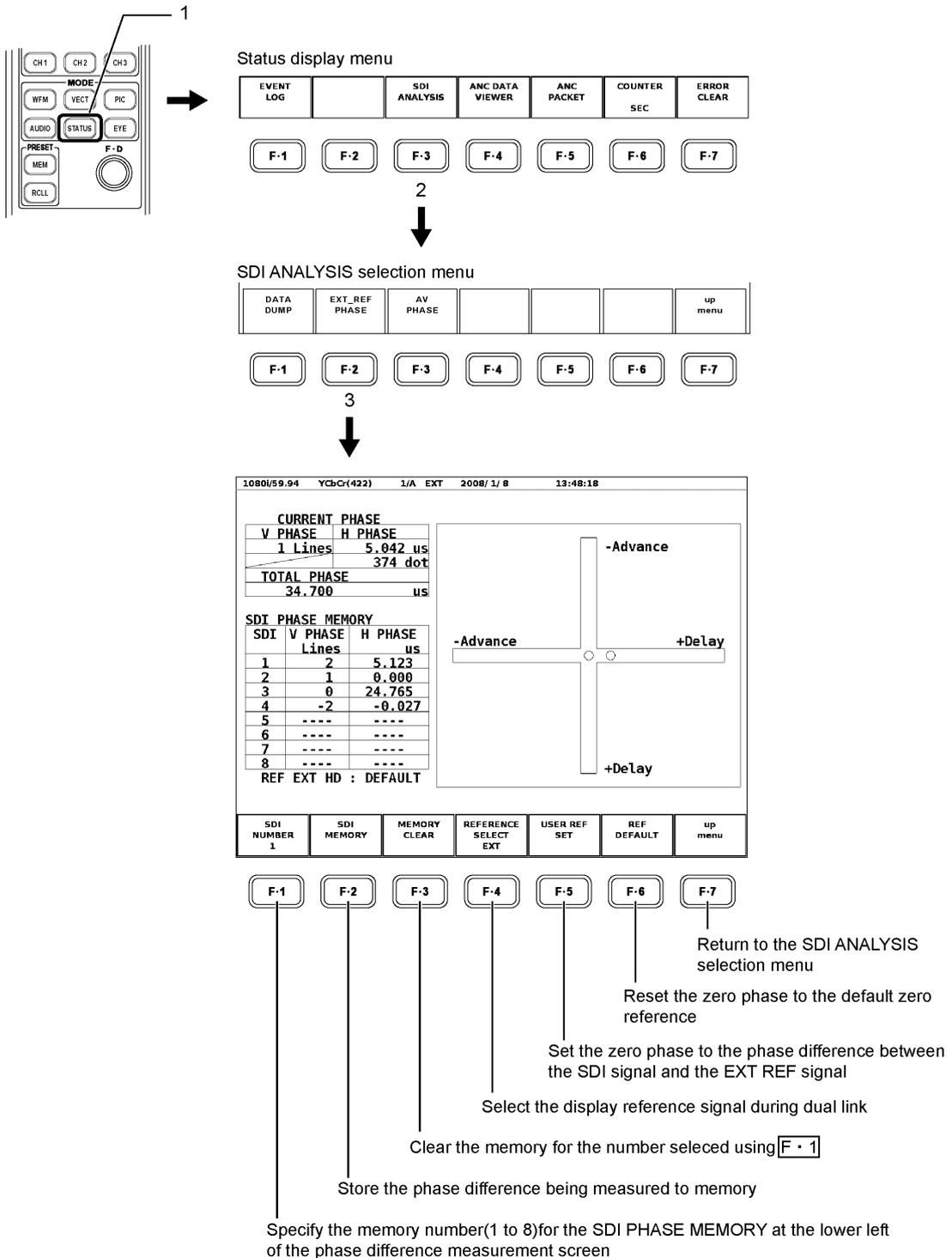
Format	Displayed with an Advance axis							
				Displayed with a Delay axis				
	V PHASE [Lines]	H PHASE [us]		V PHASE [Lines]	H PHASE [us]		V PHASE [Lines]	H PHASE [us]
1080i/59.94, 1080p/29.97, 1080PsF/29.97	-562	-29.645	~	0	0	~	562	0
1080i/60, 1080p/30, 1080PsF/30	-562	-29.616	~	0	0	~	562	0
1080i/50, 1080p/25, 1080PsF/25	-562	-35.542	~	0	0	~	562	0
1080p/23.98, 1080PsF/23.98	-562	-37.060	~	0	0	~	562	0
1080p/24, 1080PsF/24	-562	-37.023	~	0	0	~	562	0
720p/59.94	-375	0	~	0	0	~	374	22.230
720p/60	-375	0	~	0	0	~	374	22.208
720p/50	-375	0	~	0	0	~	374	26.653
720p/29.97	-375	0	~	0	0	~	374	44.475
720p/30	-375	0	~	0	0	~	374	44.430
720p/25	-375	0	~	0	0	~	374	53.319
720p/23.98	-375	0	~	0	0	~	374	55.597
720p/24	-375	0	~	0	0	~	374	55.542
525i/59.94	-262	-63.518	~	0	0	~	262	0
625i/50	-312	-63.962	~	0	0	~	312	0

9. STATUS DISPLAY

9.6.1 Displaying the Phase Difference Measurement Screen Between SDI Signal and EXT REF Signal

Carry out the procedure below to measure the phase difference between SDI signal and external sync signal. The phase difference measurement screen shows the timing of SDI signal (link A of SDI signal for dual link) with respect to the external sync signal.

If the SDI signal lags the EXT REF signal, Delay (+) is indicated. If the SDI signal is ahead of the EXT REF signal, Advance (-) is indicated.



- **Displayed Information on the Phase Difference Measurement Screen**

- **CURRENT PHASE: Current Phase Difference**

Numerically displays the phase difference between the current input SDI signal and EXT REF signal.

V PHASE:	The phase difference is displayed in units of lines.
H PHASE:	The phase difference is displayed in units of time (us) and as the number of samples (dot).
TOTAL PHASE:	The phase difference sum total of V PHASE and H PHASE is displayed in units of time (us).

- * The phase difference display in the H direction may fluctuate in the range of ± 1 clock when the signal is switched.

- **Phase Difference Graphical Display**

The graph at the right of the screen shows the line difference in the V direction along the vertical axis, and the time difference in the H direction along the horizontal axis.

- The phase difference is zero when the two circles that indicate the V and H phase differences overlap at the center.
- If the timing is at zero reference, the marker display changes from white to green.
- The H marker turns green when it comes within ± 3 clocks of the center.
- The V marker turns green when it comes within ± 0 line of the center.

- **SDI PHASE MEMORY: Phase Difference Memory Function**

SDI PHASE MEMORY at the left of the screen is a function used to store the phase difference that is being measured in CURRENT PHASE. Up to eight instantaneous measured values can be stored such as when adjusting the phase by changing systems with a switcher.

Press **F•2** SDI MEMORY to store the current measured value in the box of the selected by **F•1** SDI NUMBER. To delete data, press **F•3** MEMORY CLEAR.

- **Status of the External Sync Signal**

The REF display area at the lower left of the screen automatically displays the following status information.

REF INT:	Internal mode
REF EXT HD:	External mode with the external sync signal set to HD tri-level sink
REF EXT BB:	External mode with the external sync signal set to SD bi-level sink
REF NO SIGNAL	External mode without an external sync signal

- **Setting the User-Defined Reference**

Press **F•5** USER REF SET to set the zero phase to the phase between the input SDI signal and EXT REF signal at that point. This function allows the reference to be set arbitrarily to match your system environment.

However, this function cannot be set if the phase difference is zero.

Press **F•6** REF DEFAULT to set the zero phase to the default zero reference.

The REF item at the bottom of the SDI PHASE MEMORY table at the lower left of the phase difference display screen indicates which reference is selected, USER REF SET or REF DEFAULT.

REF EXT BB :DEFAULT: EXT REF is set to BB signal with DEFAULT selected.
 REF EXT BB :USER REF: EXT REF is set to BB signal with USER REF selected.
 REF EXT HD :DEFAULT: EXT REF is set to HD tri-level sync signal with DEFAULT selected.
 REF EXT HD :USER REF: EXT REF is set to HD tri-level sync signal with USER DEFAULT selected.

- **Zero Reference**

The default zero timing reference of the SDI and EXT REF signals is defined on the condition that the SDI output of the LEADER's LT 443D MULTIFORMAT VIDEO GENERATOR and the REF B. B signal with no timing offset are connected with cables of equal length.

However, the zero reference measurement may not be exactly zero due to the variation in the delay of the LV 5800(A).

In addition, the zero reference will be off if you are using a signal generator other than LEADER's LT 443D. In this case, use **F•5** USER REF SET.

The phase difference display in the H direction may fluctuate in the range of ± 1 clock when the signal is switched. In addition, if multiple LV58SER01 are installed, the following errors may be incurred: the phase fluctuation when switching the above signal, the fluctuation in the delay within the unit, and ± 3 clocks of display error.

9.6.2 Displaying the Phase Difference Measurement Screen of Link A and B

If the link format is dual link, the phase difference between link A and B of the SDI signal can be measured. In the link A/B phase difference screen, the reference is link A. If link B lags link A, Delay (+) is indicated. If link B is ahead of link A, Advance (-) is indicated.

EXT: Measure the phase difference of SDI signal link A with respect to the external sync signal.
 LINK A: Measure the phase difference of SDI signal link B with respect to SDI signal link A.

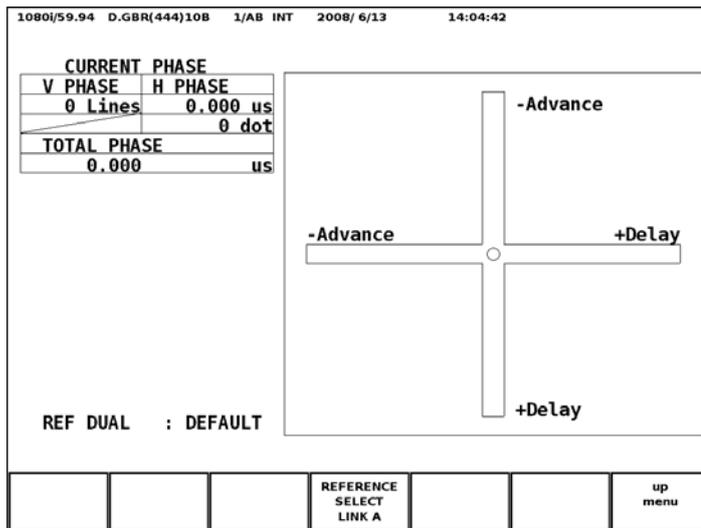
* The phase difference memory function and the user-defined reference function cannot be used in this measurement.

- **Procedure**

IF the link format is dual link.

STATUS → **F•3** SDI ANALYSIS → **F•2** EXT_REF PHASE → **F•4** REFERENCE SELECT :
 EXT / LINK A

9. STATUS DISPLAY



• Displayed Information on the Phase Difference Measurement Screen

CURRENT PHASE:Current Phase Difference

Displays numerically the phase difference between link A and B of the current dual link SDI signal input.

V PHASE: The phase difference is displayed in units of lines.

H PHASE: The phase difference is displayed in units of time (us) and as the number of samples (dot).

TOTAL PHASE: The phase difference sum total of V PHASE and H PHASE is displayed in units of time (us).

- * The phase difference display in the H direction may fluctuate in the range of ± 1 clock when the signal is switched.

Phase Difference Graphical Display

The graph at the right of the screen shows the line difference in the V direction along the vertical axis, and the time difference in the H direction along the horizontal axis.

- The phase difference is zero when the two circles that indicate the V and H phase differences overlap at the center.
- If the timing is at zero reference, the marker display changes from white to green.
- The H marker turns green when it comes within ± 3 clocks of the center.
- The V marker turns green when it comes within ± 0 line of the center.

Status of the External Sync Signal

The REF display area at the lower left of the screen automatically displays the following status information.

REF DUAL:DEFAULT: The reference is link A.

ACH NO SIGNAL: There is no link A input.

BCH NO SIGNAL: There is no link B input.

A,BCH NO SIGNAL: There are no link A and B inputs.

9.7 Lip Sync Display

Combining the LV 58SER01A with an LT 4400 (in which an LT 4400SER01 is installed) and an LV 58SER40(A) makes it possible to measure the offset between the video signal and the audio signal that occurs in the transfer route. The measurement procedure is given below.

The video signal supports the following formats: 1080i/59.94, 1080i/50, 720p/59.94, 525i/59.94, and 625i/50. Dual link signals are not supported. For the audio signal, only embedded audio is supported.

1. Turn the LT 4400 lip sync feature on.

SDI SETTING → LIPSYNC to turn this feature on. For details, see the LT 4400 instruction manual.

2. Send the signal generated from the LT 4400 SDI OUT connector to the transfer route. Apply the signal received from the transfer route to the LV 58SER01(A) INPUT SDI connector.

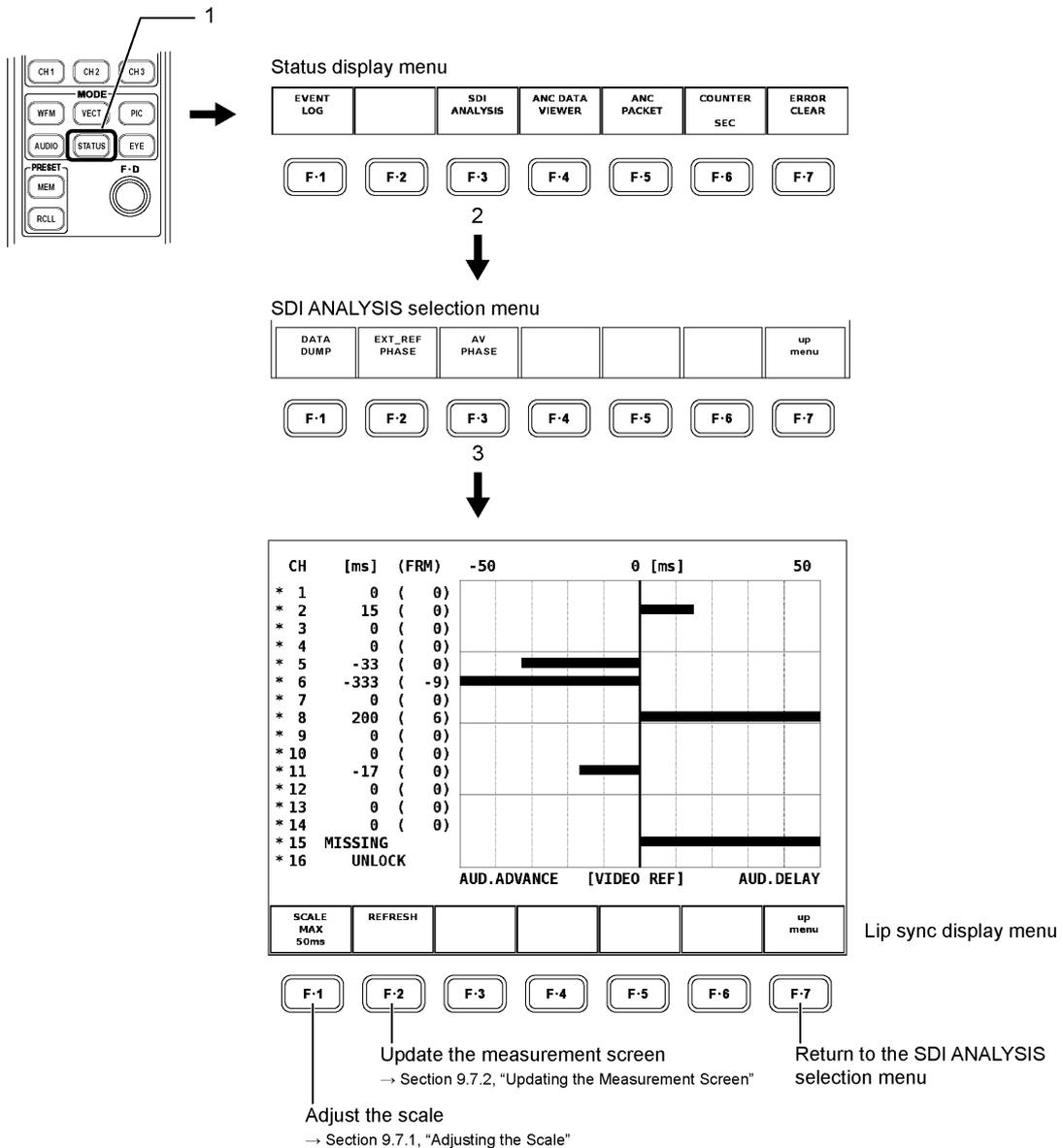
3. Carry out the procedure below to display the lip sync screen.

The time difference when the luminance level of the video signal exceeds the specified value or when the audio level signal exceeds the specified value is measured, and the results are displayed numerically and graphically for each channel.

The measured value is displayed in units of time and frames. If the audio signal cannot be detected, "UNLOCK" is displayed. If the audio signal cannot be measured correctly, "MISSING" is displayed. Further, when the measured value is updated, an asterisk is displayed next to the channel.

Note that you can set the video signal measurement range, video signal luminance level, and audio signal level by following the procedure in section 5.7, "AV PHASE SETUP."

9. STATUS DISPLAY



9.7.1 Adjusting the Scale

Carry out the procedure below to select the scale's measurement range.

• Procedure

STATUS → **F-3** SDI ANALYSIS → **F-3** AV PHASE → **F-1** SCALE MAX : 50ms / 100ms / 500ms / 1.0 s / 2.5 s

9.7.2 Updating the Measurement Screen

To update the measurement screen, follow the procedure below.

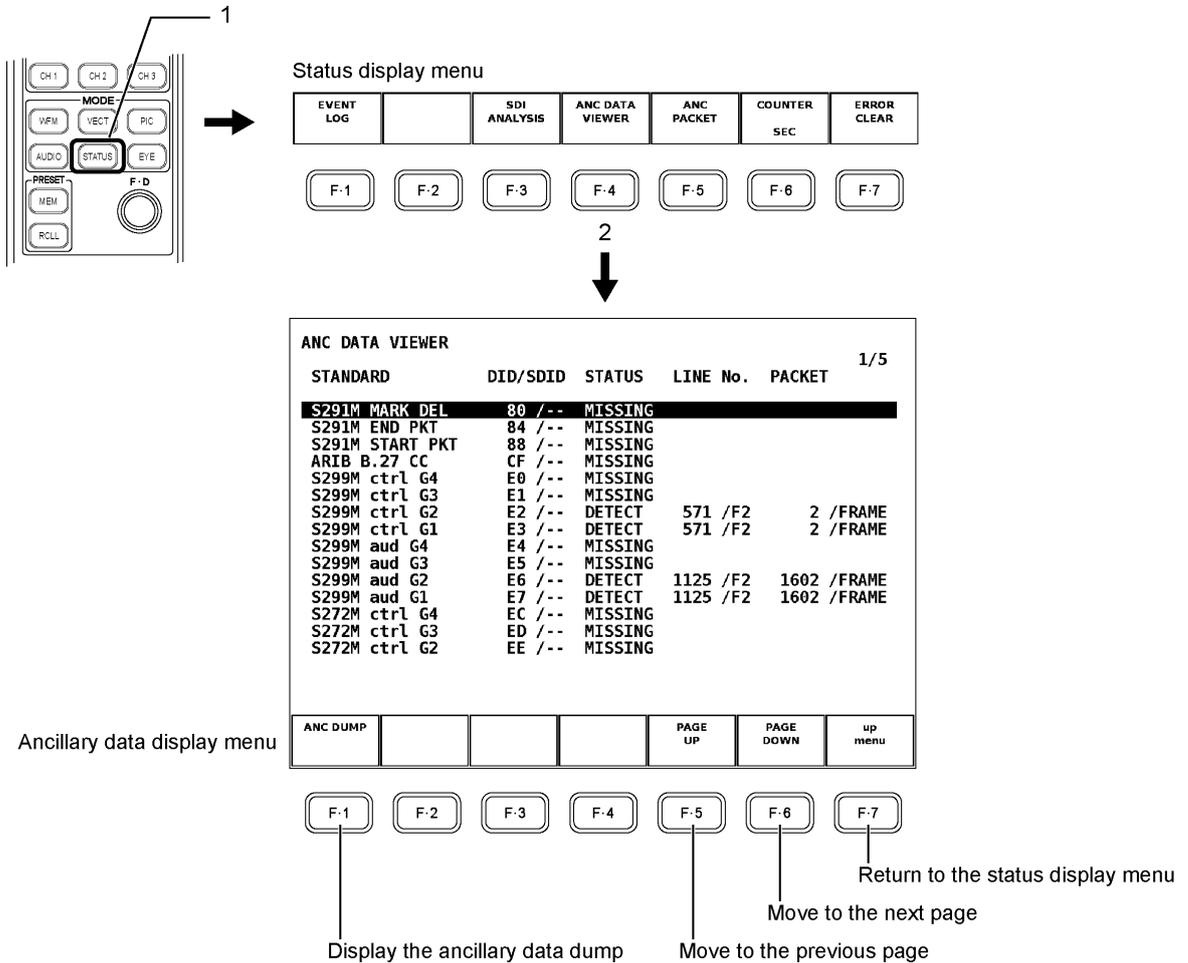
• Procedure

STATUS → **F-3** SDI ANALYSIS → **F-3** AV PHASE → **F-2** REFRESH

9.8 Displaying the List of Ancillary Data

Carry out the procedure below to display the list of ancillary data. On the ancillary data screen, data is displayed for each standard. If the data is detected, “DETECT” is displayed. If the data is not embedded in the signal, “MISSING” is displayed.

The ANC DATA VIEWER menu item is not displayed when the LV 58SER01 is in dual link mode.



On the ancillary data screen, you can view all the data by using the function dial (F•D) to scroll the screen. 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 first data is displayed.

9.8.1 Displaying the Ancillary Data Dump

Carry out the procedure below to display a dump of the file that you selected on the ancillary data screen.

● Procedure

STATUS → **F•4** ANC DATA VIEWER → Use the function dial (F•D) to select the file that you want to display the dump of → **F•1** ANC DUMP

On the dump screen, you can view all the packets by using the function dial (F•D) to scroll the screen. Also, if you press the function dial (F•D), the first packet is displayed.

The screenshot shows the 'ANC DUMP' screen with the following data:

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

Below the table is a control menu with the following items:

- HOLD TIME: 3s
- DUMP MODE: HEX
- up menu

Function key callouts below the screen:

- F-1**: Update the data dump
- F-2**: Select the data dump display mode
- F-3**: Select the data dump display mode
- F-4**: Select the data dump display mode
- F-5**: Select the data dump display mode
- F-6**: Select the data dump display mode
- F-7**: Return to the ancillary data display menu

9.8.2 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, but the line numbers are switched in an irregular order. Carry out the procedure below to select the dump display update time. If you select HOLD, the screen does not update.

● Procedure

STATUS → **F•4** ANC DATA VIEWER → **F•1** ANC DUMP → **F•2** HOLD TIME : HOLD / 1s / 3s

9.8.3 Data Dump Display Mode

Carry out the procedure below to select the dump display mode.

- HEX : Ancillary data is displayed in hexadecimal.
- BINARY : Ancillary data is displayed in binary.

● Procedure

STATUS → **F•4** ANC DATA VIEWER → **F•1** ANC DUMP → **F•3** DUMP MODE : **HEX** / **BINARY**

Hexadecimal display

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

HOLD TIME HOLD
DUMP MODE HEX
up menu

Binary display

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

HOLD TIME HOLD
DUMP MODE BINARY
up menu

9.9 Displaying the Ancillary Data Details

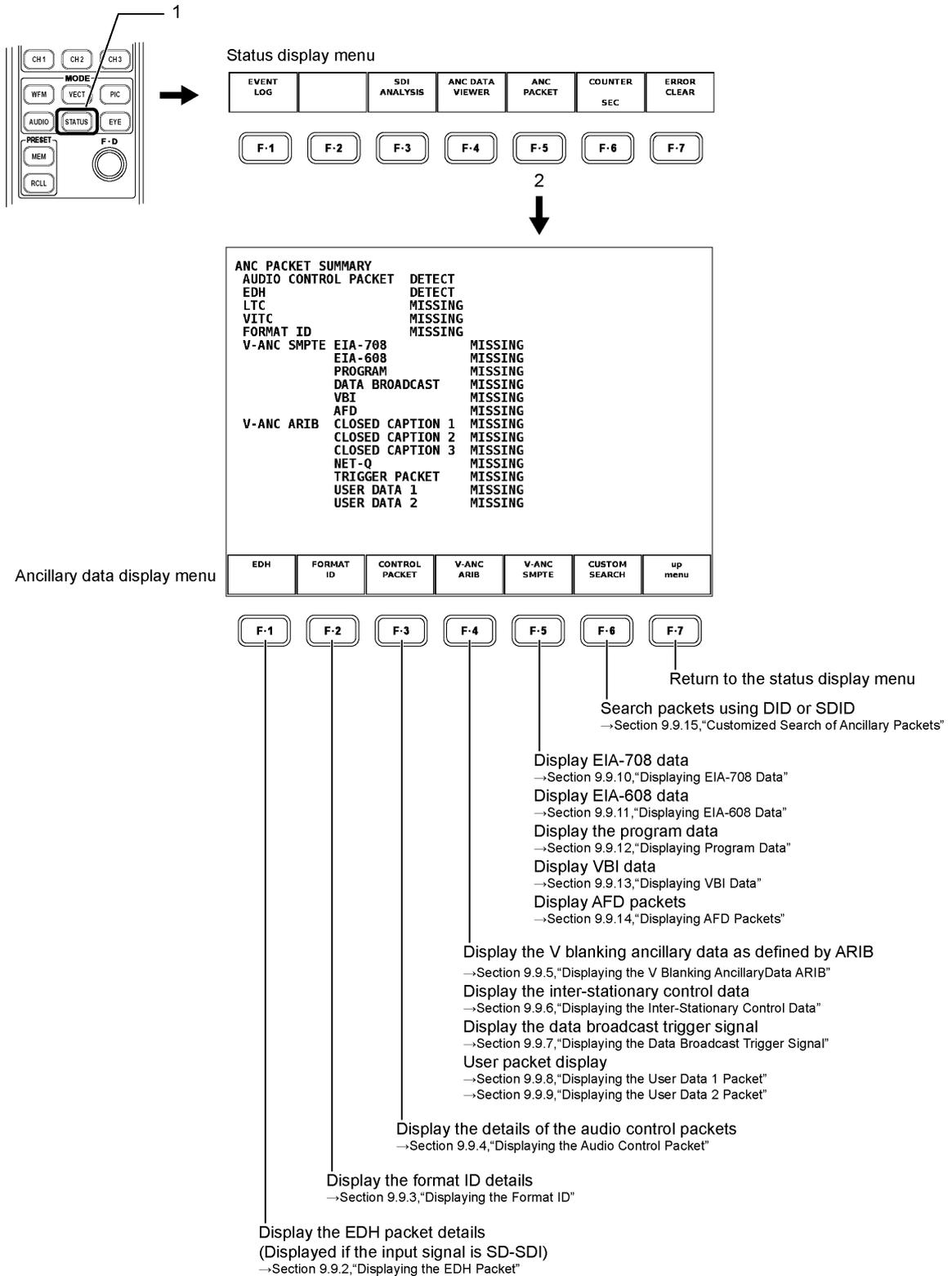
The ancillary data display supports various types of ancillary data. Some of the available analysis functions include a list display of the presence or absence of ancillary data, the ancillary data dump display, and the ancillary data search using DID or SDID.

Signal Name	Supported Standard	DID	SDID
Format ID	SMPTE 352M	241h	101h
V-ANC ARIB Standard Inter-stationary control signal Format ID	ARIB STD-B39	25Fh	1FEh
Data broadcast trigger signal	ARIB STD-B35	25Fh	1FDh
Digital closed caption data	ARIB STD-B37	25Fh	1DFh (HD closed caption) 2DEh (SD closed caption) 2DDh (analog closed caption) 1DCh (cellular closed caption)
User data 1	ARIB TR-B23	25Fh	2FCh
User data 2	ARIB TR-B23	25Fh	1FBh

The embedded line numbers are displayed on the EDH screen, format ID screen, audio control packet screen, and on each V-ANC ARIB screen. These line numbers are normally displayed in white, but they are displayed in red if they are outside of the standards.

9. STATUS DISPLAY

Carry out the procedure below to display a list of the presence/absence of ancillary data that is detectable. DETECT is displayed if the ancillary data is present. MISSING is displayed if not.



Neither V-ANC SMPTE nor V-ANC ARIB is displayed as follows during dual link.

1080i/60 D.GBR(444)10B 1/AB INT 2007/3/1 14:21:59					
ANC PACKET SUMMARY					
AUDIO CONTROL PACKET DETECT					
LTC			MISSING		
VITC			MISSING		
FORMAT ID (LINK A)			MISSING		
FORMAT ID (LINK B)			MISSING		
	FORMAT ID	CONTROL PACKET		CUSTOM SEARCH	up menu

9.9.1 Description of the ANC PACKET Summary Display

• AUDIO CONTROL PACKET

Control data for the embedded audio. Embedded audio is composed of four channels per group, and a total of four groups (16 channels) can be multiplexed. One audio control packet is multiplexed per group. Supports only link A during dual link.

Main packet contents

- Synchronous/Asynchronous
- Valid audio channels
- Sampling frequency

Embedded line

- Line 9 and 571 of the HD-SDI Y channel
- Line 12 and 275 of the SD-SDI line

[See also] Displaying the details → Section 9.9.4, "Displaying the Audio Control Packet"

• EDH (Error Detection and Handling)

Packet for detecting SD-SDI transmission errors when multiple devices are connected, this packet allows you to track the device in which the error occurred. Error is detected on the full field and active picture.

Embedded line

- 525/59.94 Line 9 and 272
- 625/50 Line 5 and 318

[See also] Displaying the details → Section 9.9.2, "Displaying the EDH Packet"

• LTC (Linear/Longitudinal Time Code)

A type of time code that is multiplexed in the frame once. Supports only link A during dual link.

Embedded line

- HD-SDI Line 10

- **VITC (Vertical Interval Time Code)**

A type of time code that is multiplexed in the field once.
Supports only link A during dual link.

Embedded line

- HD-SDI Line 9 and 571

- **FORMAT ID**

A packet for identifying the SDI video signal format.
SMPTE 352M-2002 and ARIB STD-B39 standards are supported.
During dual link, data of link A is detected on FORMAT ID (Link A), and data of link B is detected on FORMAT ID (Link B). Supported only for SMPTE standard.

[See also] Displaying the details → Section 9.9.3, "Displaying the Format ID"

- **EIA-708**

One of the closed caption standards. Closed caption data for digital video. Contains only alphanumeric characters. It is embedded in the V-ANC area.
Not displayed for dual link.

- **EIA-608**

One of the closed caption standards. Originally closed caption data for analog composite signals (multiplexed in line 21). Contains only alphanumeric characters. It is embedded in the V-ANC area. Not displayed for dual link.

- **PROGRAM (Program Description)**

Embedded in the V-ANC area. Not displayed for dual link.

- **DATA BROADCAST**

Embedded in the V-ANC area. Not displayed for dual link.

- **VBI**

Embedded in the V-ANC area. Not displayed for dual link.

- **AFD**

Embedded in the V-ANC area. Not displayed for dual link.

- **CLOSED CAPTION 1,2,3**

A closed caption information packet that is embedded in the V-ANC area. Up to three closed captions can be embedded. Not displayed for dual link.

Embedded line

- HD-SDI Line 19 and 582
- SD-SDI Line 18 and 281

- **NET-Q**

Inter-stationary control signals. Not displayed for dual link.

- **TRIGGER PACKET**

Data broadcast trigger signal. Not displayed for dual link.

- **USER DATA 1,2**

User data 1 and 2 packets. Not displayed for dual link.

9.9.2 Displaying the EDH Packet

Carry out the procedure below to display the details of the EDH status.

* This menu appears if the input signal is SD-SDI.

● **Procedure**

STATUS → F•5 ANC PACKET → 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						up menu
TEXT						

Details of the EDH Status Display Screen

The EDH packet flag indicates the contents of the EDH packet that is embedded in the input SDI signal. RECEIVED CRC indicates the result of the comparison between the CRC in the EDH packet and the CRC calculated from the data.

Because the SDI output is delivered by passing through only the serial reclock circuit, the packet contents are not overwritten even if an error occurs in the RECEIVED CRC.

The details of the displayed items are given below.

● **INTERFACE LINE No.:** Displays the line in which the EDH packet is embedded.

When the line number is outside of the standard, it is displayed in red.

If the packet is not embedded, the following items are blank.

● **EDH PACKET: Error detection of the EDH packet**

NORMAL: If all of the UES, IDA, IDH, EDA, and EDH flags (see below) are zero, and RECEIVED CRC FF and AP are NORMAL.

ERROR: If any of the UES, IDA, IDH, EDA, and EDH flags (see below) is 1, or RECEIVED CRC FF and AP are ERROR.

● **FF: Full field**

Generates a CRC code from all the data in a single field and displays the result of the error detection.

● **AP: Active picture**

Generates a CRC code from the data in the active video period and displays the result of the error detection.

- **ANC: Ancillary data**

Generates a parity bit and checksum from the ancillary data and displays the result of the error detection.

- **UES: Displays whether the connected device supports EDH packets.**

0: The entire SDI signal system supports EDH packets.

1: A device that does not support EDH packets is connected.

- **IDA: Data transmission error detection flag in the device before the LV 5800(A).**

0: Normal, 1: Error.

- **IDH: Error detection flag in the data transmission system within the device immediately before the LV 5800(A).**

0: Normal, 1: Error.

- **EDA: Transmission error detection flag in the device before the LV 5800(A).**

0: Normal, 1: Error.

- **EDH: Transmission error detection flag in the device immediately before the LV 5800(A).**

0: Normal, 1: Error.

- **RECEIVED CRC FF: Full field CRC reception error**

NORMAL: The full field CRC of the EDH packet and the full field CRC recalculated from the received data match.

ERROR: The full field CRC of the EDH packet and the full field CRC recalculated from the received data do not match.

- **RECEIVED CRC AP: Active picture CRC reception error**

NORMAL: The active picture CRC of the EDH packet and the active picture CRC recalculated from the received data match.

ERROR: The active picture CRC of the EDH packet and the active picture CRC recalculated from the received data do not match.

Selecting the Display Format

Carry out the procedure below to select the display format.

TEXT: Display the contents of the EDH packet in text format.

DUMP: Displays a data dump of the EDH packet.

- **Procedure**

STATUS → F.5 ANC PACKET → F.1 EDH → F.1 DISPLAY : TEXT / DUMP

Selecting the Dump Mode

F•2 DUMP MODE appears in the EDH packet display menu only if **F•1** DISPLAY is set to DUMP. Carry out the procedure below to select the dump display mode.

HEX: Display the EDH packet data dump in hexadecimal.

BINARY: Display the EDH packet data dump in binary.

- **Procedure**

STATUS → **F•5** ANC PACKET → **F•1** EDH → **F•2** DUMP MODE : HEX / BINARY

Hexadecimal display

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		

DISPLAY	DUMP					up
DUMP	MODE					menu
	HEX					

Binary display

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		

DISPLAY	DUMP					up
DUMP	MODE					menu
	BINARY					

9.9.3 Displaying the Format ID

There are two ancillary packets used to identify the video signal format: SMPTE and ARIB. When a link format is a single link, it can support SMPTE and ARIB, and display mode can be selected.

Carry out the procedure below to select SMPTE format ID display or ARIB current video mode display.

SMPTE: Display the format ID as defined by SMPTE 352M.

ARIB: Displays the current video mode as defined by ARIB STD-B39.

- **Procedure**

IF the link format is single link.

STATUS → **F•5** ANC PACKET → **F•2** FORMAT ID → **F•1** STANDARD : SMPTE / ARIB

9. STATUS DISPLAY

SMPTE

FORMAT ID DISPLAY INTERFACE LINE No. BYTE1 10000101 VERSION ID FORMAT ID DIGITAL INTERFACE BYTE2 00000110 TRANSPORT STRUCTURE PICTURE STRUCTURE PICTURE RATE BYTE3 10100000 ASPECT RATIO H SAMPLING SAMPLING STRUCTURE BYTE4 00000001 CHANNEL ASSIGNMENT DYNAMIC RANGE ASPECT RATIO MAPPING MODE BIT DEPTH					
STANDARD					up menu
SMPTE					

ARIB

FORMAT ID DISPLAY INTERFACE LINE No. 20, 583 BYTE1 10000101 VERSION ID 1 FORMAT ID 1125(1080) LINE DIGITAL INTERFACE 1.485Gb/s BYTE2 00000110 TRANSPORT STRUCTURE INTERLACED PICTURE STRUCTURE INTERLACED PICTURE RATE 30/1.001 BYTE3 10100000 ASPECT RATIO 16:9 H SAMPLING RESERVED DISP ASPECT RATIO 16:9 SAMPLING STRUCTURE 4:2:2 YCbCr BYTE4 00000001 CHANNEL ASSIGNMENT RESERVED BIT DEPTH 10BIT					
STANDARD					up menu
ARIB					

When the link format is a dual link, it can support SMPTE and select format ID display of link A or format ID display of link B. Carry out the procedure below to select Link A or link B.

LINK A: Displays the format ID of link A as defined by SMPTE 352M

LINK B: Displays the format ID of link B as defined by SMPTE 352M

● Procedure

If the link format is dual link.

STATUS → **F•5** ANC PACKET → **F•2** FORMAT ID → **F•2** LINK SELECT : LINK A / LINK B

LINK A

FORMAT ID DISPLAY INTERFACE LINE No. 10, 572 BYTE1 10000111 VERSION ID SMPTE 352M-2002 FORMAT ID 1125(1080) LINE DIGITAL INTERFACE 1.485Gb/s DUAL LINK BYTE2 00001010 TRANSPORT STRUCTURE INTERLACED PICTURE STRUCTURE INTERLACED PICTURE RATE 60/1.001 BYTE3 00000010 ASPECT RATIO RESERVED H SAMPLING RESERVED SAMPLING STRUCTURE 4:4:4 GBR BYTE4 00000010 CHANNEL ASSIGNMENT DUAL LINK A DYNAMIC RANGE 100% ASPECT RATIO NOT USED MAPPING MODE NOT USED BIT DEPTH 12BIT					
	LINK SELECT LINK A				up menu

LINK B

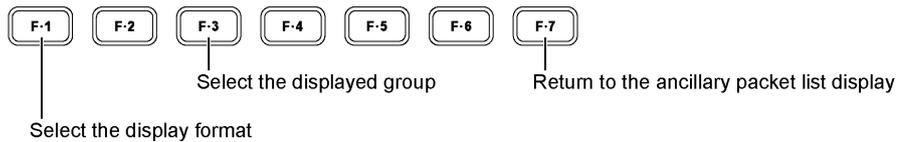
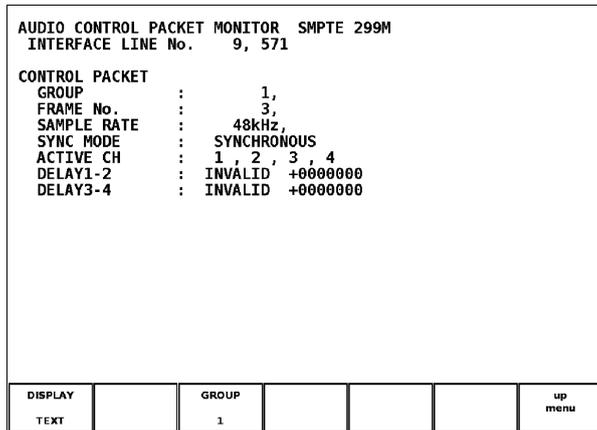
FORMAT ID DISPLAY INTERFACE LINE No. 10, 572 BYTE1 10000111 VERSION ID SMPTE 352M-2002 FORMAT ID 1125(1080) LINE DIGITAL INTERFACE 1.485Gb/s DUAL LINK BYTE2 00001010 TRANSPORT STRUCTURE INTERLACED PICTURE STRUCTURE INTERLACED PICTURE RATE 60/1.001 BYTE3 00000010 ASPECT RATIO RESERVED H SAMPLING RESERVED SAMPLING STRUCTURE 4:4:4 GBR BYTE4 01000010 CHANNEL ASSIGNMENT DUAL LINK B DYNAMIC RANGE 100% ASPECT RATIO NOT USED MAPPING MODE NOT USED BIT DEPTH 12BIT					
	LINK SELECT LINK B				up menu

9.9.4 Displaying the Audio Control Packet

Carry out the procedure below to display the audio control packet for the embedded audio by audio groups. You can set the packet display format to data dump or text. Data of link A is only detected during dual link.

● Procedure

STATUS → **F•5** ANC PACKET → **F•3** CONTROL PACKET



F•2 DUMP MODE appears only if **F•1** DISPLAY is set to DUMP.

Selecting the Displayed Group

Carry out the procedure below to select the displayed group.

- 1: Display the audio control packet of audio group 1.
- 2: Display the audio control packet of audio group 2.
- 3: Display the audio control packet of audio group 3.
- 4: Display the audio control packet of audio group 4.

● Procedure

STATUS → **F•5** ANC PACKET → **F•3** CONTROL PACKET → **F•3** GROUP : 1 / 2 / 3 / 4

Selecting the Display Format

Carry out the procedure below to select the display format.

- TEXT: Display the contents of the audio control packet in text format.
- DUMP: Displays a data dump of the audio control packet.

● **Procedure**

[STATUS] → [F•5] ANC PACKET → [F•3] CONTROL PACKET → [F•1] DISPLAY : TEXT / DUMP

Selecting the Dump Mode

[F•2] DUMP MODE appears in the audio control packet display menu only if [F•1] DISPLAY is set to DUMP. Carry out the procedure below to select the dump display mode.

- HEX: Display a data dump of the audio control packet in hexadecimal.
- BINARY: Display a data dump of the audio control packet in binary.

● **Procedure**

[STATUS] → [F•5] ANC PACKET → [F•3] CONTROL PACKET → [F•2] DUMP MODE : HEX / BINARY

Hexadecimal display

AUDIO CONTROL PACKET MONITOR SMPTE 299M	
INTERFACE LINE No. 9, 571	
DID	1E3
DBN	200
DC	10B
1 AF	204
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	101

DISPLAY	DUMP MODE	GROUP				up menu
DUMP	HEX	1				

Binary display

AUDIO CONTROL PACKET MONITOR SMPTE 299M	
INTERFACE LINE No. 9, 571	
DID	0111100011
DBN	1000000000
DC	0100001011
1 AF	1000000101
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	0100000010

DISPLAY	DUMP MODE	GROUP				up menu
DUMP	BINARY	1				

9.9.5 Displaying the Closed Caption Data

Carry out the procedure below to display the contents of the closed caption packet as defined by ARIB by closed caption types. You can select text display or dump display. If you select dump display, you can select binary or hexadecimal display.

The V-ANC ARIB menu item is not displayed when the LV 58SER01 is in dual link mode.

● **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						
TEXT	CELLULAR						up menu

F-1	F-2	F-3	F-4	F-5	F-6	F-7
-----	-----	-----	-----	-----	-----	-----

Select the display format
Select the closed caption type
Select the dump mode
(displayed if [F•1] is DUMP)
Return to the V blanking ancillary data
ARIB display selection menu

Selecting the Closed Caption Type

Carry out the procedure below to select the closed caption type to be displayed.

- HD: Display the HD closed caption.
- SD: Display the SD closed caption.
- ANALOG: Display the analog closed caption.
- CELLULAR: Display the cellular closed caption.

● **Procedure**

[STATUS] → [F•5] ANC PACKET → [F•4] V-ANC ARIB → [F•1] CLOSED CAPTION → [F•2]

TYPE : HD / SD / ANALOG / CELLULAR

Selecting the Display Format

Carry out the procedure below to select the display format.

- TEXT: Display the contents of the closed caption packet in text format.
 DUMP: Display a dump of the closed caption packet.

• Procedure

[STATUS] → [F•5] ANC PACKET → [F•4] V-ANC ARIB → [F•1] CLOSED CAPTION → [F•1]
 DISPLAY : TEXT / DUMP

Selecting the Dump Mode

[F•3] DUMP MODE appears in the closed caption data display menu only if [F•1] DISPLAY is set to DUMP.

Carry out the procedure below to select the dump display mode.

- HEX: Display the closed caption packet data dump in hexadecimal.
 BINARY: Display the closed caption packet data dump in binary.

• Procedure

[STATUS] → [F•5] ANC PACKET → [F•4] V-ANC ARIB → [F•1] CLOSED CAPTION → [F•3]
 DUMP MODE : HEX / BINARY

You can scroll the dump screen using the function dial (F•D) to view the entire packet.
 Press the function dial (F•D) to return to the head of the packet.

Hexadecimal display

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		

DISPLAY	TYPE	DUMP MODE				up menu
DUMP	CELLULAR	HEX				

Binary display

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		

DISPLAY	TYPE	DUMP MODE				up menu
DUMP	CELLULAR	BINARY				

9.9.6 Displaying the Inter-Stationary Control Data

Carry out the procedure below to display the contents of the inter-stationary control signal as defined by ARIB by closed caption types. The menu of V-ANC ARIB is not displayed during dual link.

Display format can be selected from text display or dump display. If you select the text display, you can arbitrary mask the trigger signal (Q signal) and status signal. If you select dump display, you can select binary or hexadecimal display.

In addition, the unit is equipped with a function for logging the Q signal.

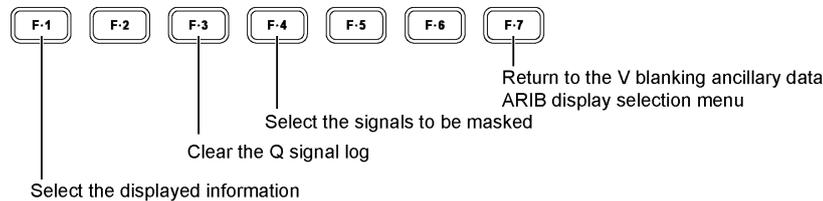
● Procedure

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 LEADER					
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	Q LOG	BIT			up
TEXT	CLEAR	MASK			menu

Inter-stationary control signal display menu



F•2 DUMP MODE appears if **F•1** DISPLAY is set to DUMP.

F•3 QLOG CLEAR appears if **F•1** DISPLAY is not set to DUMP.

F•4 BIT MASK appears if **F•1** DISPLAY is not set to DUMP.

Selecting the Signals to Be Masked

Carry out the procedure below to display the bit mask setup screen. Here you can mask the trigger signal (Q signal) and the status signal in the inter-stationary signal text display screen.

You can select arbitrary bits. However, they are not masked in the dump display and Q signal log display.

● Procedure

STATUS → **F•5** ANC PACKET → **F•4** V-ANC ARIB → **F•2** NET-Q → **F•4** BIT MASK

9. STATUS DISPLAY

After carrying out the procedure above, turn the function dial (F•D) to select the ON/OFF position of the target bit, and press the function dial (F•D) to select ON or OFF.

Q1 to Q32 correspond to TRIGGER SIGNAL Q1 to Q32, and S1 to S16 correspond to STATUS SIGNAL S1 to S16 in the inter-stationary signal text display screen.

NET-Q Bit Mask					
Q1	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	Q17	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S1	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q2	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q18	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S2	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q3	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q19	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S3	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q4	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q20	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S4	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q5	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q21	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S5	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q6	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q22	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S6	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q7	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q23	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S7	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q8	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q24	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S8	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q9	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q25	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S9	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q10	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q26	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S10	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q11	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q27	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S11	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q12	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q28	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S12	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q13	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q29	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S13	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q14	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q30	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S14	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q15	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q31	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S15	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Q16	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Q32	<input type="checkbox"/> ON <input type="checkbox"/> OFF	S16	<input type="checkbox"/> ON <input type="checkbox"/> OFF

COMPLETE			ALL ON	ALL OFF		CANCEL
----------	--	--	--------	---------	--	--------

F-1	F-2	F-3	F-4	F-5	F-6	F-7
-----	-----	-----	-----	-----	-----	-----

Return to the inter-stationary control signal display menu without applying the settings

Set all bits to OFF(mask)

Set all bits to ON

Confirm the bit mask setting

After you done specifying the settings, press **[F•1]** COMPLETE to apply the setting. The settings are applied only if you carry out this step. If you do not want to apply the settings, press **[F•7]** CANCEL. The screen returns to the inter-stationary control signal display menu.

[F•4] BIT MASK does not appear if **[F•1]** DISPLAY is set to DUMP in the inter-stationary control signal display menu.

Selecting the Displayed Information

Carry out the procedure below to select the text display, dump display, or Q signal log of the inter-stationary control signal. For the dump display, you can also select hexadecimal or binary display.

- TEXT: Display the contents of the inter-stationary control signal in text format.
- DUMP: Display a data dump of the inter-stationary control signal packet.
- Q LOG: Display the Q signal log.

● Procedure

[STATUS] → **[F•5]** ANC PACKET → **[F•4]** V-ANC ARIB → **[F•2]** NET-Q → **[F•1]** DISPLAY : TEXT
/ DUMP / Q LOG

Selecting the Dump Mode

Carry out the procedure below to select hexadecimal or binary display.

HEX: Display the data dump of the inter-stationary control signal in hexadecimal.

BINARY: Display the data dump of the inter-stationary control signal in binary.

● **Procedure**

STATUS → **F•5** ANC PACKET → **F•4** V-ANC ARIB → **F•2** NET-Q → **F•1** DISPLAY:DUMP
 → **F•2** DUMP MODE : HEX / BINARY

Hexadecimal display

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

DISPLAY	DUMP					up
DUMP	MODE					menu
	HEX					

Binary display

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

DISPLAY	DUMP					up
DUMP	MODE					menu
	BINARY					

F•2 DUMP MODE appears only if **F•1** DISPLAY is set to DUMP.

You can scroll the dump screen using the function dial (F•D) to view the entire packet.
 Press the function dial (F•D) to return to the head of the packet.

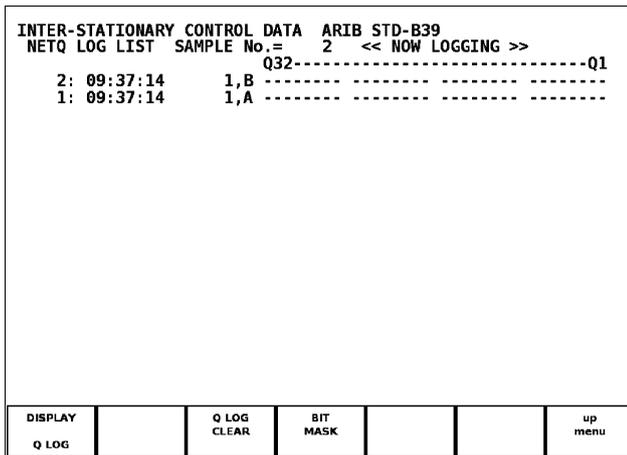
Displaying the Q Signal Log

Carry out the procedure below to display the log display menu of the Q signal and the Q signal log screen.

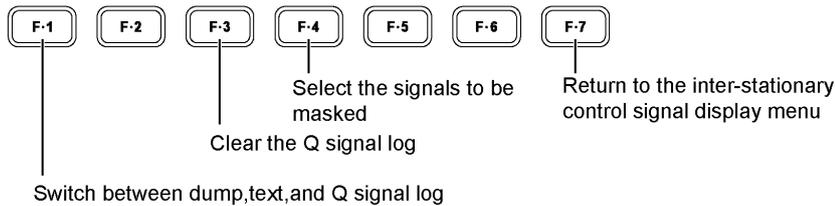
The log holds up to 5000 packets.

● **Procedure**

STATUS → **F•5** ANC PACKET → **F•4** V-ANC ARIB → **F•2** NET-Q → **F•1** DISPLAY : Q LOG



Q signal log display menu



F•4 BIT MASK appears if **F•1** DISPLAY is not set to DUMP.

You can scroll the log screen using the function dial (F•D) to view the log. Press the function dial (F•D) to return to the head of the log (latest log).

F•3 Q LOG CLEAR appears in the Q signal log display menu. Press this key to clear the Q signal log.

Selecting the Dump Mode

Carry out the procedure below to select hexadecimal or binary display.

- HEX: Display the data dump of the data broadcast trigger signal in hexadecimal.
 BINARY: Display the data dump of the data broadcast trigger signal in binary.

● Procedure

[STATUS] → [F•5] ANC PACKET → [F•4] V-ANC ARIB → [F•3] DATA TRIGGER → [F•1]
 DISPLAY DUMP → [F•2] DUMP MODE: HEX / BINARY

You can scroll the dump screen using the function dial (F•D) to view the entire packet.
 Press the function dial (F•D) to return to the head of the packet.

Hexadecimal display

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

DISPLAY	DUMP					up
DUMP	MODE	HEX				menu

Binary display

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

DISPLAY	DUMP					up
DUMP	MODE	BINARY				menu

[F•2] DUMP MODE appears only if [F•1] DISPLAY is set to DUMP.

9.9.8 Displaying the User Data 1 Packet

Carry out the procedure below to display a data dump of the user data 1 packet as defined by ARIB by closed caption types. A dump display can be selected from binary display or hexadecimal display.

The menu of V-ANC ARIB is not displayed during dual link.

- HEX: Display the data dump of the user data 1 packet in hexadecimal.
 BINARY: Display the data dump of the user data 1 packet in binary.

● Procedure

[STATUS] → [F•5] ANC PACKET → [F•4] V-ANC ARIB → [F•4] USER DATA1 → [F•2] DUMP
 MODE : HEX / BINARY

9. STATUS DISPLAY

Hexadecimal display

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

	DUMP						up
	MODE						menu
	HEX						

Binary display

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

	DUMP						up
	MODE						menu
	BINARY						

You can scroll the dump screen using the function dial (F•D) to view the entire packet. Press the function dial (F•D) to return to the head of the packet.

9.9.9 Displaying the User Data 2 Packet

Carry out the procedure below to display a data dump of the user data 2 packet as defined by ARIB by closed caption types.

The function and display configuration are the same as the user data 1 packet.

● Procedure

[STATUS] → [F•5] ANC PACKET → [F•4] V-ANC ARIB → [F•5] USER DATA2 → [F•2] DUMP
MODE : HEX / BINARY

[See also] Function and display configuration → Section 9.9.8, “Displaying the User Data 1 Packet”

9.9.10 Displaying EIA-708 Data

Carry out the procedure below to display the data as defined by EIA-708.

The V-ANC SMPTE menu item is not displayed when the LV 58SER01 is in dual link mode.

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
TEXT							menu

- **Procedure**

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•1 EIA-708

Description of Data

- **FRAME RATE**

Displays the frame_rate field information in the header section of the CDP packet as defined by EIA-708.

- **TIMECODE**

Displays the presence of time_code_section as defined by EIA-708. If the time code is present, the value is also displayed. The presence of time_code_section is checked with the time_code_present field in the header section of the CDP packet.

- **CC**

Displays the presence of ccd_data_section as defined by EIA-708. The presence of ccd_data_section is checked with the ccd_data_present field in the header section of the CDP packet.

- **SVCINFO**

Displays the presence of ccsvcinfo_section as defined by EIA-708. The presence of ccsvcinfo_section is checked with the svcinfo_present in the header section of the CDP packet.

- **Caption Data ch**

Indicates the type of received CC packet.

- **XDS CHECKSUM**

Compares the checksum of the received XDS data and the checksum field of the XDS packet and displays the result.

- **CONTENT ADVISORY**

Displays the content advisory information of the received XDS packet.

- **COPY MANAGEMENT**

Displays the copy management information of the received XDS packet.

Selection of Display Format

The display format can be selected from the text display and the dump display by the following operations.

- **Procedure**

STATUS → F•5 ANC PACKET → F•5 V-ANC SMPTE → F•1 EIA-708 → F•1 DISPLAY :
TEXT / DUMP

Selection of Dump Mode

If the display format is set to dump display, you can select from HEX (hexadecimal notation) display and binary display by the following operations.

Also, in dump display screen, data can be scrolled by turning the function dial (F.D) and returned to the head of data by pressing it.

● **Procedure**

IF **F•1** DISPLAY is set to DUMP

STATUS → **F•5** ANC PACKET → **F•5** V-ANC SMPTE → **F•1** EIA-708 → **F•2** DUMP
MODE : HEX / BINARY

HEX							BINARY						
EIA-708 CDP PACKET							EIA-708 CDP PACKET						
DID 161							DID 0101100001						
SDID 101							SDID 0100000001						
DC 1AB							DC 0110101011						
CDP_ID1 296							CDP_ID1 1010010110						
CDP_ID2 269							CDP_ID2 1001101001						
CDP_LENGTH 1AB							CDP_LENGTH 0110101011						
CDP_FRAME RATE 14F							CDP_FRAME RATE 0101001111						
CDP_STATUS 2FF							CDP_STATUS 1011111111						
SEQ_CNT1 1C1							SEQ_CNT1 0111111101						
SEQ_CNT2 253							SEQ_CNT2 1011100010						
271							1001110001						
2C3							1011000011						
2A9							1010111000						
1C4							0110100010						
1A8							1010000111						
DISPLAY	DUMP					up	DISPLAY	DUMP					up
DUMP	MODE	HEX					DUMP	MODE	BINARY				

9.9.11 Displaying EIA-608 Data

Carry out the procedure below to display the data as defined by EIA-608.

The column of "FRAME RATE", "TIMECODE", "CC", and "SVCINFO" becomes blank.

The V-ANC SMPTE menu item is not displayed when the LV 58SER01 is in dual link mode.

EIA/CEA-608						
FRAME RATE						
TIMECODE						
CC						
SVCINFO						
Caption Data ch CC1 CC2 CC3 CC4 TT1 TT2 TT3 TT4 XDS						
XDS CHECKSUM DETECT						
CONTENT ADVISORY						
COPY MANAGEMENT						
DISPLAY						up
TEXT						menu

● **Procedure**

STATUS → **F•5** ANC PACKET → **F•5** V-ANC SMPTE → **F•2** EIA-608

9.9.12 Displaying Program Data

Carry out the procedure below to display the presence of the Program Description packet as defined by ATSC A/65.

Display "DETECT" if each descriptor ID is present and "MISSING" if not.

The V-ANC SMPTE menu item is not displayed when the LV 58SER01 is in dual link mode.

● 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
--	--	--	--	--	--	--	------------

9.9.13 Displaying VBI Data

Carry out the procedure below to display the VBI data.

The column of "FRAME RATE", "TIMECODE", "CC", and "SVCINFO" becomes blank.

The V-ANC SMPTE menu item is not displayed when the LV 58SER01 is in dual link mode.

● Procedure

[STATUS] → [F•5] ANC PACKET → [F•5] V-ANC SMPTE → [F•4] VBI

VBI(CEA/EIA-608)										
FRAME RATE										
TIMECODE										
CC										
SVCINFO										
Caption Data ch	CC1	CC2	CC3	CC4	TT1	TT2	TT3	TT4	XDS	
XDS CHECKSUM										
CONTENT ADVISORY										
COPY MANAGEMENT										

							up menu
--	--	--	--	--	--	--	------------

Description of Data

- **Caption Data ch**

Indicates the type of received CC packet.

- **XDS CHECKSUM**

Compares the checksum of the received XDS data and the checksum field of the XDS packet and displays the result.

- **CONTENT ADVISORY**

Displays the content advisory information of the received XDS packet.

- **COPY MANAGEMENT**

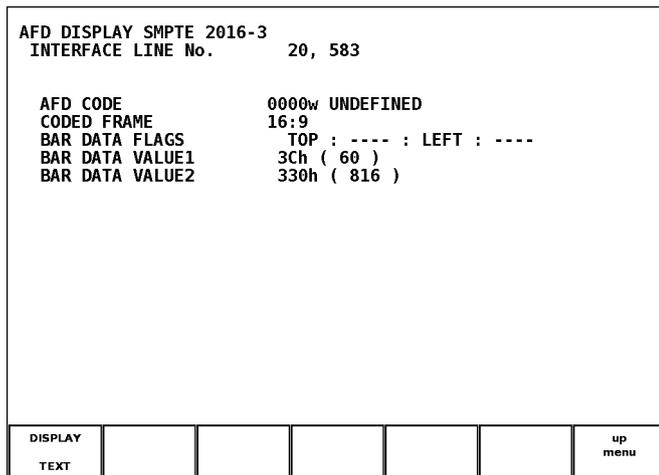
Displays the copy management information of the received XDS packet.

9.9.14 Displaying AFD Packets

Carry out the procedure below to display AFD packets.

The V-ANC SMPTE menu item is not displayed when the LV 58SER01 is in dual link mode.

- **Procedure**



Explanation of Data

- **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.
[See also] Section 8.4.5, "Displaying AFDs"

- **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 second 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.

Selecting the Dump Mode

If the display format is set to dump display, you can select from HEX (hexadecimal notation) display and binary display by the following operations.

Also, in dump display screen, data can be scrolled by turning the function dial (F.D) and returned to the head of data by pressing it.

• **Procedure**

IF **F•1** DISPLAY is set to DUMP

STATUS → **F•5** ANC PACKET → **F•5** V-ANC SMPTE → **F•5** AFD → **F•2** DUMP
 MODE : HEX / BINARY

Hexadecimal display

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				
DISPLAY	DUMP				up menu
DUMP	HEX				

Binary display

AFD DISPLAY SMPTE 2016-3					
INTERFACE LINE No.		20, 583			
DID	1001000001				
SDID	100000101				
DC	0100001000				
1 AFD	010000100				
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				
DISPLAY	DUMP				up menu
DUMP	BINARY				

9.9.15 Customized Search of Ancillary Packets

Carry out the procedure below to detect the ancillary packet that is embedded in a section other than the C data series of the HD video format and display the data dump.

The detection is possible on the AND condition of the DID and SDID or DID only. You can select binary or hexadecimal display for the data dump.

Data of link A is only detected during dual link.

- Procedure

STATUS → F•5 ANC PACKET → F•6 CUSTOM SEARCH

Custom search display menu for ancillary packets

DID	SDID	SET	DUMP MODE HEX			up menu
00	--					



Select the dump mode

Return to the ancillary packet list display

Assign the dump screen scroll function to the function dial(F • D)

Set the SDID of the ancillary packet you want to detect

Set the DID of the ancillary packet you want to detect

Setting the DID of the Ancillary Packet You Want to Detect

Carry out the procedure below to change the DID setup display to blue. If an ancillary packet of the specified DID is embedded in a section other than the C data series of the HD video format, a data dump is displayed. However, if the SDID is also specified, the data dump is displayed only if both the DID and SDID conditions are met.

- Procedure

STATUS → F•5 ANC PACKET → F•6 CUSTOM SEARCH → F•1 DID

After carrying out the procedure above, turn the function dial (F•D) to change the DID setting in the range of 00 to FF. Press the function dial (F•D) to return to the default value (00).

Setting the SDID of the Ancillary Packet You Want to Detect

Carry out the procedure below to change the SDID setup display to blue. If an ancillary packet of the specified DID and SDID is embedded in a section other than the C data series of the HD video format, a data dump is displayed.

If the SDID is not specified, the data dump is displayed only on the specified DID condition.

- Procedure

STATUS → F•5 ANC PACKET → F•6 CUSTOM SEARCH → F•2 SDID

9. STATUS DISPLAY

After carrying out the procedure above, turn the function dial (F•D) to change the SDID setting in the range of 00 to FF. Press the function dial (F•D) to return to the default value (--).

The setting "--" indicates that the SDID is not specified.

CUSTOM SELECTED ANC PACKET		INTERFACE LINE No. 9	
DID	260		
DBN	260		
DC	110		
1	218		
2	200		
3	120		
4	200		
5	180		
6	200		
7	250		
8	200		
9	290		
10	200		
11	250		
12	200		

DID	SDID	SET	DUMP MODE			up menu
60	--		HEX			

Selecting the Dump Mode

Carry out the procedure below to select the dump display mode.

- HEX: Display a data dump of the detected ancillary packet in hexadecimal.
- BINARY: Display a data dump of the detected ancillary packet in binary.

• Procedure

[STATUS] → **[F•5]** ANC PACKET → **[F•6]** CUSTOM SEARCH → **[F•4]** DUMP MODE : HEX / BINARY

Hexadecimal display

CUSTOM SELECTED ANC PACKET		INTERFACE LINE No. 9	
DID	260		
DBN	260		
DC	110		
1	218		
2	200		
3	120		
4	200		
5	180		
6	200		
7	250		
8	200		
9	290		
10	200		
11	250		
12	200		

DID	SDID	SET	DUMP MODE			up menu
60	--		HEX			

Binary display

CUSTOM SELECTED ANC PACKET		INTERFACE LINE No. 571	
DID	1001100000		
DBN	1001100000		
DC	0100010000		
1	0100010000		
2	0100001000		
3	0100100000		
4	1000000000		
5	1000000000		
6	1000000000		
7	1011000000		
8	1000000000		
9	1000000000		
10	1000000000		
11	1000000000		
12	1000000000		

DID	SDID	SET	DUMP MODE			up menu
60	--		BINARY			

Scrolling the Data Dump Using the Function Dial (F•D)

You can view the entire packet by carrying out the procedure below to scroll the data dump screen of the detected ancillary packet.

• Procedure

STATUS → **F•5** ANC PACKET → **F•6** CUSTOM SEARCH → **F•3** SET

Carry out the procedure below to change the SET display to blue. In this condition, the function dial (F•D) operates as a dump screen scroll function. You can view arbitrary positions of the packet using the function dial (F•D). Press the function dial (F•D) to return to the head of the packet.

10. FRAME CAPTURE FUNCTION

The unit can store one frame of serial digital data in SD or HD format to the internal memory. The data can also be saved to external USB memory in frame format or as .dpx or .tif files. The data stored in the unit's internal memory is cleared when the power is turned off. You can keep the data by storing it to USB memory. Data stored in frame format on USB memory can be loaded into the unit's internal memory. The data stored in the unit's internal memory can be displayed as a waveform, vector, picture, or as status information (data dump) on the instrument's display.

[See also] Data dump → Section 9.5.1, "Data Dump Display Mode"

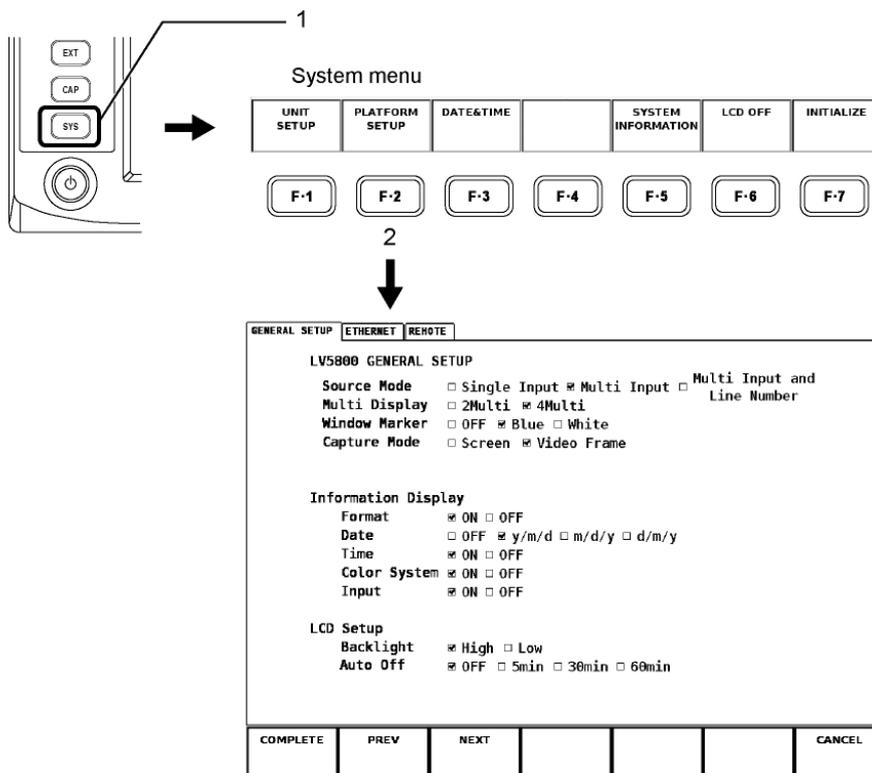
- * The .dpx and .tif files only contain picture data.
- * You cannot display the audio, status, or eye pattern from the frame-captured data.
- * 4Y parade display of the waveform display cannot display the capture waveform. The latest waveform is displayed.

10.1 Setting the Capture Mode

To use the frame capture function, you must set the capture mode to Frame Capture in advance.

You can only specify Frame Capture Mode if this unit is installed.

• Key Operation to Display the Setup Screen



Procedure to Set the Frame Capture Mode

1. Turn the function dial (F•D) to move the cursor to Video Frame by Capture Mode.

2. Press the function dial (F•D).

A red check is placed by Video Frame.

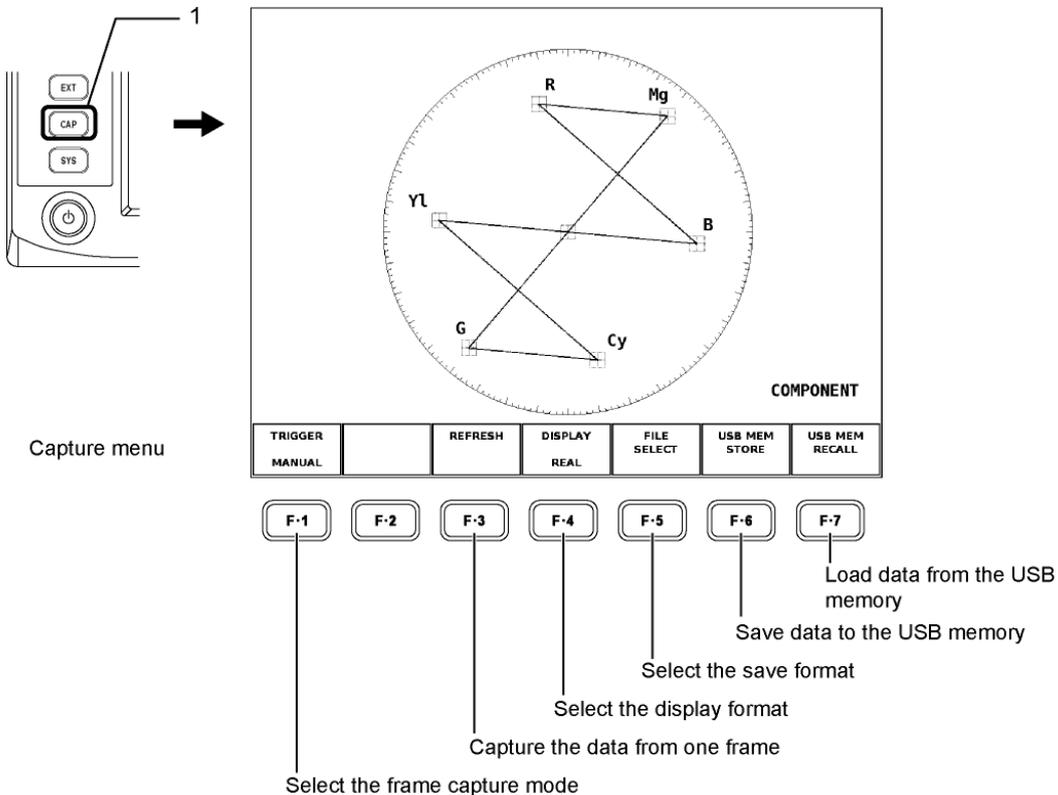
3. Press **F•1 COMPLETE.**

The setting is applied, and the capture mode is set to Frame Capture.

- * To capture the screen, reset Capture Mode back to Screen.
- * If Frame Capture Mode is enabled, the waveform, vector, or picture display disappears momentarily when you carry out the various key operations.
- * If you change the display position using HPOS or VPOS or adjust the gain variable or intensity using the function dial (F•D), the display blinks. Change these items slowly.

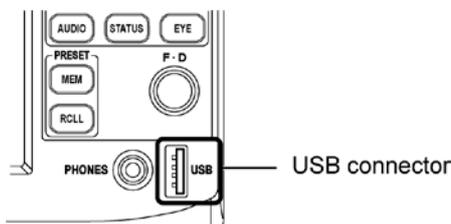
10.2 Capture Menu

Press the CAP (capture) key to display the capture menu.



* The CAP key is enabled only if the display in the selected screen area is set to waveform, vector, or picture.

* **F•5** FILE SELECT, **F•6** USB MEM STORE, and **F•7** USB MEM RECALL only appear if a USB memory device is connected to the USB connector on the front panel. Additionally, **F•6** USB MEM STORE does not appear 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 data stored on the LV 5800(A).



10.3 Selecting the Frame Capture Mode

Frame data can be captured to the unit's internal memory through one of the following two methods.

Carry out the procedure below to select the frame capture mode.

- MANUAL: Capture frame data manually
 ERROR: Capture frame data automatically when an error occurs

This setting is not saved to presets or retained when you restart the LV 5800(A). Even if you select ERROR, if you then load a preset or restart the LV 5800(A), this setting will be set to MANUAL.

● Procedure

If the display of the selected screen area is waveform, vector, or picture

CAP → **F•1** TRIGGER : MANUAL / ERROR

10.4 Capture One Frame Data

Carry out the procedure below to capture the data from one frame to the unit's internal memory.

This unit has a separate memory for the two SDI inputs (Ach and Bch).

During dual link, you can capture the link A and B simultaneously by using the memory of two systems (Ach and Bch).

● Procedure

If the display of the selected screen area is waveform, vector, or picture

CAP → **F•3** REFRESH

- * If another screen area is displaying the frame capture a channel that is the same as the unit number and SDI input channel on which this operation is being carried out, the frame capture display of that screen area is also updated with the newly captured frame data.
- * When you take a screen capture, data is stored in the internal memory when you press the CAP (capture) key. However, if you want to take a frame capture, you must press **F•3** REFRESH to store the data in the internal memory.

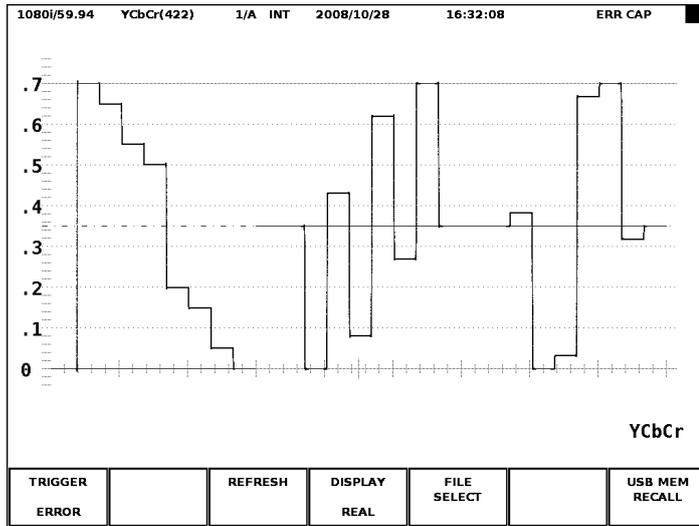
● Capturing Frame Data Manually

The unit captures frame data and stores it to the internal memory when you press **F•3** REFRESH. If you press **F•3** REFRESH again, the data that is stored in the internal memory is overwritten with the newly captured frame data.

This operation causes the displayed waveform, vector, or picture to disappear momentarily.

● **Capturing Frame Data Automatically When an Error Occurs**

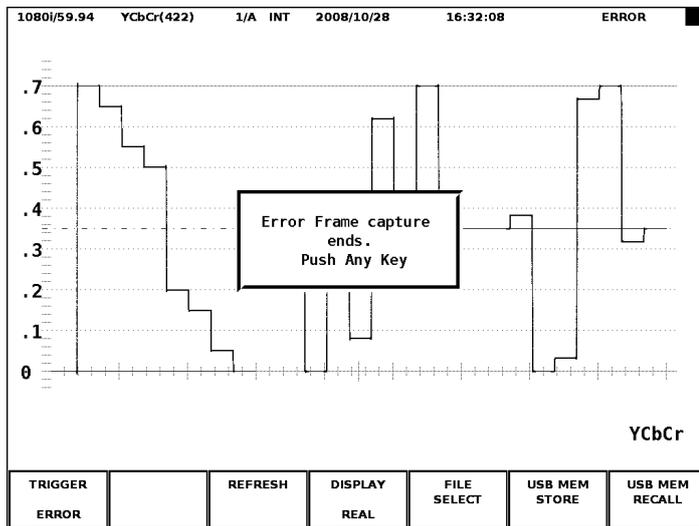
Press **F•3** REFRESH to switch the unit into error standby mode. The message “ERR CAP” blinks in the upper right of the screen.



If one of the following errors occurs while “ERR CAP” is blinking, the frame data at that moment is captured to the internal memory. If the error detection explained in chapter 5, “SYSTEM SETUP OF THE UNIT” is turned off, nothing is captured.

TRS Error / Line Number Error / Illegal Code Error / Parity Error (ANC Data) / Checksum Error (ANC Data) / BCH Error / DBN Error / Parity Error (Audio) / Inhibit Line Error / Gamut Error / Composite Gamut Error / Level Error

When a message appears in the center of the display, press any key except for the power key.



- * While "ERR CAP" is blinking, the error standby mode will be cancelled if one of the following occurs:
 - The unit assigned to the area in error standby mode is changed.
→ Cancelled in the corresponding area
 - The channel (A or B) is changed in the area that is in error standby mode.
→ Cancelled in the corresponding area
 - **F•1** TRIGGER is set to MANUAL in the area that is in error standby mode.
→ Cancelled in the corresponding area
 - **F•1** TRIGGER is set to MANUAL, and **F•3** REFRESH is pressed.
→ Cancelled in the corresponding area and all other areas that are monitoring the same signal
 - Link Format in the system settings is switched.
→ Cancelled in all the areas that are assigned to the corresponding unit
 - Capture Mode in the system settings is set to Screen.
→ Cancelled in all areas
 - Frame data is loaded from USB memory.
→ Cancelled in all areas
- * Note that the captured data in the internal memory is cleared when you press **F•3** REFRESH.

10.5 Selecting the Display

The frame capture data in the internal memory of this unit can be displayed.

The following three display methods are available.

Carry out the procedure below to select the display format.

REAL: Display the latest information.

HOLD: Display the captured image. To display the waveform or vectorscope, the captured waveform display is converted to cyan. However, the scale and readout are updated with the latest information.

BOTH: Display both the newest information and captured image overlaid.

If pictures are overlaid, the latest information and the captured image are displayed with one-half the original brightness. If waveforms and vectors are overlaid, the latest information is displayed with one-half the original brightness, and the captured waveform is displayed with the cyan component reduced to half (the captured waveform display is converted to cyan).

- * To display the frame capture data, an SDI signal with the same format as the data in the internal memory must be applied to the corresponding SDI channel.
- * Even if HOLD and BOTH have been selected, the captured waveform is not displayed when 4Y parade display is being displayed. The latest waveform is displayed.
- * This operation causes the waveform, vector, or picture on screen to disappear momentarily.

● Procedure

When the display of the selected screen area is any of the waveform, the vector, or the picture.

CAP → **F•3** DISPLAY : REAL / HOLD / BOTH

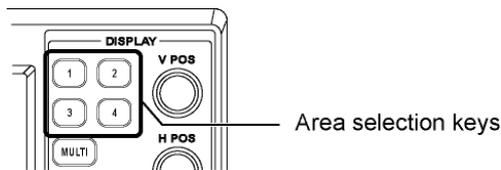
10.6 Saving to USB Memory

The captured frame data in the unit's internal memory is cleared when the power is turned off. You can keep the data by storing it to USB memory. You can save data to USB memory in frame format or as .dpx or .tif files.

Data stored in frame format on USB memory can be loaded into the unit's internal memory. It can then be displayed as a waveform, vector, picture, or as status information (data dump) on the LV 5800(A) display.

Carry out the procedure below to save data to USB memory.

1. **Press an area selection key to select the display area of the SDI input channel of the unit number that corresponds to the internal memory that contains the captured frame data that you want to save.**



2. **Set the display of the selected screen area to waveform, vector, or picture.**

Use the following keys to select the display:

Waveform display: WFM key

Vectorscope display: VECT key

Picture display: PIC key

3. **Connect a USB memory device to the USB connector.**

4. **Select the file formats.**

Press **[CAP]** → **[F•5]** FILE SELECT to set the file formats that you want to save to ON.

When you are finished, press **[F•7]** up menu.

DPX FILE: Only picture data is saved as .dpx files.

TIF FILE: Only picture data is saved as .tif files.

FRM FILE: Single frames are saved.

[F•5] FILE SELECT appears only if a USB memory device is connected to the USB connector.

5. **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.

Captured frame data is saved to the USB memory's "BMP" folder using the following naming format:

yyyymmddhhmmss (The order is: year, month, day, hour, minute, second. You can set the date and time in the system settings.)

[F•6] USB MEM STORE does not appear when a USB memory device is not connected to the USB connector, 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 data stored on the LV 5800(A).

The time required to save a file depends on the input format. For example, saving a file under the single link, 1080i/59.94 input format takes approximately 30 seconds.

The approximate file sizes are listed below. These are the sizes that are displayed on the LV 5800(A).

File Format DPX	Input Format		
	Single Link		Dual Link
	1080i/59.94	525i/59.94	1080i/59.94
DPX	8.3 MB	1.4 MB	8.3 MB
TIF	12.5 MB	2.1 MB	12.5 MB
FRM	9.9 MB	3.6 MB	19.8 MB

10.7 Loading from USB Memory

Carry out the procedure below to load captured frame data that is stored in frame format on USB memory to the unit's internal memory. The loaded data can be displayed as a waveform, vector, or picture on the screen. In addition, it can also be displayed in the data dump display that is accessible from the status display menu.

• Procedure to Load Data from USB Memory

- 1. Connect the USB memory containing the frame capture data you want to load to the USB connector.**
- 2. Select the screen area of the SDI input channel of the unit number corresponding to data to be loaded in internal memory using an area selection key.**
- 3. Set the display of the selected screen area to waveform, vector, or picture.**

Use the following keys to select the display.

Waveform display:	WFM key
Vectorscope display:	VECT key
Picture display:	PIC key

- 4. Press the CAP (capture) key.**

The capture menu appears.

- 5. In the capture menu, press **F•7** USB MEM RECALL.**

The USB memory load menu and a list of stored frame files appear. **F•7** USB MEM RECALL appears only if a USB memory device is connected to the USB connector.

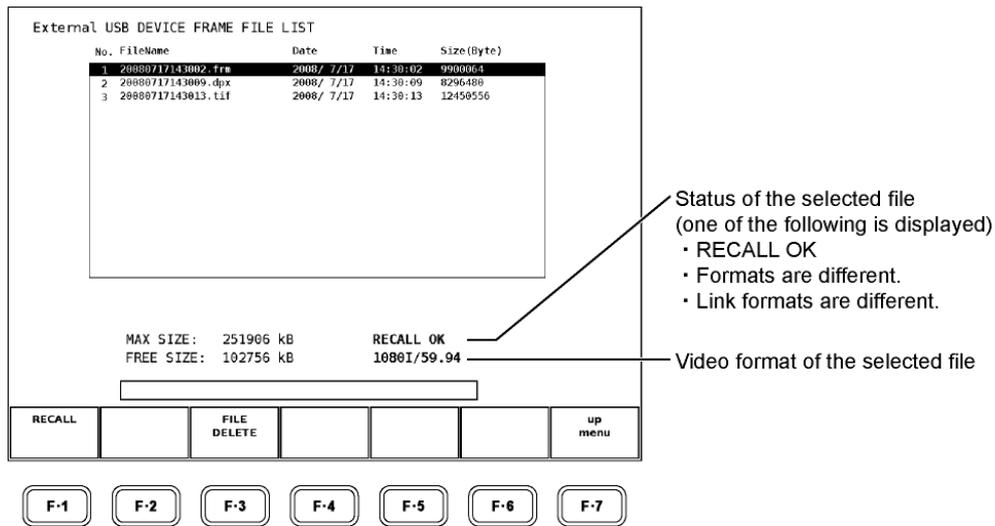
- 6. Turn the function dial (F•D) to select the file you want to load.**

The selected file is indicated in blue, and its video format information is displayed below the file list. If the current SDI input video format is the same as the video format of the selected file, "RECALL OK" is displayed in yellow-green, and **F•1** RECALL appears.

In the following cases, **F•1** RECALL does not appear, and you can not load data from the USB memory.

- The current input video format and the video format of the selected file are different.
- The current input link format and the link format of the selected file are different.
- The selected file is a .dpx file or a .tif file.

10. FRAME CAPTURE FUNCTION



7. In the USB memory load menu, press **F-1** **RECALL**.

The captured frame data is loaded into the unit's internal memory.

The screen automatically returns to the capture menu when the data is loaded. The screen that is displayed depends on the **F-4** **DISPLAY** setting.

10.8 Deleting a Screen Capture File

Carry out the procedure below to delete a frame capture file stored in the USB memory.

● Procedure to Delete a Screen Capture File

1. **Connect the USB memory containing the frame capture data you want to load to the USB connector.**
2. **Select the screen area of this unit using an area selection key.**
3. **Set the display of the selected screen area to waveform, vector, or picture.**

Use the following keys to select the display.

Waveform display: WFM key

Vectorscope display: VECT key

Picture display: PIC key

4. **Press the CAP (capture) key.**

The capture menu appears.

5. **Press **F-7** **USB MEM RECALL**.**

The USB memory load menu and a list of stored frame files appear. **F-7** **USB MEM RECALL** appears only if a USB memory device is connected to the USB connector.

6. **Turn the function dial (F•D) to select the file you want to delete.**

7. **Press **F-3** **FILE DELETE**.**

F-1 **DELETE YES** and **F-3** **DELETE NO** appear.

Press **F-1** **DELETE YES** to delete the selected file.

Press **F-2** **DELETE NO** to not delete the selected file and return to the USB memory load menu.

10.9 Dual Link

This unit is equipped with a separate memory for the two SDI inputs (Ach and Bch). However, if set to dual link mode, the internal memories for Ach and Bch are assigned to LINK_A and LINK_B, respectively, to achieve the capturing of a single dual link frame. Therefore, a pair of files for LINK_A and LINK_B stored to the USB memory compose a single dual link frame.

10.10 File Format of Captured Frame Data

Captured frame data that is saved in frame format is saved to USB memory in binary format (.frm extension). This section explains the details of the captured frame data file format.

10.10.1 Header Data

The figure below, “Header data,” shows the beginning of a captured frame data file. It starts with the header data. Be aware that because the ordering is little endian, the least significant byte is at the beginning, and the most significant byte is at the end.

The first two bytes (addresses 0 and 1) are reserved. The next four bytes (addresses 2 to 5) indicate the size of the captured data. In the figure, “ below, the four bytes are 00970FE0h, signifying a size of 9,900,000 bytes (in a dual link, half of the size of the captured data, which is equivalent to the size of one link, will be indicated).

The next two bytes indicate the video format. The codes for each video format are listed in the chart, “Video format codes.” In the figure below, “Header data“, the two bytes are 0001h, signifying 1080i/59.94.

The 56 bytes contained in addresses 8 through 3Fh are reserved, and the captured data starts with address 40h.

Figure <Header data>

	Reserved		Data size				Format code									
ADDRESS	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000000	0A	00	E0	0F	97	00	01	00	01	01	00	00	00	00	00	00
0000010	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0000020	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0000030	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
Start of captured data 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

10. FRAME CAPTURE FUNCTION

Table <Video format code>

Link format	Color System	Quantization	Format code	Video format
single link	SINGLE	10bit	0000	1080i/60
	SINGLE	10bit	1000	1080PsF/30
	SINGLE	10bit	0001	1080i/59.94
	SINGLE	10bit	1001	1080PsF/29.97
	SINGLE	10bit	0002	1080i/50
	SINGLE	10bit	1002	1080PsF/25
	SINGLE	10bit	0004	1080PsF/24
	SINGLE	10bit	0005	1080PsF/23.98
	SINGLE	10bit	000A	1080p/30
	SINGLE	10bit	000B	1080p/29.97
	SINGLE	10bit	000C	1080p/25
	SINGLE	10bit	000E	1080p/24
	SINGLE	10bit	000F	1080p/23.98
	SINGLE	10bit	0106	720p/60
	SINGLE	10bit	0107	720p/59.94
	SINGLE	10bit	0108	720p/50
	SINGLE	10bit	010A	720p/30
	SINGLE	10bit	010B	720p/29.97
	SINGLE	10bit	010C	720p/25
	SINGLE	10bit	010E	720p/24
	SINGLE	10bit	010F	720p/23.98
	SINGLE	10bit	0201	525i/59.94
	SINGLE	10bit	0202	625i/50
	dual link	GBR_444	10bit	0800
GBR_444		10bit	1800	1080PsF/30
GBR_444		10bit	0801	1080i/59.94
GBR_444		10bit	1801	1080PsF/29.97
GBR_444		10bit	0802	1080i/50
GBR_444		10bit	1802	1080PsF/25
GBR_444		10bit	0804	1080PsF/24
GBR_444		10bit	0805	1080PsF/23.98
GBR_444		10bit	080A	1080p/30
GBR_444		10bit	080B	1080p/29.97
GBR_444		10bit	080C	1080p/25
GBR_444		10bit	080E	1080p/24
GBR_444		10bit	080F	1080p/23.98
GBR_444		12bit	0900	1080i/60
GBR_444		12bit	1900	1080PsF/30
GBR_444		12bit	0901	1080i/59.94
GBR_444		12bit	1901	1080PsF/29.97
GBR_444		12bit	0902	1080i/50
GBR_444		12bit	1902	1080PsF/25
GBR_444		12bit	0904	1080PsF/24
GBR_444		12bit	0905	1080PsF/23.98

10. FRAME CAPTURE FUNCTION

Link format	Color System	Quantization	Format code	Video format
	GBR_444	12bit	090A	1080p/30
	GBR_444	12bit	090B	1080p/29.97
	GBR_444	12bit	090C	1080p/25
	GBR_444	12bit	090E	1080p/24
	GBR_444	12bit	090F	1080p/23.98
	YCbCr_422	10bit	0A06	1080p/60
	YCbCr_422	10bit	0A07	1080p/59.94
	YCbCr_422	10bit	0A08	1080p/50
	YCbCr_422	12bit	0B0A	1080p/30
	YCbCr_422	12bit	0B0B	1080p/29.97
	YCbCr_422	12bit	0B0C	1080p/25
	YCbCr_422	12bit	0B0E	1080p/24
	YCbCr_422	12bit	0B0F	1080p/23.98
	YCbCr_422	12bit	0B00	1080i/60
	YCbCr_422	12bit	1B00	1080PsF/30
	YCbCr_422	12bit	0B01	1080i/59.94
	YCbCr_422	12bit	1B01	1080PsF/29.97
	YCbCr_422	12bit	0B02	1080i/50
	YCbCr_422	12bit	1B02	1080PsF/25
	YCbCr_422	12bit	0B04	1080PsF/24
YCbCr_422	12bit	0B05	1080PsF/23.98	
dual link 2K	GBR_444	12bit	0984	1080PsF/24
	GBR_444	12bit	0985	1080PsF/23.98
	GBR_444	12bit	098E	1080p/24
	GBR_444	12bit	098F	1080p/23.98

10.10.2 HD Format

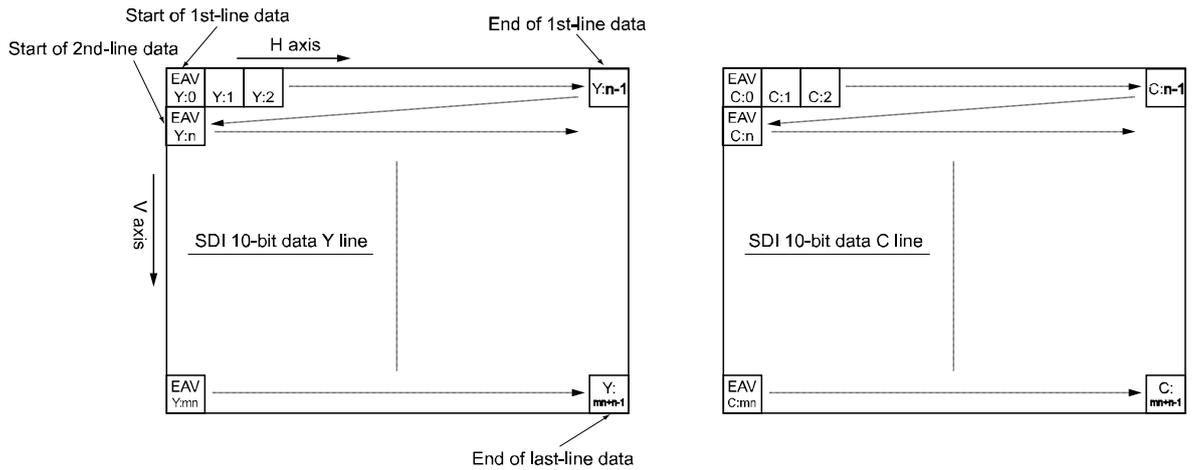
The captured data starts at address 40h. 10 bits of digital data are expressed with one word (16 bits). In HD format, the order of words (2 bytes) is Y0, C0, Y1, C1, Y2, C2, and so on. The figure, "HD format," shows how each image element is handled.

The one word contained in addresses 40 and 41h indicates Y0. Its value is 3FFh.

The 6 bits from the MSB (15th bit) to the 10th bit of a word are zeroes for Y and reserved for C. The reserved bits are used by the instrument when the frame capture is displayed.

In a dual link, link A data starts from address 40, and link B frame data comes after the end of the link A frame data.

Figure < HD format >



1st Y-line word: Y0(EAV)=3FFh

1st C-line word: C0(EAV)=3FFh (Top 6 bits are ignored)

2nd Y-line word: Y1=000h

2nd C-line word: C1=000h (Top 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												
0000090	40	00	00	1E												
00000A0	40	00	00	1E												
00000B0	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												

52nd Y-line word: Y51=040h

52nd C-line word: C51=200h (Top 6 bits are ignored)

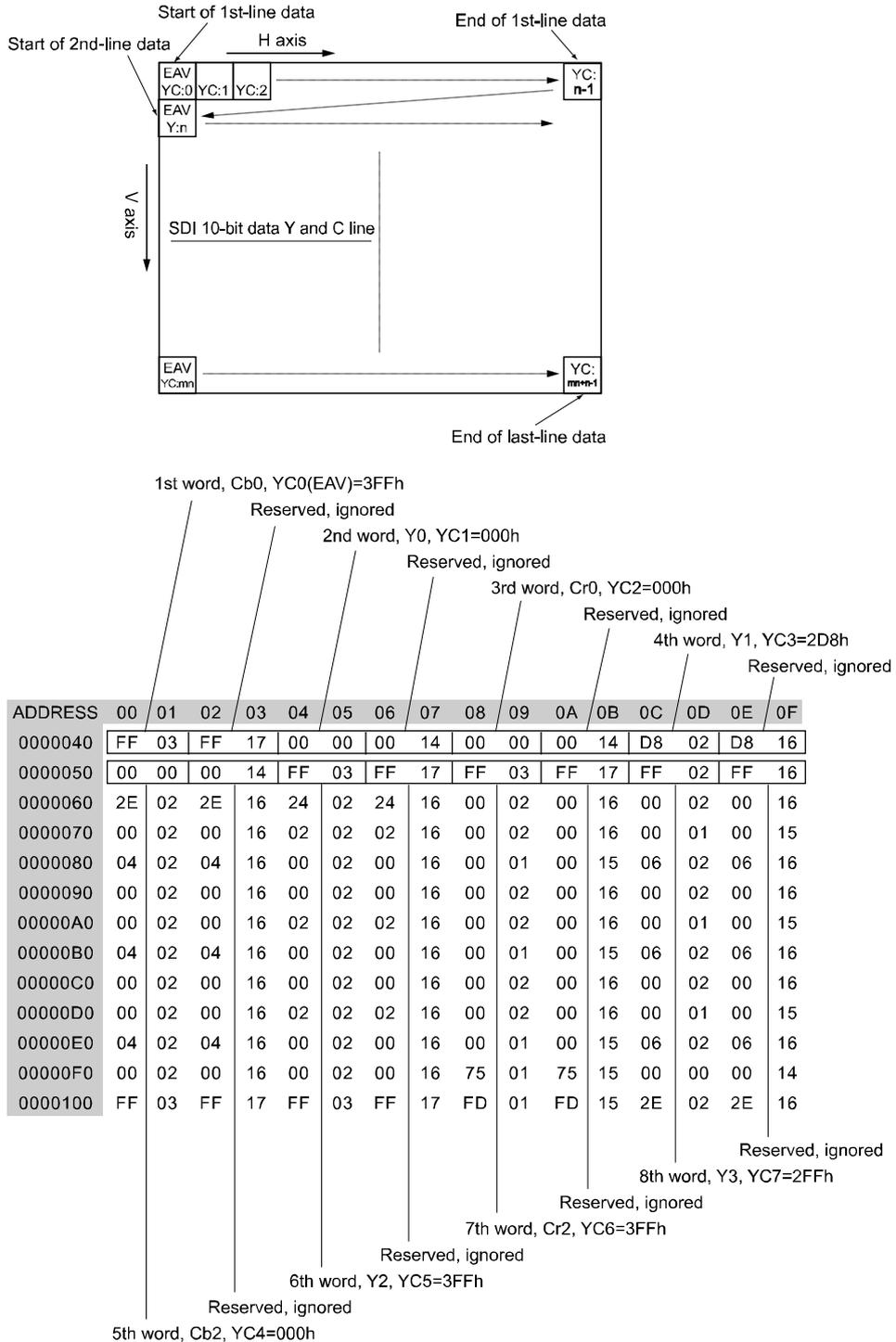
10.10.3 SD Format

The captured data starts at address 40h. 10 bits of digital data are expressed with one word (16 bits). In SD format, the order of words (2 bytes) is Cb0, reserved, Y0, reserved, Cr0, reserved, Y1, reserved, Cb2, reserved, Y2, reserved, Cr2, and so on. The reserved words are used by the instrument to display the frame capture.

The figure, "SD format," shows how each pixel is mapped. The value of the one word contained in addresses 40 and 41h represent Y0, and the value is 3FFh. The 6 bits from the MSB (15th bit) to the 10th bit of each word are fixed at 0.

The 6 bits from the MSB (15th bit) to the 10th bit of each word are fixed at 0.

Figure <SD format>



11. A/B OUTPUT SELECT FUNCTION

The LV 58SER01A is capable of delivering the reclocked signal of the applied SDI signal. The OUTPUT SDI A/B connector allows you to switch the reclocked signal output between the SDI signal applied to the INPUT SDI A or B connector.

- * This function is not available on the LV 58SER01. The OUTPUT SDI A connector delivers the reclocked output of the SDI signal applied to the INPUT SDI A connector, and the OUTPUT SDI B connector delivers the reclocked output of the SDI signal applied to the INPUT SDI B connector. This function is also not available on the LV 58SER01A in dual link mode (the input and output assignments are fixed).

You can select whether to output from the OUTPUT SDI A/B connector only the reclocked SDI signal applied to the INPUT SDI A connector or the reclocked SDI signal by switching between INPUT SDI A or B connector using key operation. You can make this selection in the system settings.

[See also] Setting the OUTPUT SDI A/B connector → Section 5.1, "GENERAL SETUP"

● Output Select Operation

If you set SDI Select Output to Ach/Bch, you can select the output from the OUTPUT SDI A/B connector using the A and B keys.

Press the A key to output from the OUTPUT SDI A/B connector the reclocked signal of the SDI signal applied to the INPUT SDI A connector or the B key to output the reclocked signal of the SDI signal applied to the INPUT SDI B connector.

The status of the A and B key indicators changes according to the operation. The output from the OUTPUT SDI A/B connector is synchronized with the indicators. The switching is carried out on the unit that is selected using an area selection key.

12. FIRMWARE REVISION HISTORY

This manual was written for the following firmware versions:

- Ver. 1.2 on the LV 5800A
- Ver. 11.1 on the LV 5800
- Ver. 5.7 on the LV 7800

To confirm the version, press a key in order of **[SYS]** → **[F•5]** SYSTEM INFORMATION.

- **Ver 1.2 on the LV 5800A / Ver 11.1 on the LV 5800 / Ver 5.7 on the LV 7800**
 - On the LV 58SER01(A), a measurement range setting function was added to the lip sync measurement of the status display.
- **Ver 10.6 on the LV 5800 / Ver 5.2 on the LV 7800**
 - On the LV 58SER01(A), the video signal waveform display now includes 1023,255 for SCALE UNIT.
 - On the LV 58SER01(A), the picture display ASPECT MARKER now includes 14:9, 13:9, and 2.39:1.
 - On the LV 58SER01(A), 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**
 - TV commercial (Japanese closed caption and loudness) check feature have been added to the LV 58SER01(A).
- **Ver 7.9 on the LV 5800 / Ver 2.6 on the LV 7800**
 - A feature has been added to the LV 58SER01(A) for logging Japanese closed caption clear screen commands.
- **Ver 7.5 on the LV 5800 / Ver 2.1 on the LV 7800**
 - A feature has been added to the LV 58SER01(A) that displays “CS” in cyan on the Japanese closed caption display when a clear screen command 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 58SER01(A).
 - An SDI signal lip-sync measurement feature, which is accessible by installing an LV 58SER01(A) and an LV 58SER40(A), has been added to the status display.
 - An error capture feature has been added to the LV 58SER01(A) for BCH errors, DBN errors, parity errors (audio), and inhibit line errors.
- **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 58SER01(A).
- **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 58SER01(A).

- **Ver 6.1 on the LV 5800 / Ver 1.1 on the LV 7800**
 - A marker display feature that matches the AFD data has been added to the picture display of the LV 58SER01(A).
 - An AFD packet analysis display feature has been added to the status display of the LV 58SER01(A).
 - An ANC data listing feature has been added to the status display of the LV 58SER01(A).
- **Ver 5.9 on the LV 5800 / Ver 1.1 on the LV 7800**
 - A histogram display feature has been added to the picture display of the LV 58SER01(A).
- **Ver 5.5 on the LV 5800 / Ver 1.1 on the LV 7800**
 - OFF has been added to the LPF setting in the LV 58SER01(A) unit setup.
- **Ver 5.4 on the LV 5800**
 - D-VITC has been added to the time codes in the LV 58SER01(A) unit setup.
 - An entry for millivolts (mV) has been added to gamut error and composite gamut error in the LV 58SER01(A) unit setup.
 - MULTI has been added to the waveform colors for the video signal waveform display for the LV 58SER01(A). (When using the single display.)
 - ACTIVE has been added to SWEEP MAG for the video signal waveform display for the LV 58SER01(A). (When using the pseudo-composite display.)
- **Ver. 5.1 on the LV 5800**
 - An error frame capturing feature has been added to the LV 58SER01(A).
- **Ver. 4.8 on the LV 5800**
 - An AFD display feature has been added to the LV 58SER01(A)'s picture display.
- **Ver. 4.7 on the LV 5800**
 - WHITE and GREEN display color options have been added to the video signal waveform and vector waveform displays on the LV 58SER01(A), LV 58SER03, and LV 58SER04.
 - The following five types of scale memory that are used when a video signal waveform is displayed in RGB or GBR have been added to the LV 58SER01(A) and LV 58SER04.
 1. Full scale 150 %
 2. 8-bit scale (decimal: 255)
 3. 8-bit scale (hexadecimal: FF)
 4. 10-bit scale (decimal: 1023)
 5. 10-bit scale (hexadecimal: 3FF)
 - The DPX and TIFF formats have been added to the save formats for captured frame data on the LV 58SER01(A).
 - The CINELITE option on the LV 58SER01(A) now supports CINELITE II.
- **Ver. 4.5 on the LV 5800**
 - The Japanese closed caption display feature on the LV 58SER01(A) now supports 1-byte DRCS.
 - On the LV 58SER01(A), the H PHASE value on the phase difference display can now be displayed as the number of samples.

- **Ver. 3.7 on the LV 5800**
 - The manual formatting function is added to the LV 58SER01(A).
 - The phase difference display function is improved for the LV 58SER01(A). The horizontal sweep rate is changed to $\pm 1H$.
 - When the Japanese closed caption is displayed on the LV 58SER01(A), the type of superimpose caption and decode caption can be displayed.
 - When the Japanese closed caption is displayed on the LV 58SER01(A), the caption can be cleared on the CLEAR menu.
- **Ver. 3.2 on the LV 5800**
 - The Japanese closed caption can be displayed by installing the LV 58SER01(A).
 - For the LV 58SER01(A), if a level error occurs on the Y-axis, it can be displayed on the Gamut Error screen.
- **Ver. 3.0 on the LV 5800**
 - For the LV 58SER01(A), the 2K format in dual link mode can be used.
- **Ver. 2.8 on the LV 5800**
 - For the LV 58SER01(A), the 4Y_PARADE function can also be applied to the 1Y, 2Y, and 3Y modes.
 - For the LV 58SER01(A), closed caption EIA-708-B is added to the single Picture display mode.
- **Ver. 2.3 on the LV 5800**
 - For the LV 58SER01(A), the SMPTE CC (608/(708)/608/(608)/VB1) can be used.
- **Ver. 2.2 on the LV 5800**
 - For the LV 58SER01(A), the A or B mode can be selected on the data dump screen in dual link mode.
 - For the LV 58SER01(A), the title of $YC_B C_R$ or GBR can be respectively displayed on the data dump screen in dual link mode.
- **Ver. 2.0 on the LV 5800**
 - The dual link mode is added to the LV 58SER01(A).
- **Ver. 1.6 on the LV 5800**
 - The LV 58SER01A can be used.
 - The SWEEP MAG X20 mode is added to the LV 58SER01(A).
 - The GAIN IQ-MAG is added to the LV 58SER01(A).
 - For the LV 58SER01(A), the "mV/%" scale is added to the 5 BAR display and the RGB/GBR can be sequentially selected.
 - For the LV 58SER01(A), the input information can be displayed in the 4Y-PARADE mode.
 - The frame capture function is added to the LV 58SER01(A).
 - For the LV 58SER01(A), the detected power values are common to the both 5 BAR and the GAMUT.
 - For the LV 58SER01(A), the level errors of Y and C can be displayed.
 - For the LV 58SER01(A), the "MENU OFF" capability is added to the PICTURE.

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Following information is for Chinese RoHS only

所含有毒有害物质信息

部件号码: LV 58SER01A



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	×	○	○	○	○	○
包装材	○	○	○	○	○	○
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。						

LEADER

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