SONY®

HD DIGITAL VIDEOCASSETTE RECORDER

HDW-1800
HDW-D1800

HDCAM MEMORY STICK CINE ALTA

OPERATION MANUAL   English

1st Edition (Revised 3)

WARNING

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

THIS APPARATUS MUST BE EARTHED.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: THIS WARNING IS APPLICABLE FOR USA ONLY.
If used in USA, use the UL LISTED power cord specified below.
DO NOT USE ANY OTHER POWER CORD.

Plug Cap	Parallel blade with ground pin (NEMA 5-15P Configuration)
Cord	Type SJT, three 16 or 18 AWG wires
Length	Minimum 1.5m (4 ft .11in.), Less than 2.5 m (8 ft .3 in.)
Rating	Minimum 10A, 125V

Using this unit at a voltage other than 120V may require the use of a different line cord or attachment plug, or both.
To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

WARNING: THIS WARNING IS APPLICABLE FOR OTHER COUNTRIES.

1. Use the approved Power Cord (3-core mains lead) / Appliance Connector / Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
2. Use the Power Cord (3-core mains lead) / Appliance Connector / Plug conforming to the proper ratings (Voltage, Ampere).

If you have questions on the use of the above Power Cord / Appliance Connector / Plug, please consult a qualified service personnel.

CAUTION
The apparatus shall not be exposed to dripping or splashing. No objects filled with liquids, such as vases, shall be placed on the apparatus.

CAUTION
The unit is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the unit itself has been turned off.

For the customers in the U.S.A.
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the customers in Europe
This product with the CE marking complies with both the EMC Directive and the Low Voltage Directive issued by the Commission of the European Community.
Compliance with these directives implies conformity to the following European standards:
• EN60065: Product Safety
• EN55103-1: Electromagnetic Interference (Emission)
• EN55103-2: Electromagnetic Susceptibility (Immunity)
This product is intended for use in the following Electromagnetic Environment(s):
E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors), E4 (controlled EMC environment, ex. TV studio).

For the customers in Europe
The manufacturer of this product is Sony Corporation, 1-7-1 Konan, Minato-ku, Tokyo, 108-0075 Japan.
The Authorized Representative for EMC and product safety is Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Germany. For any service or guarantee matters please refer to the addresses given in separate service or guarantee documents.

Attention-when the product is installed in Rack:

1. **Prevention against overloading of branch circuit**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please make sure that the rack does not overload the supply circuit.
2. **Providing protective earth**
   When this product is installed in a rack and is supplied power from an outlet on the rack, please confirm that the outlet is provided with a suitable protective earth connection.
3. **Internal air ambient temperature of the rack**
   When this product is installed in a rack, please make sure that the internal air ambient temperature of the rack is within the specified limit of this product.
4. **Prevention against achieving hazardous condition due to uneven mechanical loading**
   When this product is installed in a rack, please make sure that the rack does not achieve hazardous condition due to uneven mechanical loading.
5. **Install the equipment while taking the operating temperature of the equipment into consideration**
   For the operating temperature of the equipment, refer to the specifications of the Operation Manual.
6. **When performing the installation, keep the following space away from walls in order to obtain proper exhaust and radiation of heat.**

   Right, Left : 4 cm (1.6 inches) or more
   Rear: 10 cm (4 inched) or more

When installing the installation space must be secured in consideration of the ventilation and service operation.
• Do not block the ventilation slots at the left side and right side panels, and vents of the funs.
• Leave a space around the unit for ventilation.
• Leave more than 40 cm of space in the rear of the unit to secure the operation area.
When the unit is installed on the desk or the like, leave at least 4 cm of space in the left and right sides.
Leaving 40 cm or more of space above the unit is recommended for service operation.

Do not install the appliance in a confined space, such as book case or built-in cabinet.

WARNING
Excessive sound pressure from earphones and headphones can cause hearing loss.
In order to use this product safely, avoid prolonged listening at excessive sound pressure levels.

Voor de Klanten in Nederland

• Gooi de batterij niet weg maar lever deze in als klein chemisch afval (KCA)
• Dit apparaat bevat een vast ingebouwde batterij die niet vervangen hoeft te worden tijdens de levensduur van het apparaat.
• Raadpleeg uw leverancier indien de batterij toch vervangen moet worden.De batterij mag alleen vervangen worden door vakbekwaam servicepersoneel.
• Lever het apparaat aan het einde van de levensduur in voor recycling, de batterij zal dan op correcte wijze verwerkt worden.

For the customers in Taiwan only

廢電池請回收

Table of Contents

Overview

Chapter ***1***

1-1 Features

The HDW-1800/D1800 is a high-definition (HD) digital videocassette recorder based on the HDCAM format. This unit uses large scale integrated circuits for signal processing, and has a simple internal construction, allowing it to provide functionality at least equivalent to a conventional VTR in a compact (4U size), lightweight, and low power consumption design.
In addition to HDCAM format recording and playback, the HDW-D1800 can also play back tapes recorded in the Digital Betacam and MPEG IMX formats.

HDCAM format

The HDCAM format uses the same 12.65-mm width tape as the conventional Betacam series. It provides high definition images, offering up to two hours of recording. For video signal compression, prefiltration and coefficient recording technologies are used.
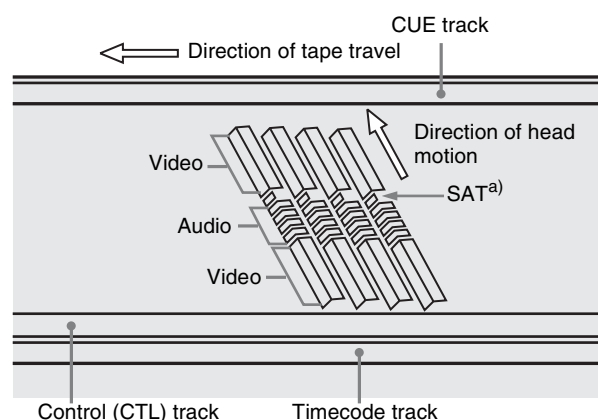
a) Supplemental Automatic Tracking signal

High-performance heads and compatibility functions

The newly developed high-performance heads and dynamic tracking (DT) technology provide high-density recording and playback in narrow tracks with high reliability. The VTR automatically detects the recording format of tapes when they are loaded, so that no menu settings need to be made when changing formats.

High-precision digital signal processing and range of interfaces

Digital signal processing uses HD 4:2:2 component video signals complying with SMPTE 292M, which are converted into parallel data and then compressed into HDCAM format.
The audio signals are based on the AES/EBU format, and are subjected to digital signal processing without being compressed.

The unit is equipped with a high definition to standard definition (HD-to-SD) downconverter, and has the following interfaces for ease of connection to different external devices.
- SD analog composite signal output
- Analog audio signal input/output (2 channels)
- HDSDI SMPTE 292M input/output (HD digital video/audio, 4/8 channels)
- SDI SMPTE 259M output (component digital video/audio, 4/8 channels)
- AES/EBU serial digital audio input/output (4 channels for input, 4/8 channels for output)
- Timecode input/output

High-quality four-channel audio

High-quality 20 bit/48 kHz digital audio is supported in the HDCAM format and there are four digital audio input/output channels.
The HDW-D1800 also supports 4-channel digital audio playback in the Digital Betacam format and a maximum of 8-channel digital audio playback in the MPEG IMX format.

Control panel with LCD

The control panel contains an LCD unit to display various types of information including time data. The display mode can be changed to show the video which is currently being recorded or played back.

Basic operation buttons and jog/shuttle dial

Buttons, indicators, and a jog/shuttle dial for basic VTR operations are provided in the conventional VTR layout, ensuring continuity with conventional operating panels.

Function menu

You can use the function buttons on the LCD and the MULTI CONTROL knob to easily carry out many of the operations and make many of the settings supported by the unit. The current settings can be checked on the LCD. In addition, you can redefine the names and functions of the function buttons. These are preset to standard factory default values, but you can redefine them for ease of operation according to the application. For example, you can change the function button definitions to avoid displaying an unnecessary function.

Audio level meters and level controls

Audio levels are shown on the LCD in the form of bar graphs. Recording and playback levels can be controlled with individual control knobs for each channel.

High-quality variable speed playback and digital jog sound function

In HDCAM, Digital Betacam, and MPEG IMX format playback, the dedicated playback DT heads allow smooth, noiseless playback.
In slow motion operation, the digital jog sound function provides the same ease of operation as for a conventional analog VTR.

Wide range of editing functions

By combining two units, you can carry out both assemble editing and insert editing automatically. All of the necessary editing functions are provided to set and amend edit points, to preview and review results of editing, and so on.

DMC (Dynamic Motion Control) editing

This allows automatic editing with a varying playback speed memorized beforehand for an edit segment.

Split editing

In insert editing, the audio IN and OUT points can be set separately from the video edit points.

Preread editing

This allows you to play back prerecorded video and audio material, edit it by applying effects with an external device, and then rerecord almost simultaneously on the same tape.

Cross fade editing

In audio editing, you can fade the audio track. You can select cut in, fade in, fade out, or cross fade.

Downconverter function

The unit has an HD-to-SD downconverter function, and can output standard definition SDI and analog composite signals.

Upconverter function (HDW-D1800 only)

The HDW-D1800 features a standard definition to high-definition (SD-to-HD) upconverter as standard equipment. This allows high-quality HD signals to be output even when playing back tapes recorded in the Digital Betacam and MPEG IMX formats.

Remote control function

This unit can be controlled from an external remote controller or editor through an interface complying with RS-422A (serial 9-pin). Since two remote control connectors are provided, you can also control more than one VTR simultaneously.
Additionally, a parallel (50-pin) interface is also fitted as standard, supporting easy external control through the parallel interface.

Rack mounting

Using the optional RMM-131 Rack Mount Adaptor, you can mount the unit in a standard EIA 19-inch rack.

For details of rack mounting, refer to the mounting instructions supplied with the rack mount adaptor.

2-3 pulldown playback and 720P output function (option)

The HKDW-104 Pull-down/720P Board can be installed in this unit to carry out 2-3 pulldown playback and 720P output.

For details on installation, settings, and operations of the HKDW-104 board, refer to the Operation Manual supplied with the board.

HDV (i.LINK) input (option)

The HKDW-105 i.LINK (HDV) Input Board can be installed in this unit to record i.LINK (HDV) signals from HDV devices onto HDCAM tapes.

For details on installation, settings, and operations of the HKDW-105 board, refer to the Operation Manual supplied with the board.

Note

HDV editing is not supported.

1-2 Example System Configuration

The following conceptual diagram shows an example of use.
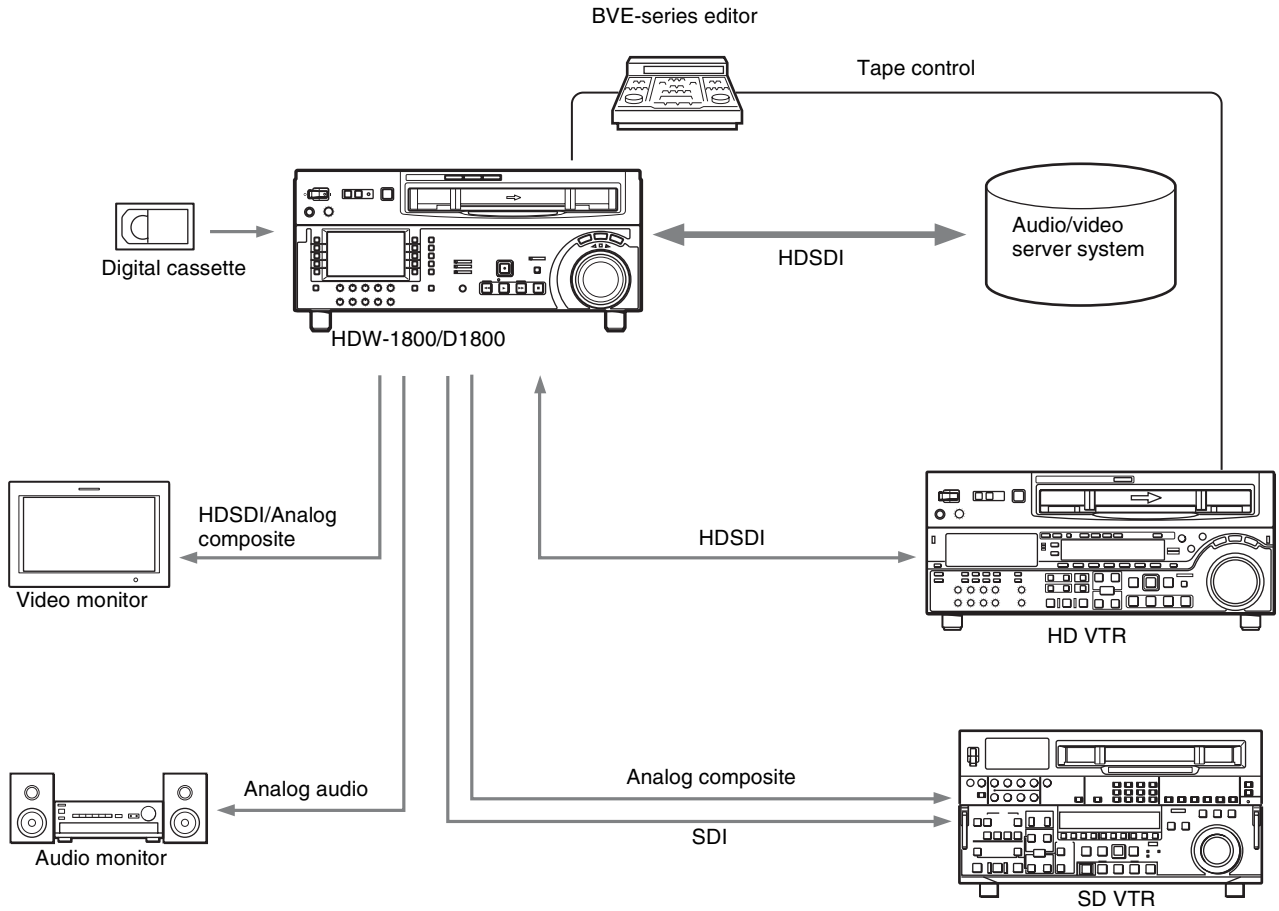
1-3 Description of the Function Menu in this Manual

You can redefine function menu pages and function buttons to configure the function menu of this unit. This manual describes the items related to the function menu as follows, based on the standard factory default settings.

Example:
    Setting F6 (PB/EE) in function menu page P01: HOME

This indicates that the PB/EE function is assigned to function selection button F6 in function menu page P01, which is named HOME.

Location and Function of Parts

Chapter **2**

2-1 Control Panels

There are three control panels, as follows:
• Upper control panel
• Lower control panel
• Switch panel

Upper control panel *(see page 12)*

Lower control panel *(see page 13)*

Switch panel: access by opening the lower control panel *(see page 22)*
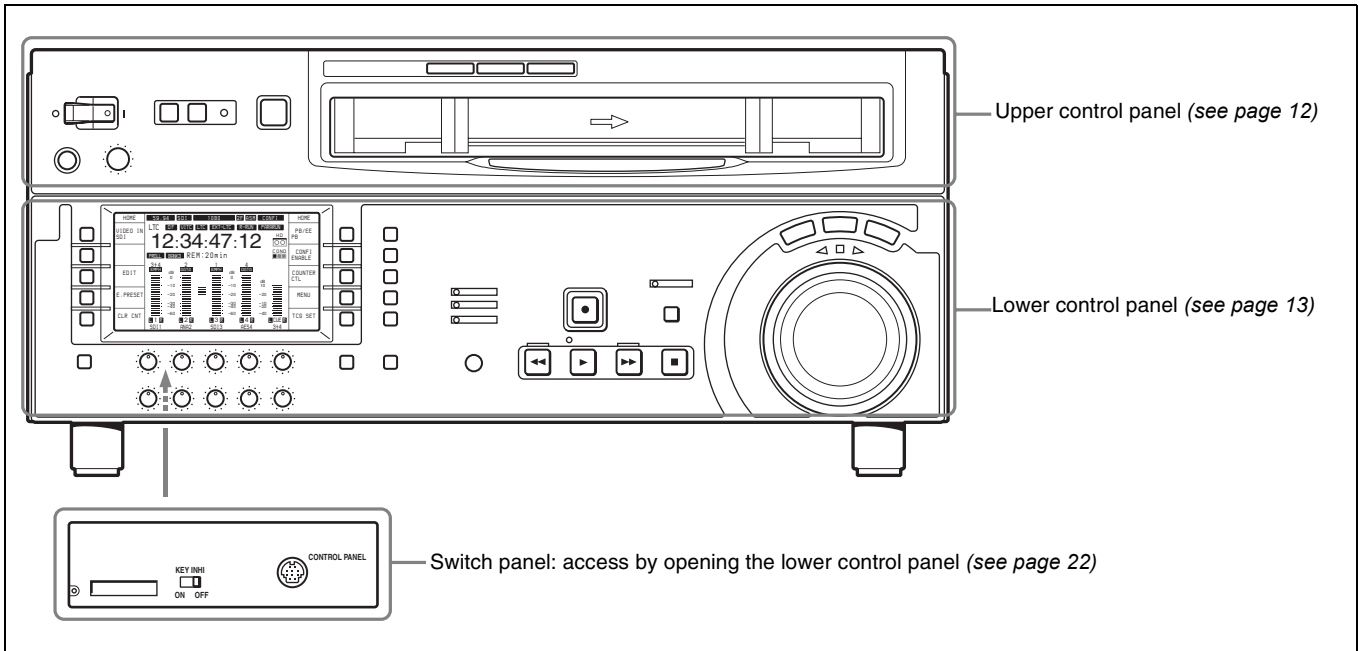
To open the lower control panel
Push in the lower control panel unlock button to open the
lower control panel. You can fix the lower control panel in
any of five positions between vertical and horizontal.

Lower control panel unlock button

Note

When closing the lower control panel, be careful not to catch your fingers in the panel.
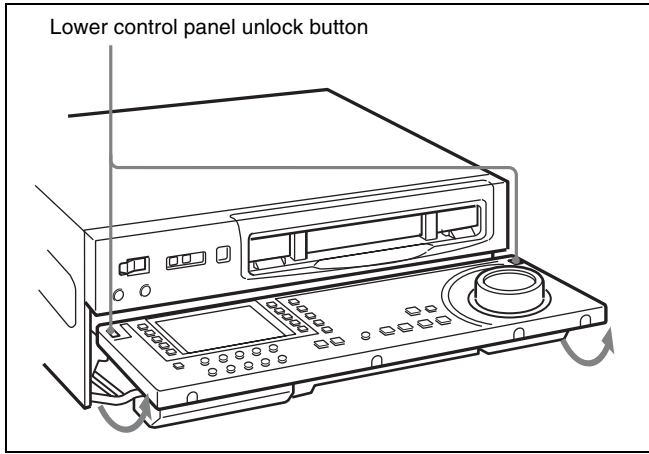
To close the lower control panel
Push up the folding levers on both sides at the same time.

2-1-1 Upper Control Panel

❶ POWER switch

❷ REMOTE buttons and RS-232C indicator

❸ EJECT button

Cassette compartment

❹ PHONES jack and control
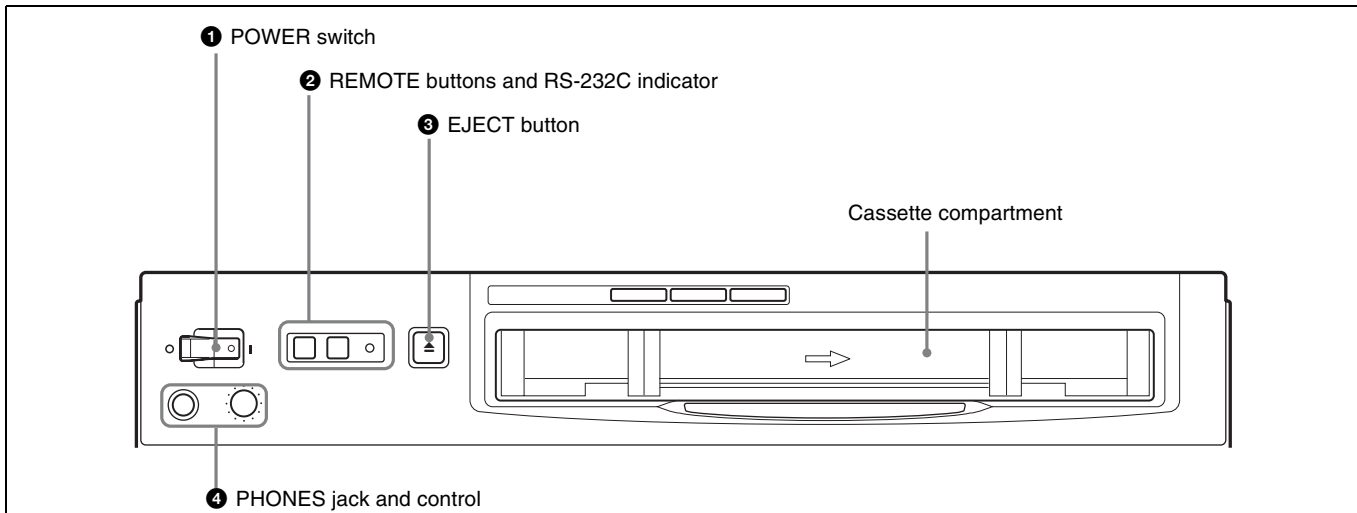
❶ **POWER switch**
Pressing the " **l** " side of the switch powers the unit on. When the unit is powered on, the LCD *(see page 14)* lights.

❷ **REMOTE buttons and RS-232C indicator**
Press the 1 (9P) button or 2 (50P) button to select the device controlling this unit.
1(9P): This unit is controlled by a device connected to the REMOTE 1-IN(9P) or REMOTE 1-OUT(9P) connector. The button lights when pressed.
2(50P): This unit is controlled by a device connected to the REMOTE 2 PARALLEL I/O(50P) connector. The button lights when pressed.
RS-232C indicator: This indicator lights when this unit is communicating with a device connected to the RS-232C connector.

❸ **EJECT button**
To eject the cassette, press this button. While the cassette is being ejected, this button lights.

Note

Ejecting with the EJECT button is a local operation. It is not possible to eject a cassette in another VTR by remote control.

❹ **PHONES jack and control**
Connect stereo headphones with an impedance of 8 Ω, to monitor the sound during recording, playback and editing. The control knob adjusts the volume.
It is possible to set an internal board switch so that the output volume from the MONITOR OUTPUT L and R connectors is controlled simultaneously.

For details, refer to the Installation Manual.

2-1-2 Lower Control Panel

2 Audio level control knobs
(see page 19)

7 Search control section
(see page 21)

6 REC INHI indicator *(see page 21)*

1 Menu control section
(see page 13)

5 Tape transport control section *(see page 20)*

4 MULTI CONTROL knob and PUSH/SHIFT indicator *(see page 20)*

3 ALARM indicator and KEY INHI indicator *(see page 20)*
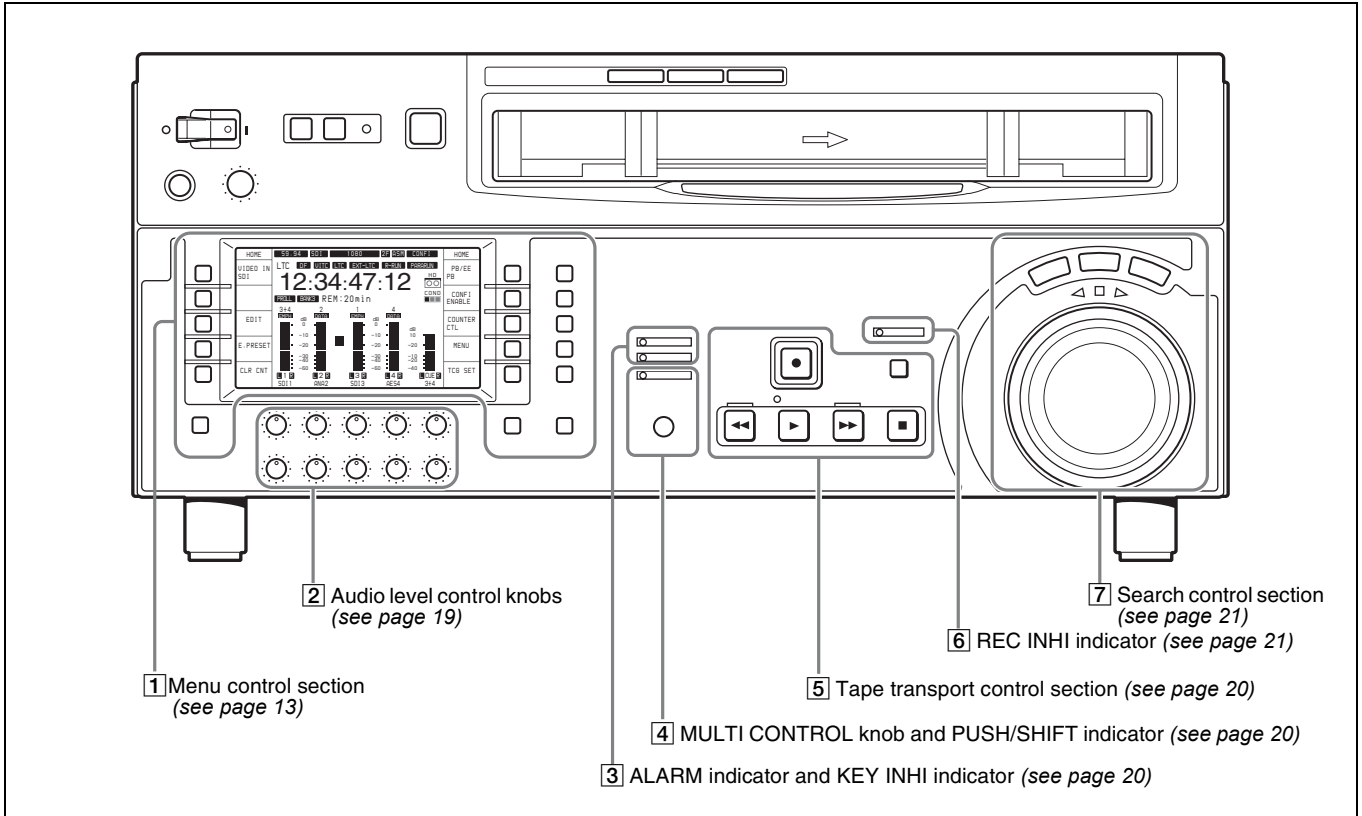
1 Menu control section

① Function selection buttons

② LCD

③ Menu page
selection
buttons

④ DISPLAY
button

⑥ ALT/DELETE button

⑤ SHIFT/ENTRY
button

① Function selection buttons (F1 to F10)
These buttons allow you to set the functions displayed in
the function menu.

① System information

HOME

VIDEO IN
SDI

EDIT

E.PRESET

CLR CNT

59.94 SDI   1080   2F ASM CONFI

LTC DF VITC LTC EXT-LTC R-RUN PARARUN

12:34:47:12   HD ⊙⊙

PROLL BANK3 REM:20min   COND ▮▮▯▯

HOME

PB/EE
PB

CONFI
ENABLE

COUNTER
CTL

MENU

TCG SET

③ Audio level meter block 1

② Function menu information

④ Audio level meter block 2

⑤ Time data information

⑥ Information relating to timecode
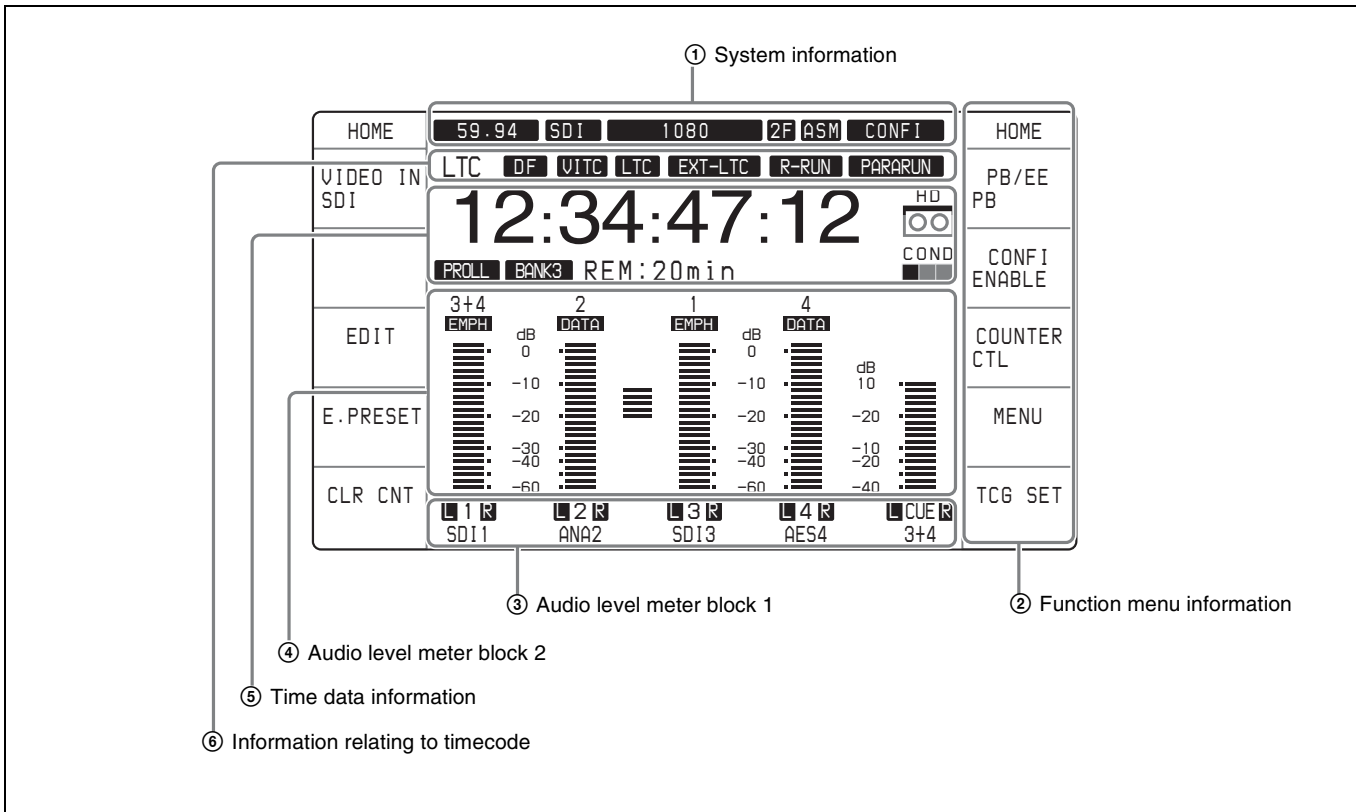
The LCD has the following display modes.
- **Video display mode:** The LCD displays the video signals currently being recorded or played back.
- **Function display mode:** The LCD displays timecode, important information about the operating state, audio level meter values, and function menu information.
- **Function & video display mode:** The LCD displays timecode, important information about the operating state, audio level meter values, function menu information, and the video signals currently being recorded or played back.

To change the display mode
Pressing the DISPLAY button toggles the display mode between video display mode and function display mode.

Note

The function menu cannot be operated in video display mode.

For details on the function menu, see page 64.

Video display mode

In video display mode, the video signals currently being recorded or played back appear on the full screen of the LCD.

Function display mode

The following describes the items shown in the function display mode.

① System information
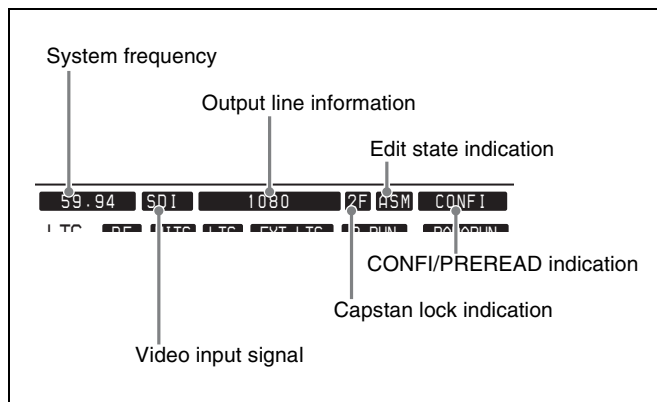
- **System frequency**
During operation the system frequency is indicated as 59.94, 50, 29.97PsF, 25PsF, 24PsF or 23.98PsF.

- **Output line information**
Output line information is indicated as shown below.
"VIN 1080": The unit is in E-E mode.
"1080": The unit is in PB mode.
"60Hz >> 1080": An HDCAM tape containing material recorded at different frequencies is currently being played back.

"525 → 1080": A Digital Betacam or MPEG IMX tape is currently being played back and upconverted (HDW-D1800 only).

• Edit state indication

The following indications appear when edit preset is activated.

"ASM": Assemble editing is preset.
"INS": Insert editing is preset.
" " (blank): Neither of the above is preset.

• CONFI/PREREAD indication

The CONFI or PREREAD mode and operating state are indicated as shown below.

"CONFI": The unit is in CONFI mode, but not currently executing CONFI playback.
"CONFI ON": The unit is in CONFI mode and currently executing CONFI playback.
"PREREAD": The unit is in PREREAD (audio and video) mode.
"A-PREREAD": The unit is in PREREAD (audio only) mode.
"V-PREREAD": The unit is in PREREAD (video only) mode.
" " (blank): None of the above apply.

• Capstan lock indication

The capstan lock mode is indicated as 2F, 4F or 8F (in 50i mode or 25PsF mode).

• Video input signal

The currently selected video input signal type is indicated as SDI or HDV.

Note

The video input signal indicator flashes when there is no input signal selected (for example, when there is no input).

② Function menu information

The function menu displays information regarding the function buttons on the left and right sides of the LCD.

For details on the function menu, see page 64.

Name of function menu page

Function button display area
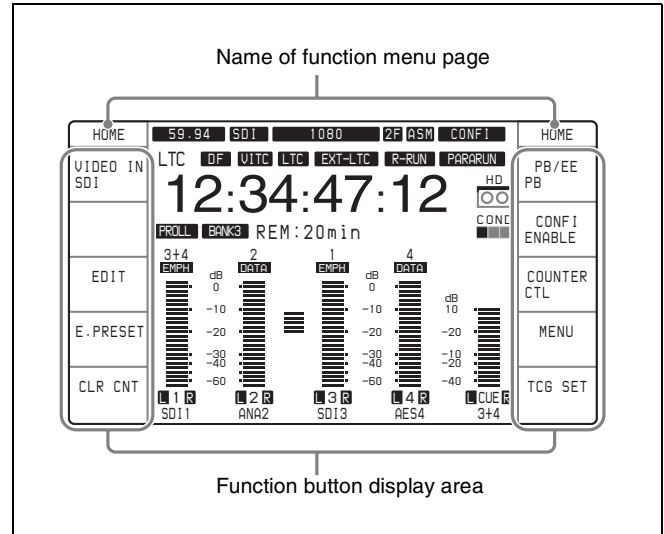
• Name of function menu page

This displays the name of the current function menu page.

• Function button display area

A total of 10 function buttons are displayed for each function menu page: five each on the left and right sides of the LCD.

Function button name: This is the name of the function button.
Function button settings: This is the setting of the function button.

③ Audio level meter block 1

Audio input selection

CUE track input selection

Digital audio track/input channel number

Monitor selection
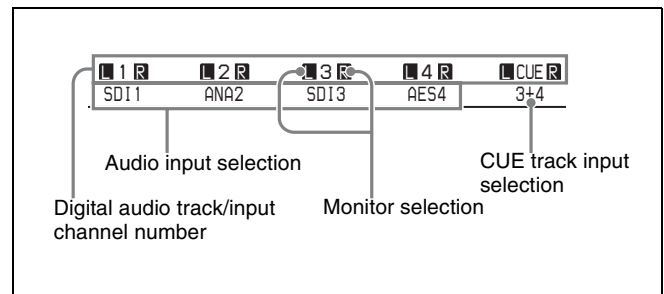
• Digital audio track/input channel number

This displays the digital audio track number and input channel number (1 to 4, CUE or 5 to 8).

Note

If the playback tape format and system frequency are different and therefore normal playback is impossible, the input channel number display flashes.

• Audio input selection

The name of the signal selected for each input channel is indicated under the digital audio input channel number.
"SDI1": HDSDI CH1
"SDI2": HDSDI CH2
"SDI3": HDSDI CH3
"SDI4": HDSDI CH4

"AES1": AES/EBU CH1
"AES2": AES/EBU CH2
"AES3": AES/EBU CH3
"AES4": AES/EBU CH4
"ANA1": ANALOG CH1
"ANA2": ANALOG CH2
"SG": Internal audio test signal (when F6 (AUDIO SG) is set to "ON" in function menu page P08: AUD INP)
"HDV1": HDV CH1 [a] (when an option is installed)
"HDV2": HDV CH2 [a] (when an option is installed)

a) The digital audio input channel numbers are all selected at one time.

Note

The audio input selection is not displayed when the audio levels of track 5 to 8 are being indicated during MPEG IMX tape playback on this unit.

• Monitor selection
Whether or not tracks are currently selected for monitoring is indicated on the left and right sides of the digital audio track/input channel number 1 indication. When MONITOR CH1 (L) is selected, "L" is indicated. When MONITOR CH2 (R) is selected, "R" is indicated.

• CUE track input selection
Whether the CUE track input is selected or not is indicated under the CUE track indication (CUE).
Only one input channel number is displayed: The signals from the input channel indicated by the number are recorded.
Input channel number, +, input channel number are displayed: The signals from the two input channels indicated by the numbers are mixed and recorded.

On how to select the CUE track input method, see setup menu item 833 "CUE AUDIO INPUT SELECT".

④ Audio level meter block 2

Input channel indication
Data/Emphasis indication
Cursor
Headroom mark
Audio level indication

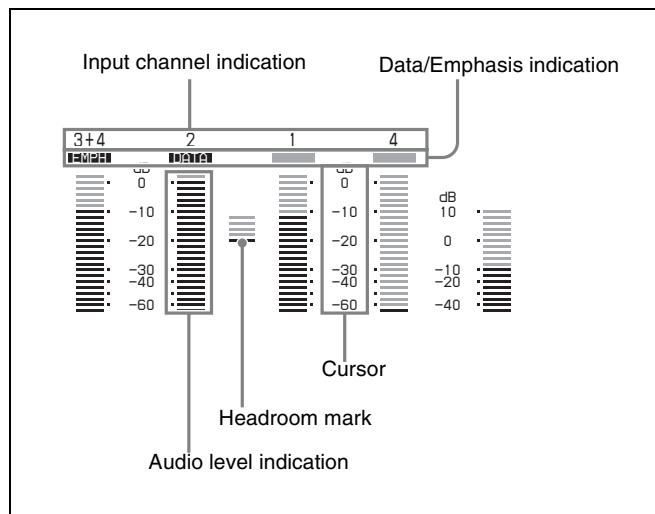**Audio level meter indication block**
This indicates the audio levels of four digital track channels and one CUE (analog) track channel.
The CUE track is shown only if a Digital Betacam or HDCAM tape is currently loaded in the unit.
There are three types of digital track audio level indication. As shown below, the indications are different for each type.
"FULL"-"PEAK0": The maximum level is indicated as 0 dB.
"FULL"-"REF.0": The reference level is indicated as 0 dB.
"FINE": The region near the reference level (–3 to 2.75 dB) is enlarged for display.

For details on "FINE" and "FULL", see the settings of F4 (MT.SCALE) in function menu page P08: AUD INP.

For details on "REF.0" and "PEAK0", see "LEVEL METER SCALE" in setup menu item 806.

• Input channel indication
The input channels from which signals are recorded are indicated for the digital tracks (1 to 4).
Only one input channel number is displayed: The signals from the input channel indicated by the number are recorded on the track.
Input channel number, +, input channel number are displayed: The signals from the two input channels indicated by the numbers are mixed and recorded on the track.

Note

Input channels are not displayed when the audio levels of digital track 5 to 8 are being indicated during MPEG IMX tape playback on HDW-D1800.

• Data/Emphasis indication
This indicates the attributes of the signals to be recorded on or played back from the specified track.
"EMPH": Indicates that the current signals are audio signals with EMPHASIS set to "ON".
"DATA": Indicates that the current signals are non-audio data (for example, Dolby-E).
" " (blank): Indicates that the current signals are neither of the above (EMPHASIS for audio signals is set to "OFF").

• Cursor
When the audio level indications of digital tracks are as shown below, level values in the corresponding range and marker dots are displayed.
"PEAK0": –60 to 0 dB
"REF.0": –40 to 20 dB
"FINE": –2 to 2 dB

For the cursor used to indicate the audio levels of analog tracks, level values in the range from –40 to 10 dB and marker dots are displayed.

• Headroom mark

When the audio level indication of a digital track shows the peak value 0, a marker displays the meter headroom setting value.
One of the following values is displayed: –20 dB, –18 dB, –16 dB, –14 dB or –12 dB.

For details on the meter headroom, see M370 METER HEAD ROOM in the maintenance menu.

When the audio level indication is "FINE", the mark is placed at the reference level position.
When the audio level indication is "REF.0", the mark is placed at the reference level position.

• Audio level indication

When the digital track audio indication mode is "FULL-PEAK0" or "FULL-REF.0", the audio level is indicated in the form of a bar graph with 24 segments (a top segment in red indicates that the level exceeds the maximum level). The "FINE" audio level of a digital track is indicated with 23 segments. Only the segment corresponding to the current level lights. If the audio level is out of the displayable range, the top or bottom segment flashes. The audio level of an analog track is indicated in the form of a bar graph with 18 segments. A peak program indication appears for digital tracks in audio indication modes other than "FINE".

Example of "REF.0" level indication
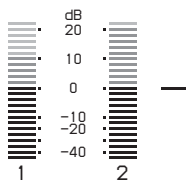
Example of "FINE" level indication
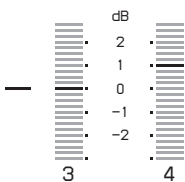
⑤ **Time data information**
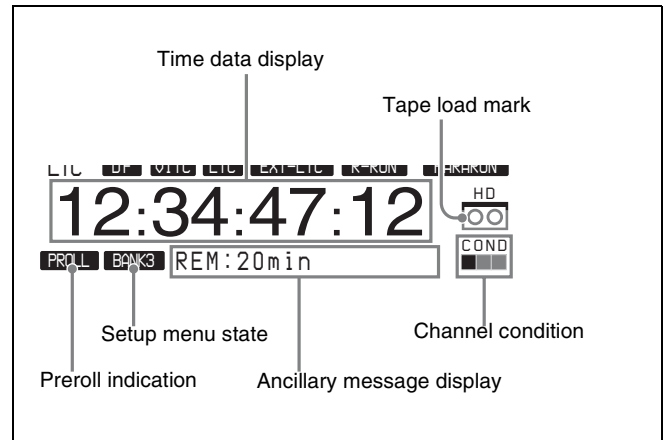
• Time data display

This displays values such as timecode values, user bit values, and CTL counts.

Note

Error messages are displayed as up to 10 alphanumeric characters.

• Tape load mark

This appears when a cassette tape is currently loaded.
The abbreviations show information about the tape format.

Tape format	Abbreviations	Color
HDCAM	HD	Orange
IMX	IMX	Green (HDW-D1800 only)
D-BETA	DB	Blue (Dark blue) (HDW-D1800 only)
CLEAN	CL	Red (flashing) a)
Other	Not displayed	Not displayed b)

a) Cleaning mode is activated automatically when a cleaning tape is loaded (the tape is ejected after playback for 10 seconds).
b) Tapes in formats that are not supported for playback are ejected automatically.

• Channel condition

This indicates the playback status of a tape.
The playback status is indicated by a square (■) in green, yellow, or red, from the left. When no signal is being played back, all squares are gray.

• Ancillary message display

This shows ancillary messages according to occasion.
Normally, it displays the remaining time on the tape (REMAIN) or the total time of the tape (TOTAL) in units of minutes, such as "REM : 020min" and "TOTL : 020min".

For changing the content of tape information to display, see the F6 (T-INFO) setting in function menu page P04: MISC-1.

• Setup menu state

The following indications appear when the state of the setup menu matches the state of a setup menu bank or the factory default state.

"DEFLT": The setup menu state matches the factory default state.

"BANK1": The setup menu state matches the state of user bank 1.

"BANK2": The setup menu state matches the state of user bank 2.

"BANK3": The setup menu state matches the state of user bank 3.

"BANK4": The setup menu state matches the state of user bank 4.

" " (blank): Other than the above.

• Preroll indication

This indicates whether a preroll is in progress or not.
"PROLL": Preroll is in progress.
" " (blank): Other than preroll in progress.

⑥ Information relating to timecode

Time data title
VITC/LTC status
TCG RUN mode
LTC DF VITC LTC EXT-LTC R-RUN PARARUN
VTR control mode
TCG mode
DF status

• Time data title

This shows the type of time data which is currently displayed.
"LTC": Longitudinal timecode
"LUB": Longitudinal user bits
"VITC": VITC
"VIUB": VIUB user bits
"CTL": CTL count value

• VITC/LTC status

This indicates the VITC or LTC read status.
"VITC": VITC values are being read normally.
"LTC": LTC values are being read normally.
" " (blank): The values are not being read normally.
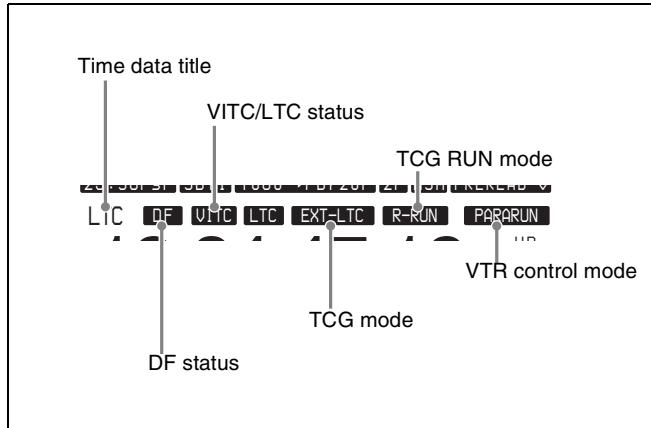
• TCG RUN mode

This shows the criterion for starting the timecode generator when the timecode generator is in the "INT-PSET" state.
"F-RUN": The timecode generator always runs.
"R-RUN": The timecode generator runs only when recording is in progress.

• VTR control mode

This indicates the control status of the VTR.
" " (blank): The VTR is being operated as a standalone unit.
"PARARUN": This unit and devices connected to the unit by 9-pin connectors are being operated simultaneously from the control panel.
"R-CTRL": This unit is being operated from the control panel (as a recorder) when two units are being used for editing.
"P-CTRL": A device connected to this unit by a 9-pin connector is being operated from the control panel (as a player) when two units are being used for editing.

• TCG mode

This indicates the operation mode of the timecode generator (TCG).
"INT-PSET": A preset value for the internal TCG is being used.
"INT-LTC": The TCG synchronizes with the LTC recorded on a tape.
"INT-VITC": The TCG synchronizes with the VITC recorded on a tape.
"EXT-LTC": The TCG synchronizes with the external LTC input.
"SDI-LTC": The TCG synchronizes with the LTC superimposed on the HDSDI input.
"SDI-VITC": The TCG synchronizes with the VITC superimposed on the HDSDI input.
"HDV-LTC": The TCG synchronizes with the LTC superimposed on the HDV (i.LINK) input. (Option)
"HDV-VITC": The TCG synchronizes with the VITC superimposed on the HDV (i.LINK) input. (Option)

• DF status

This indicates the drop-frame status of the timecode.
"DF": Drop-frame mode
"NDF": Non-drop-frame mode
" " (blank): The drop-frame status of the timecode is unknown.
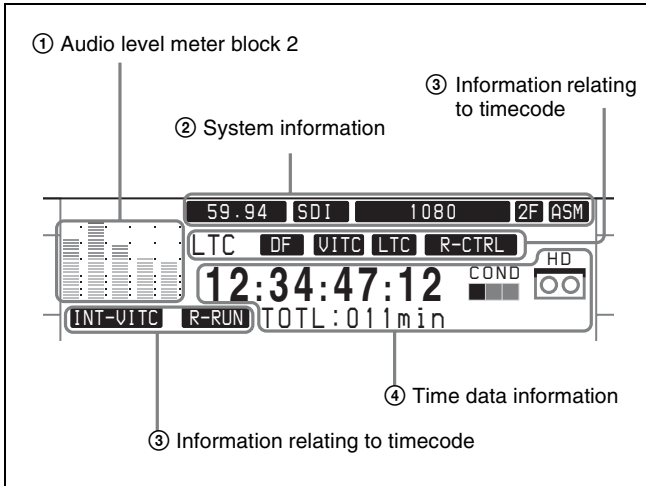
Note

A blank appears in modes without drop-frame such as the 50i mode.

Function & video display mode

The following describes the items shown in the function & video display mode.
The information of the items below is common to the function display mode *(see page 14)*.

- ① Audio level meter block 2
- ② System information
- ③ Information relating to timecode
- ④ Time data information
- ③ Information relating to timecode

① Audio level meter block 2

For details on audio level indication, see ④ Audio level meter block 2 on page 17.

② System information

For details on indication of the following items, see ① System information on page 14.

- System frequency
- Video input signal
- Output line information
- Capstan lock indication
- Edit state indication

③ Information relating to timecode

For details on indication of the following items, see ⑥ Information relating to timecode on page 18.

- Time data title
- DF status
- VITC/LTC status
- VTR control mode
- TCG mode
- TCG RUN mode

④ Time data information

For details on indication of the following items, see ⑤ Time data information on page 17.

- Time data display
- Tape load mark
- Channel condition
- Ancillary message display

❸ Menu page selection buttons

These buttons select function menu pages to display on the LCD.

• P1: HOME button

This button selects the HOME function menu page. The HOME page allows you to make settings for basic VTR and editing operations.

• P2: TC button

This button selects the TC (timecode) function menu page. The TC page allows you to change between LTC and VITC, change between DF and NDF, and make settings for the timecode indications on an external monitor.

• P3: VID PROC button

This button selects the VID PROC (video processor) function menu page. The VIDEO page allows you to make settings for items relating to video.

• P4: AUD INP button

This button selects the AUD INP (audio input) function menu page. The AUDIO page allows you to make settings for items relating to audio.

• P5: PAGE DOWN button

Each time this button is pressed, the function menu page changes in the order P01 → P02 → P03 → P04 → P05 → P06 → P07 → P08 → P01 …

When this button is pressed with the SHIFT/ENTRY button held down, the function menu page changes in the reverse order.

❹ DISPLAY button

This button switches the display mode to function display mode, video display mode, or function & video display mode. The mode changes each time the button is pressed.

❺ SHIFT/ENTRY button

This button is used to enter an edit point.

❻ ALT(alternative)/DELETE button

This button is used to delete an edit point.

② Audio level control knobs

- ❶ REC knobs
- ❷ PB knobs
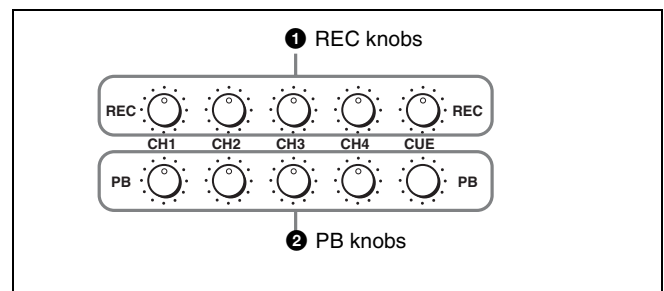
❶ REC (audio recording level control) knobs

These individually adjust the recording levels on channels 1 to 4, and cue audio.

Enter E-E mode, press to protrude the control knobs and adjust the recording level while monitoring the audio level indication in audio level meter block 2.

When the knobs are pushed in, the recording levels return to the preset levels and cannot be adjusted.

For details about selecting the E-E mode, see the description of the REC button in the tape transport control section (page 20) and PB/EE setting in the function menu page P01: HOME (page 65).

❷ PB (audio playback level control) knobs

These individually adjust the output levels on channels 1 to 4, and cue audio.

During playback, press to protrude the control knobs and adjust the playback level while monitoring the audio level indication in audio level meter block 2.

When the knobs are pushed in, the playback levels return to the preset levels and cannot be adjusted.

③ ALARM indicator and KEY INHI indicator

ALARM indicator

This lights when a hardware error is detected on the unit, and goes off when the error is resolved. When this indicator lights, an error message appears in the time data display area. If you are using the HDSDI OUTPUT 3 (SUPER), SDI OUTPUT 3 (SUPER) or COMPOSITE VIDEO OUTPUT 3 (SUPER) connector, and the setting of F5 (CHARA) in function menu page P04: MISC-1 is "ON", then the error message also appears on the video monitor.

For details on error messages, refer to the Maintenance Manual Volume 1.

KEY INHI (inhibit) indicator

This indicator lights when the KEY INHI switch on the switch panel *(see page 22)* is set to "ON".

④ MULTI CONTROL knob and PUSH/SHIFT indicator

In function menu operations, turn the MULTI CONTROL knob to change settings that flash in the menu display section. In setup menu operations, turn this knob to select menu items.

The PUSH/SHIFT indicator is lit when you press this knob in. In this state, the value of the setting changes by a greater amount when you turn the knob.

⑤ Tape transport control section
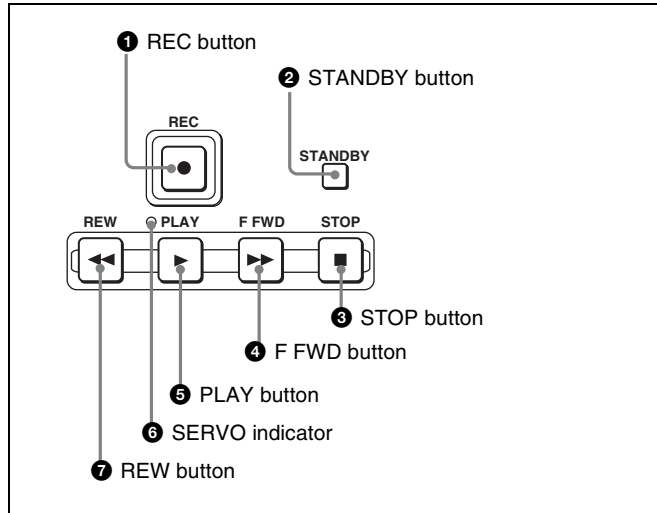
❶ REC (record) button

To start recording, press this button together with the PLAY button, turning it on.

To monitor in E-E mode

When the unit is in stop mode, pressing the REC button lights the button and allows you to monitor the video and audio in E-E mode. To return to the original state, press the STOP button.

During playback, search, fast forward, or rewind, holding down the REC button allows you to monitor the video and audio in E-E mode. In this case the button does not light.

❷ STANDBY button

When this button is off with a cassette inserted in the unit, to put the unit in standby mode, press the button, turning it on.

In standby mode, the drum is rotating and the tape is in contact with the drum, and therefore recording or playback can start immediately.

To cancel standby mode, press the STANDBY button, turning it off.

If 8 minutes (value can be changed using setup menu item 501) elapse in standby mode, the unit automatically switches out of standby mode to protect the tape.

❸ STOP button

To stop recording or playback, press this button, turning it on.

When you stop playback, the unit switches either to still playback or to E-E mode according to the setting of F6 (PB/EE) in function menu page P01: HOME and the setting in setup menu item 108.

Fault display function

The STOP button flashes in the following cases related to reference signals:
• When F2 (REF VID) is set to "INPUT" in function menu page P03: VID PROC, there is no input video signal.

- When F2 (REF VID) is set to "REF" in function menu page P03: VID PROC, there is no external reference video signal input or the input external reference video signal is not in synchronization with the input video signal.

❹ F FWD (fast forward) button
To fast forward the tape, press this button, turning it on.

❺ PLAY button
To start playback, press this button, turning it on.

To operate in capstan override mode
Hold down the PLAY button, and rotate the search dial.

For details of capstan override mode, see page 39.

❻ SERVO indicator
Lights when the drum servo and capstan servo are locked.

❼ REW (rewind) button
To rewind the tape, press this button, turning it on.

⑥ REC INHI (recording inhibit) indicator

This indicator is on or off according to the combination of the F1 (REC INHI) setting in function menu page P07: E.PRESET and the record inhibit plug on the cassette, as shown in the following table. When this indicator is on, recording on tape is prohibited.

REC INHI indicator indications

RECINH setting	State of the record inhibit plug on the cassette	REC INHI indicator state
ON	Record inhibit/permit	Lit
OFF	Record inhibit	Lit [a)]
	Record permit	Off

a) It is possible to make the indicator flash by setting setup menu item 107.

⑦ Search control section

① SHUTTLE button
② JOG button
③ VAR button
④ Search dial
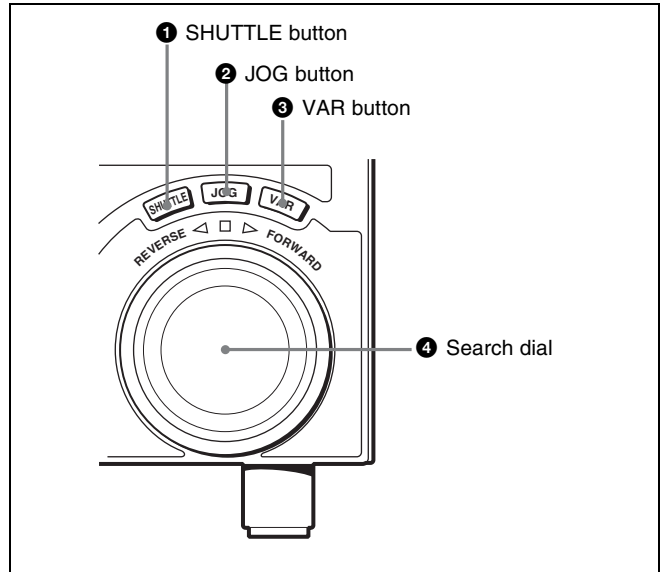
❶ SHUTTLE button
To use the search dial for playback in shuttle mode, press this button, turning it on.

For details of playback in shuttle mode, see the description of the search dial ❹.

❷ JOG button
To use the search dial for playback in jog mode, press this button, turning it on.

For details of playback in jog mode, see the description of the search dial ❹.

❸ VAR (variable) button
To use the search dial for playback in variable speed mode, press this button, turning it on.

For details of playback in variable speed mode, see the description of the search dial ❹.

❹ Search dial
Rotate this dial to carry out playback in the modes shown in the following table. Rotating the dial clockwise lights the ▷ (FORWARD) indicator and plays back in the forward direction. Rotating the dial counterclockwise lights the ◁ (REVERSE) indicator and plays back in the reverse direction.
When the tape is stopped or the unit is powered on, the □ indicator lights. Pressing the dial toggles between shuttle and jog modes or between variable speed and jog modes. Depending on the tape format, noiseless playback is possible in the following ranges.
HDCAM: –1 to +2 times normal speed
Digital Betacam: –1 to +3 times normal speed
MPEG IMX: –1 to +3 times normal speed

Playback modes using the search dial

Playback mode	Operations and functions
Shuttle	Press the SHUTTLE button or the search dial so that the SHUTTLE button lights, then rotate the search dial. Playback is carried out at a speed determined by the angular position of the search dial. Playback speed ranges are as follows. • HDCAM tape: ±50 times normal speed (59.94i, 29.97PsF mode), ±58 times normal speed (50i, 25PsF mode), ±60 times normal speed (24PsF, 23.98PsF mode) • Digital Betacam tape: ±50 times normal speed • MPEG IMX tape: ±78 times normal speed There are detents on the search dial at the still position and at the position for ±5 times normal speed. The maximum shuttle mode playback speed can be changed in setup menu item 102 *(see page 81)*.
Jog	Press the JOG button or the search dial so that the JOG button lights, then rotate the search dial. Playback is carried out at a speed determined by the speed of rotation of the search dial. The playback speed range is ±1 time normal speed. The search dial has no detents.
Variable speed	Press the VAR button, turning it on, then rotate the search dial. You can control the playback speed finely in the range in which noiseless playback is possible. • HDCAM: Maximum 51 steps • Digital Betacam, MPEG IMX: Maximum 54 steps There are detents on the search dial at the still position and at the position for ±1 times normal speed.
Capstan override	*For details on operation, see page 39.*

Setting setup menu item 101 (see page 81) to KEY enables you to use only the SHUTTLE, JOG, and VAR buttons to select shuttle/jog/variable speed modes.

2-1-3 Switch Panel

To access the switch panel, open the lower control panel.

For details on how to open the lower control panel, see the figure on page 11.

❹ CONTROL PANEL connector

CONTROL PANEL

KEY INHI

ON OFF

❸ KEY INHI switch

❷ "Memory Stick" slot

❶ "Memory Stick" access indicator
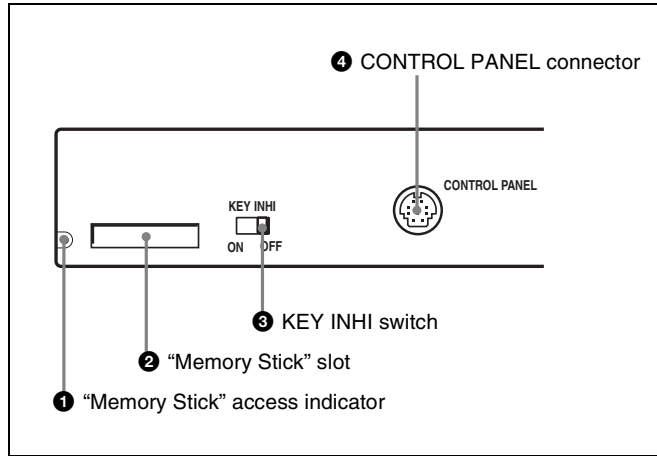
❶ "Memory Stick" access indicator
Lights or flashes when data is being read from or written to a "Memory Stick".

❷ "Memory Stick" slot
Use this to update the firmware. You can also use it to save and load setup menu settings and user-definable function menu settings.

Notes

• Do not insert or eject a "Memory Stick" during playback or recording to tape.
• After inserting a "Memory Stick", allow at least five seconds to elapse before removing it.

For more information about firmware updates, and about saving and loading setup menu and user-definable function menu settings, refer to the Maintenance Manual Volume 1.

❸ KEY INHI (inhibit) switch
Setting this switch to the ON position disables the controls on the upper and lower control panels.
You can specify which buttons and knobs are disabled in setup menu item 118.

❹ CONTROL PANEL connector (20-pin, round type)
Plug in the lower control panel connection cable.

2-2 Connector Panel
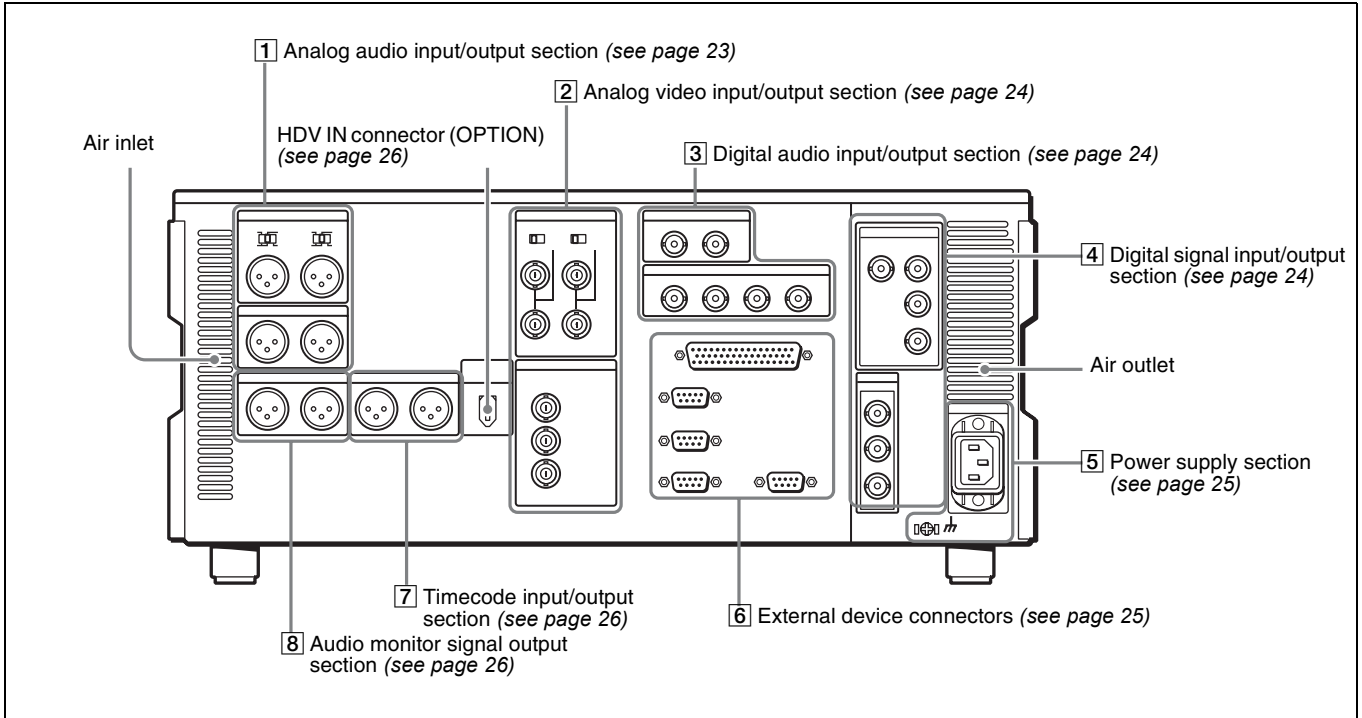
1 Analog audio input/output section

❶ AUDIO INPUT CH1 and CH2 connectors

❷ AUDIO INPUT CH1 and CH2 LEVEL switches

❸ AUDIO OUTPUT CH1 and CH2 connectors
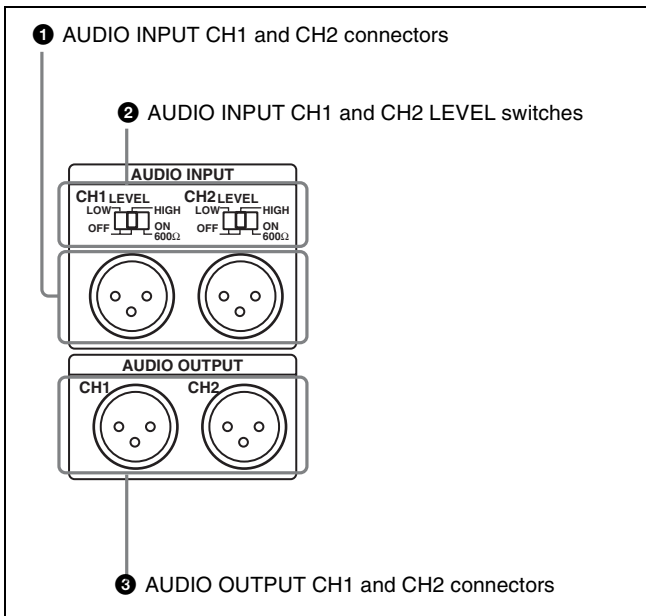
❶ **AUDIO INPUT CH1 and CH2 (channels 1 and 2) connectors (XLR 3-pin, female)**
Input analog audio signals to channels 1 and 2.
You can record analog audio signals input to these connectors to any audio track on tape.

❷ **AUDIO INPUT CH1 and CH2 (channels 1 and 2) LEVEL switches**
Set these for each channel as shown in the following table, according to the audio input levels and the impedance to the AUDIO INPUT CH1 and CH2 connectors.

AUDIO INPUT CH1 and CH2 LEVEL switch settings

Audio input level and impedance		Switch setting
Level	**Impedance**	
−60 dBu (microphone input)	High impedance (approx. 20 kΩ)	LOW-OFF (left position)
+4 dBu (line audio input)	High impedance (approx. 20 kΩ)	HIGH-OFF (center position)
+4 dBm (line audio input)	600 Ω	HIGH-ON 600 Ω (right position)

❸ **AUDIO OUTPUT CH1 and CH2 (channels 1 and 2) connectors (XLR 3-pin, male)**
Output analog audio signals for channels 1 and 2.

2 **Analog video input/output section**

❶ REF. VIDEO INPUT 1 connectors and 75Ω termination switch

❷ REF. VIDEO INPUT 2 (OPTION) connectors and 75Ω termination switch

❸ COMPOSITE VIDEO OUTPUT connectors
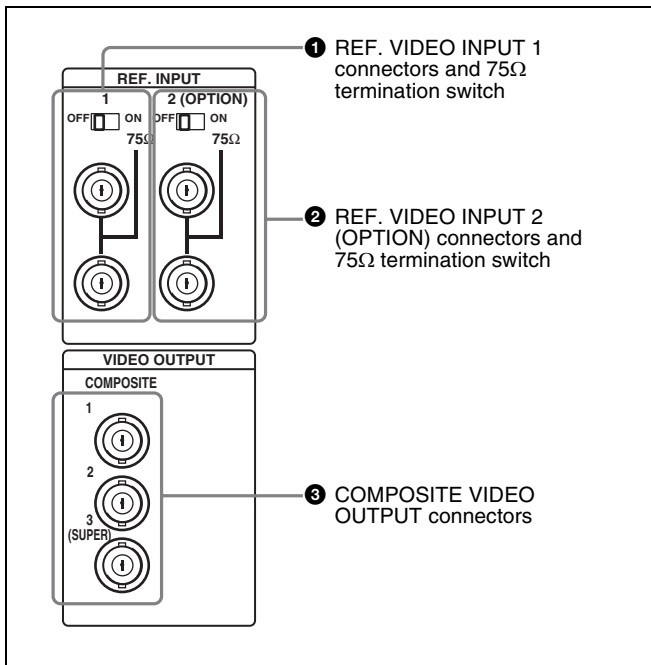
❶ **REF. VIDEO INPUT 1 (reference video signal input 1) connectors (BNC type) and 75Ω termination switch**

Input a reference video signal. Input a tri-level (positive and negative) sync signal, a video signal with chroma burst (VBS) or a monochrome video signal (VS). When using the loop-through connection set the switch to the "OFF" position, and otherwise to the "ON" position.

❷ **REF. VIDEO INPUT 2 (OPTION) (reference video signal input 2) connectors (BNC type) and 75Ω termination switch**

Input a reference video signal. Input a tri-level (zero/negative/positive) sync signal, a video signal with chroma burst (VBS) or a monochrome video signal (VS).
When using the loop-through connection, set the switch to the "OFF" position, and otherwise set to the "ON" position.
These connectors and switch operate only when the HKDW-104 Pull-down/720P Board is installed.

❸ **COMPOSITE VIDEO OUTPUT connectors (BNC type)**

Output analog composite video signals.
When the setting of F5 (CHARA) in function menu page P04: MISC-1 is "ON", connector 3 (SUPER) outputs a signal with superimposed timecode, menu settings, alarm messages and other text information.

3 **Digital audio input/output section**

❶ AUDIO INPUT (AES/EBU) connectors

❷ AUDIO OUTPUT (AES/EBU) connectors
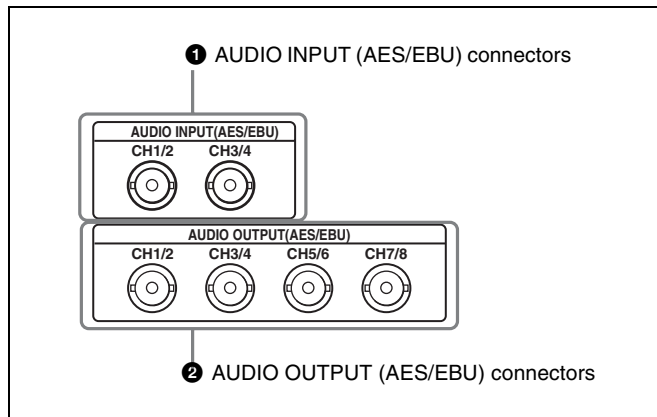
❶ **AUDIO INPUT (AES/EBU) connectors (BNC type)**
Input two sets (4 channels: CH1/2 and CH3/4) of AES/EBU format digital audio signals.

❷ **AUDIO OUTPUT (AES/EBU) connectors (BNC type)**
Output a maximum of 4 sets (8 channels: CH1/2, CH3/4, CH5/6, CH7/8) of AES/EBU format digital audio signals. However, the HDW-1800 supports 2 sets only (4 channels: CH1/2, CH3/4).

4 **Digital signal input/output section**

❶ HDSDI INPUT connector

❷ HDSDI OUTPUT connectors

❸ SDI OUTPUT connectors
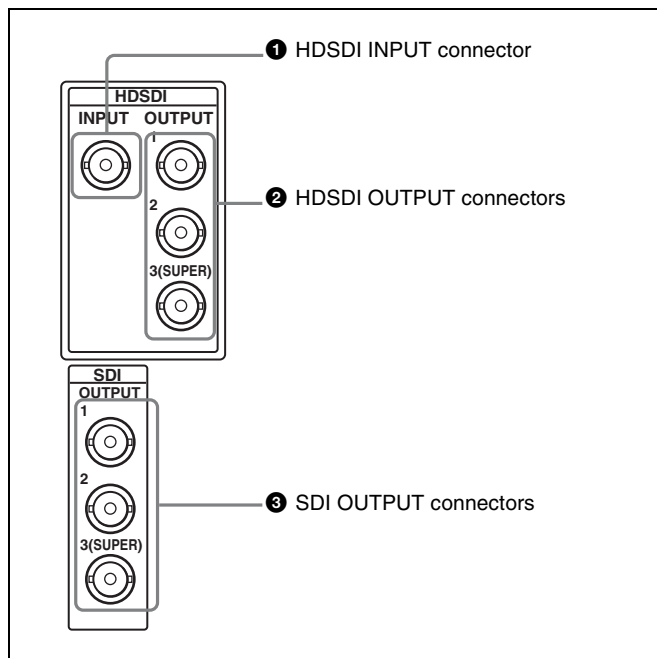
❶ **HDSDI (HD Serial Digital Interface) INPUT connector (BNC type)**
Inputs HD format video/audio signals.

2 **HDSDI (HD Serial Digital Interface) OUTPUT connectors (BNC type)**

Output HD format video/audio signals.
When the setting of F5 (CHARA) in function menu page P04: MISC-1 is "ON", connector 3 (SUPER) outputs a signal with superimposed timecode, menu settings, alarm messages and other text information.

3 **SDI (Serial Digital Interface) OUTPUT connectors (BNC type)**

Output D1 format video/audio signals.
When the setting of F5 (CHARA) in function menu page P04: MISC-1 is "ON", connector 3 (SUPER) outputs a signal with superimposed timecode, menu settings, alarm messages and other text information.

5 **Power supply section**
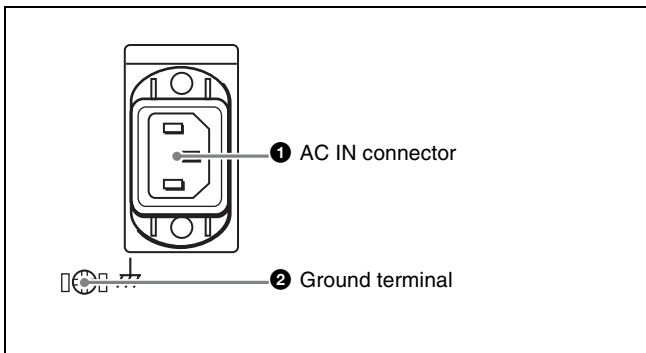
1 **AC IN (AC power input) connector**
Use the optional power cord to connect this to an AC outlet.

2 **Ground terminal**
Connect this to ground.

6 **External device connectors**
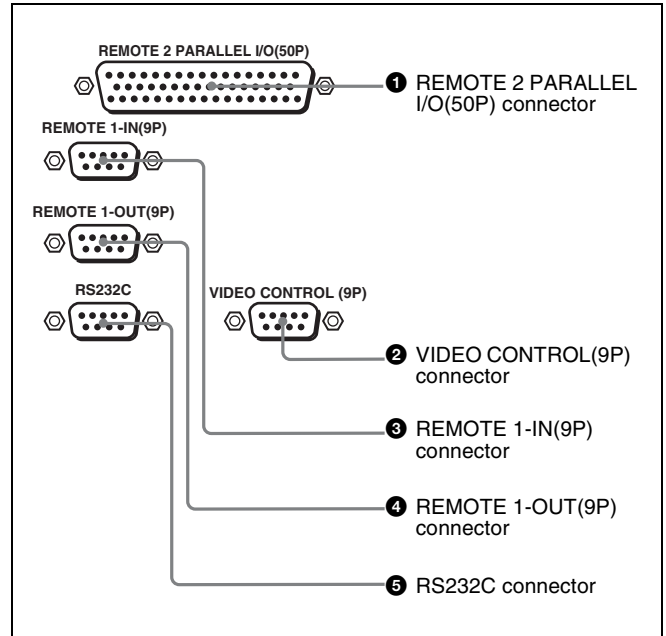
1 **REMOTE 2 PARALLEL I/O(50P) connector (D-sub 50-pin)**
Connect remote control signals from an external device.

For details, refer to the Installation Manual.

2 **VIDEO CONTROL(9P) (digital video processor control) connector (D-sub 9-pin)**
For remote control of the internal digital video processor, connect the optional HKDV-900 Video Remote Controller.
Always power off this unit before connecting the video remote controller.

3 **REMOTE 1-IN(9P) (remote control signal input) connector (D-sub 9-pin)**
When using this unit together with another HDCAM VTR, and a BVE-series BVE-700/900/910/2000/9000/9000P/9100/9100P or other editor, connect the optional 9-pin remote control cable from the other unit to this connector.
Depending on the setting in setup menu item 211, you can use this connector alone, or in a loop-through configuration with the REMOTE 1-OUT(9P) connector.

4 **REMOTE 1-OUT(9P) (remote control signal output) connector (D-sub 9-pin)**
This provides the loop-through output for remote control signals from the REMOTE 1-IN(9P) connector.
Depending on the setting in setup menu item 211, you can use this connector alone, or in a loop-through configuration with the REMOTE 1-IN(9P) connector.

5 RS232C (serial interface) connector (D-sub 9-pin)
Use this for monitoring and diagnosis of the state of this unit from an external computer, using the ISR (Interactive Status Reporting) function.

HDV IN (OPTION) connector (6-pin, conforming to IEEE1394)
Use an i.LINK cable to connect this unit to an HDV unit (HVR-1500, HVR-M25, HVR-M15, HVR-Z1, HVR-A1, HDR-FX1, HDR-FX7 or HDR-HC3) recommended by Sony. This connector can be used only when an optional HKDW-105 i.LINK (HDV) Input Board is installed.

Notes

- If video or audio signals from an external device connected to the HDV input connector fail to be output, disconnect the i.LINK cable and connect it again, pushing it straight in.
- Before connecting or disconnecting an i.LINK cable between this unit and a device with a 6-pin i.LINK connector, power off the device and disconnect its power cord from the electrical outlet. If the i.LINK cable is connected or disconnected with the device's power plug still connected, high voltage (8 to 40 V) from the device's i.LINK connector can flow into this unit, possibly damaging the unit.
- When connecting this unit to a device with a 6-pin i.LINK connector, connect to the 6-pin i.LINK connector of the other device first.

7 Timecode input/output section
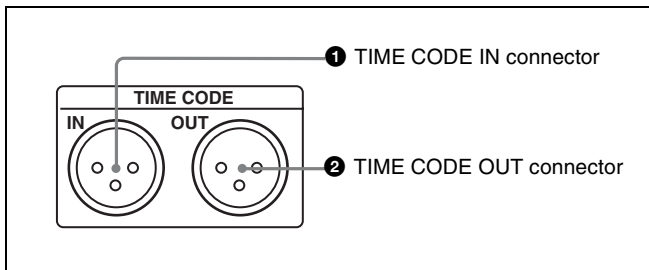
1 TIME CODE IN connector (XLR 3-pin, female)
To record timecode from an external device, input a timecode signal from the timecode output connector of the external device.

2 TIME CODE OUT connector (XLR 3-pin, male)
This outputs a timecode according to the operating state of the unit, as follows:
- **During playback:** the playback timecode
  By setting setup menu item 606, you can also output the timecode from the internal timecode generator locked to the playback timecode.
- **During recording:** the timecode generated by the internal timecode generator or the timecode input to the TIME CODE IN connector.

8 Audio monitor signal output section
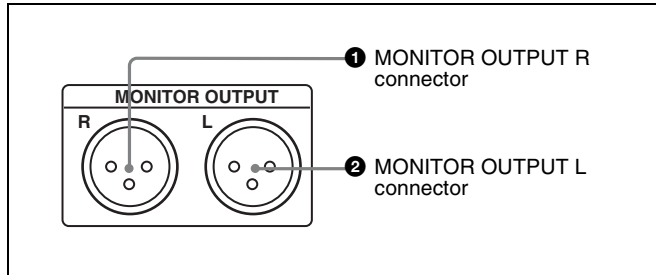
1 MONITOR OUTPUT R (right channel) connector (XLR 3-pin, male)
This outputs the audio signals whose output destination was set to "R" with the audio monitor signal selection buttons in the audio control section. If multiple tracks have been set to "R", the signals of those tracks are mixed for output.

2 MONITOR OUTPUT L (left channel) connector (XLR 3-pin, male)
This outputs the audio signals whose output destination was set to "L" with the audio monitor signal selection buttons in the audio control section. If multiple tracks have been set to "L", the signals of those tracks are mixed for output.

Preparations

3-1 Connections to External Devices

3-1-1 Connections to Digital Devices

This unit can input serial digital signals (video and audio) from another digital VTR such as the HDW-500/F500/A2100/M2100. The following figure shows example connections to use this unit (HDW-1800/D1800) as recorder and the HDW-A2100/M2000 unit as player.

Reference signal

75Ω termination switch: OFF

REF. VIDEO INPUT

HDW-A2100/M2100 (player)

REF. VIDEO INPUT

REMOTE 1-IN(9P)

HDSDI OUTPUT

75Ω termination switch: ON

REF. VIDEO INPUT

HDSDI INPUT

HDW-1800/D1800 (recorder)

SDI OUTPUT 3 (SUPER)

HDSDI OUTPUT3 (SUPER)

BVM-A series color video monitor [1]
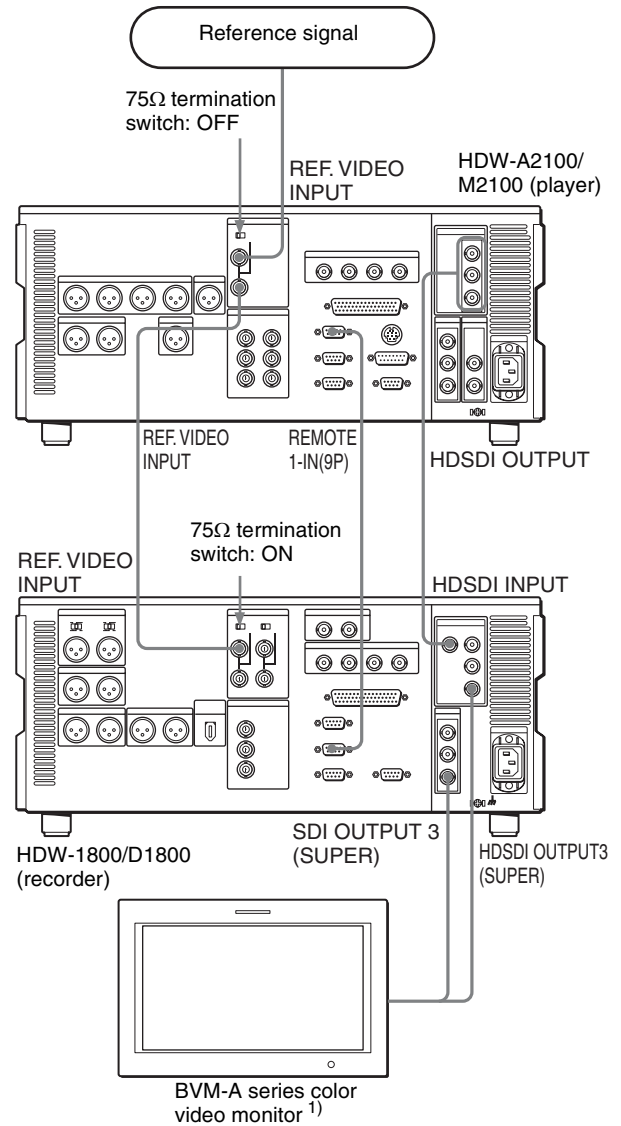
1) The optional BKM-62HS HDSDI/SDI Input Adaptor is required.

3-2 Reference Sync Signals

This section describes how reference signals for the video output signals and servo system are selected.
The output from the internal reference video signal generator is supplied to the output video signal and servo circuits as a reference signal.

3-2-1 Selecting Reference Sync Signal Depending on Operational Status

The reference sync signal selection switches automatically between REF and INPUT depending on the menu settings and the operating status of the unit, as shown in the following table.

P03:VID PROC F2(REF VID) setting	Menu item 309 setting	Menu item 334 setting	Unit's operational status a)	Reference signal setting
–	EXT	NORMAL	EE	REF
			PB	
			EDIT	
			REC	
		INPUT	EE	INPUT
			PB	REF
			EDIT	
			REC	
REF	AUTO1	NORMAL	EE	
			PB	
			EDIT	
			REC	INPUT
		INPUT	EE	
			PB	REF
			EDIT	
			REC	INPUT
INPUT		–	EE	
			PB	
			EDIT	
			REC	

P03:VID PROC F2(REF VID) setting	Menu item 309 setting	Menu item 334 setting	Unit's operational status a)	Reference signal setting
REF	AUTO2	NORMAL	EE	REF
			PB	
			EDIT	INPUT
			REC	
		INPUT	EE	
			PB	REF
			EDIT	INPUT
			REC	
INPUT		–	EE	
			PB	
			EDIT	
			REC	

a) **EE:** In E-E mode
 PB: Playing back (normal playback, jog mode, shuttle mode, variable speed mode and stop mode)
 EDIT: Edit preset enabled
 REC: Recording

Notes

- When there is no HDSDI signal input whereas INPUT is selected, the unit synchronizes with the REF signal.
- When there is no REF signal input whereas REF is selected, no external reference signal is used. In this case, the unit synchronizes with the internally generated reference signal.

3-2-2 Connecting Reference Signals

Connect reference signals as shown below, according to the way in which the unit is to be used.

- **Connections for recording from a switcher or signal generator**

HDW-1800/D1800
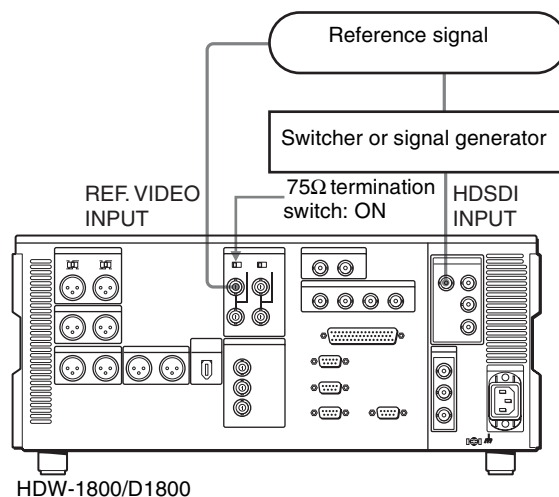
• **Connections for recording from an external VTR (player)**

Reference signal

75Ω termination switch: OFF | REF. VIDEO INPUT | HDW-1800/D1800 (recorder)

HDSDI INPUT

REF. VIDEO INPUT | 75Ω termination switch: ON | HDSDI OUTPUT

HDW-A2100/M2100 (player)
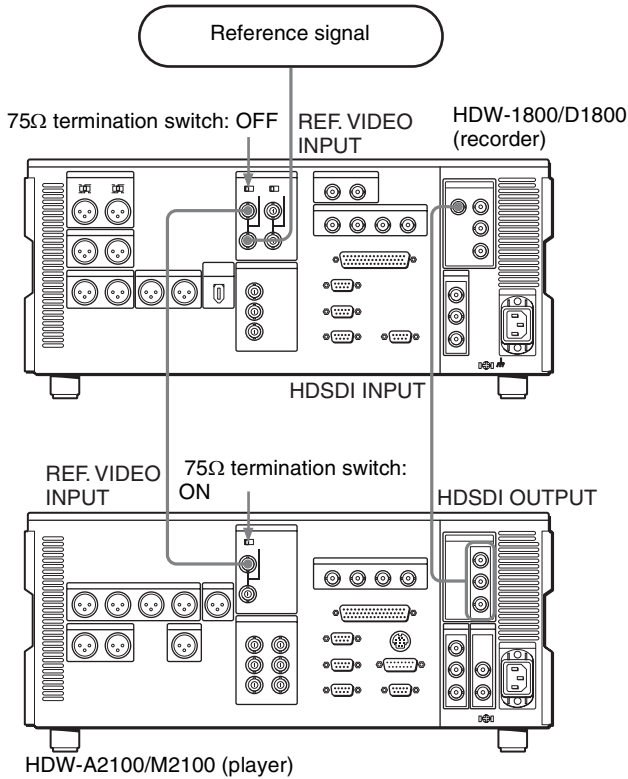
• **Connections for playback**

Reference signal | HD video monitor

REF. VIDEO INPUT | 75Ω termination switch: ON | HDSDI OUTPUT

COMPOSITE | SDI OUTPUT

HDW-1800/D1800

SD video monitor
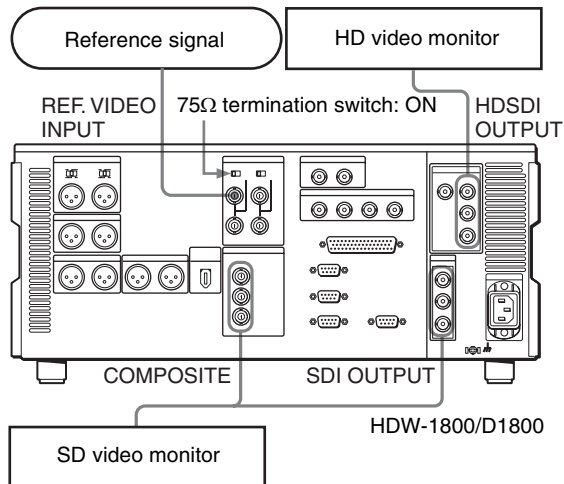
3-3 Setup

The principal setup operations before operating this unit can be carried out using setup menus.
The setup menus of this unit comprise a basic setup menu and an extended setup menu. The contents of these menus are as follows.

Basic setup menu:
• Items relating to the digital hours meter
• Items relating to operation
• Items relating to menu banks

Extended setup menu:
• Items relating to control panels
• Items relating to the remote control interface
• Items relating to editing operations
• Items relating to preroll
• Items relating to tape protection
• Items relating to the timecode generator
• Items relating to metadata
• Items relating to video control
• Items relating to audio control
• Items relating to digital processing

For more information about the items of these menus and how to use them, see Chapter 9 "Setup Menus" (page 74). For detailed information about items and setting operations relating to the digital hours meter in the basic setup menu, see Section "10-5-1 Digital Hours Meter" (page 106).

This unit saves menu settings in what are termed "menu banks". Saved menu settings can be recalled for use as required.

For more information about the menu banks, see the section "Menu bank operations (menu items B01 to B13)" (page 77).

3-4 Superimposed Character Information

When F5 (CHARA) in function menu page P04: MISC-1 is selected, the video signal output from the HDSDI OUTPUT 3 (SUPER), SDI OUTPUT 3 (SUPER) or COMPOSITE VIDEO OUTPUT 3 (SUPER) connector can contain superimposed text information, including timecode, menu settings, and alarm messages.

To adjust the character display

You can adjust the position, size and type of the superimposed characters using setup menu items 002, 003, 005, 009, and 011.

For details, see Section "9-3 Items in the Basic Setup Menu" (page 78).

Information displayed

❷ Timecode reader drop-frame mark (for 59.94i, 29.97PsF mode only)

❸ Timecode generator drop-frame mark (for 59.94i, 29.97PsF mode only)

❶ Type of time data

Time data

❹ VITC data field mark

❼ Operation mode

❻ Stop freeze mode

❺ VTR control mode
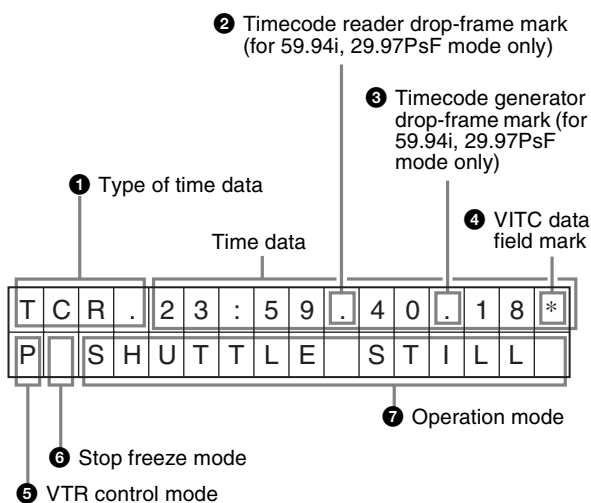
Note

The display shown above corresponds to the factory default settings of the unit.
Changing the setting in setup menu item 005 displays different time data in the lower line of the display.

For details, see Section "9-3 Items in the Basic Setup Menu" (page 78).

❶ Type of time data

Display	Meaning
CTL	CTL counter data
TCR	LTC reader timecode

Display	Meaning
UBR	LTC reader user bits
TCR.	VITC reader timecode
UBR.	VITC reader user bits
TCG	Timecode generator timecode
UBG	Timecode generator user bits
IN	IN point
OUT	OUT point
AI	Audio IN point
AO	Audio OUT point
DUR	Duration between any two of the four edit points (IN, OUT, audio IN, audio OUT)

Note

If the time data or user bits cannot be read correctly, they will be displayed with an asterisk. For example, "T∗R", "U∗R", "T∗R." or "U∗R.".

❷ Timecode reader drop-frame mark (for 59.94i, 29.97PsF mode only)
".": Indicates drop-frame mode
":": Indicates non-drop-frame mode

❸ Timecode generator drop-frame mark (for 59.94i, 29.97PsF mode only)
".": Indicates drop-frame mode (factory default setting)
":": Indicates non-drop-frame mode

❹ VITC data field mark
" " (blank): Fields 1 and 3 (for 59.94i, 29.97PsF mode) or fields 1, 3, 5 and 7 (for 50i, 25PsF mode)
" ∗ ": Fields 2 and 4 (for 59.94i, 29.97PsF mode) or fields 2, 4, 6 and 8 (for 50i, 25PsF mode)

❺ VTR control mode (Recorder/player selection)
The indication changes as follows, according to the VTR control mode (the setting of F6 (R/P SEL) in function menu page P06: EDIT).
P: Two-unit editing is currently being carried out and the VTR (player) connected by a 9-pin remote cable is being operated from the lower control panel (P-CTRL).
R: Two-unit editing is currently being carried out and this unit (recorder) is being operated from the lower control panel (R-CTRL).
No indication: This unit (recorder) is being operated from the lower control panel as a standalone unit. Alternatively, multiple VTR units connected by 9-pin remote cables are being operated in synchronization (PARARUN).

Note

No character is displayed for both the PARARUN mode and the standalone operation mode.

❻ Stop freeze mode

#: This appears when tapes stop with the STOP FREEZE function enabled by the setting of setup menu item 906.

No indication: The STOP FREEZE function is not enabled by the setting of setup menu item 906.

❼ Operation mode

This field is divided into three blocks, A, B and C.
- Block A displays the operation mode.
- Block B displays the servo lock status or tape speed.
- Block C displays a ■ mark to indicate an edit section during automatic editing.

Display		Operation mode
Block A	**Block B**	
TAPE UNTHREAD		Cassette is not loaded.
STANDBY OFF		Standby off mode
T.RELEASE		Tape tension release mode
STOP		Stop mode
F.FWD		Fast forward mode
REW		Rewind mode
PREROLL		Preroll mode
PLAY		Playback mode (servo unlocked)
PLAY	LOCK	Playback mode (servo locked)
PLAY	Variation from normal speed (%)	Capstan override mode *(see page 39)*
REC		Record mode (servo unocked)
REC	LOCK	Record mode (servo locked)
EDIT		Edit mode (servo unlocked)
EDIT	LOCK	Edit mode (servo locked)
JOG	STILL	Still playback in jog mode
JOG	FWD	Jog mode in forward direction
JOG	REV	Jog mode in reverse direction
SHUTTLE	(Speed)	Shuttle mode
VAR	(Speed)	Variable speed mode
AUTO EDIT		Automatic editing mode
PREVIEW		Preview mode
REVIEW		Review mode

Display		Operation mode
Block A	**Block B**	
DMC	(Speed)[a]	DMC playback mode
D-PREV	(Speed)[a]	DMC editing preview mode
D-EDIT	(Speed)[a]	DMC editing mode
DMC-SPD	(Speed)	DMC initial speed setting
PLY-SPD	Variation from normal speed (%)	Tape speed override mode (when "TSO" is selected in setup menu item 111)

a) Initial speed setting or stored speed setting

3-5 Cassettes

3-5-1 Cassette Types

This unit uses the following HDCAM cassettes for both recording and playback.

HDCAM cassettes

| Small cassettes | BCT-6HD/12HD/22HD/32HD/40HD |
| Large cassettes | BCT-34HDL/64HDL/94HDL/124HDL |

The HDW-D1800 can also play back the following cassettes.
• Digital Betacam cassettes
• MPEG IMX cassettes

3-5-2 Inserting and Ejecting Cassettes

It is not possible to insert or eject a cassette unless the unit is powered on.

To insert a cassette
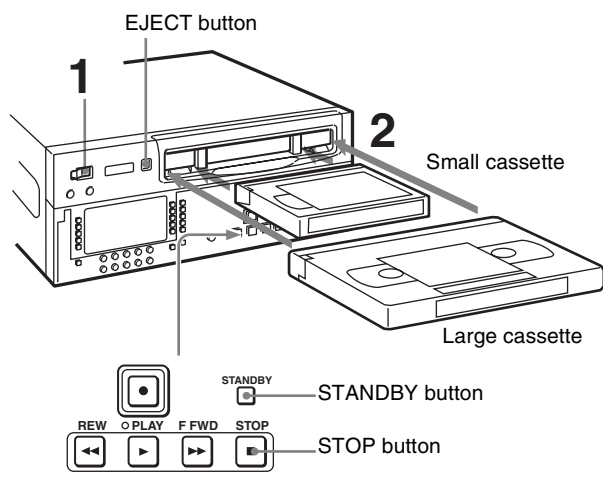
1 Turn the POWER switch on.

2 Check the following points, then insert the cassette horizontally in the orientation shown in the figure.

• Check that message "ERR-10" is not shown in the time data/menu display section.
• Check that there is no slack in the tape.

The cassette is drawn into the unit, and the STANDBY and STOP buttons light.

To remove slack from the tape
Press in one of the reels with a finger, and turn gently in the direction shown by the arrows until there is no slack in the tape.
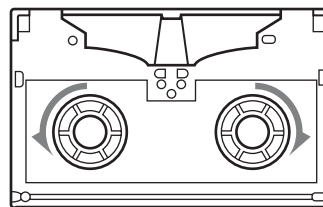
To eject a cassette
Press the EJECT button.

Note

Ejecting is a local operation. It is not possible to eject a cassette in another VTR by remote control.

If the tape slacks inside the unit, pressing the EJECT button may not eject the cassette. For information about how to remove the cassette in such a case, refer to the Installation Manual.

3-5-3 Preventing Accidental Erasure of Recordings

To prevent a tape from being inadvertently erased, press in the record inhibit plug on the cassette.
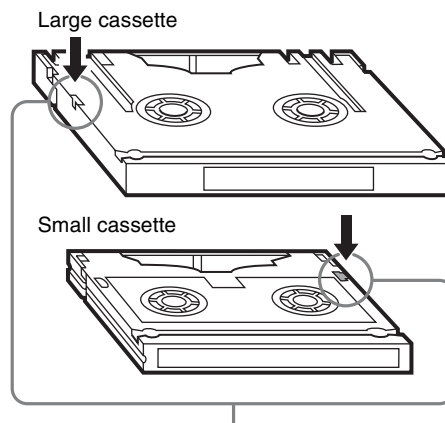
Press in the record inhibit plug. (ON)
Return this plug to its original position to enable recording on the tape again. (OFF)

Recording and Playback   Chapter *4*

4-1 Recording

This section describes video and audio recording on the unit.

4-1-1 Preparations for Recording

Switch and menu settings

Before you start recording, make necessary switch and menu settings.

For details on each setting, see the pages indicated in parenthesis.

Turn on: POWER switch *(see page 12)*

REMOTE buttons *(see page 12)*: off
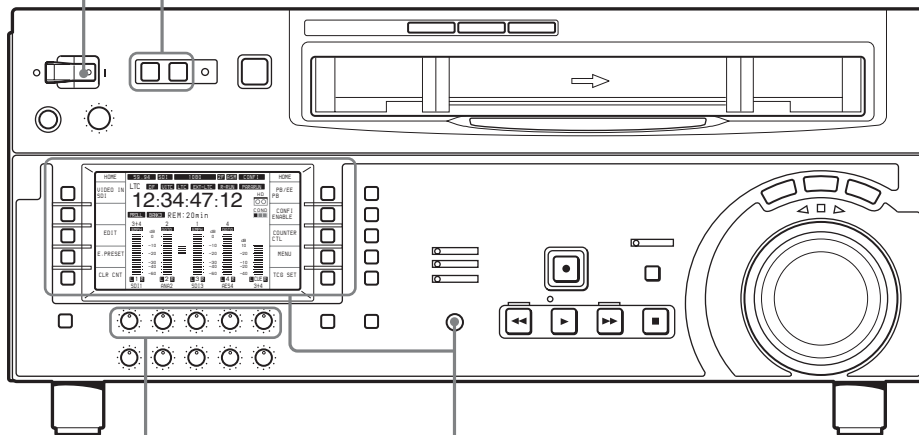
Adjust the audio recording levels *(see page 19)*.

Select the input audio signal *(see page 69)*.

Select the input video signal *(see page 65)*.

Select the audio channel to be monitored *(see page 69)*.

PREREAD setting *(see page 68)*: OFF

CONFI setting *(see page 65)*: ENABLE

PB/EE setting *(see page 65)*: PB

COUNTER setting *(see page 66)*: Select the time data to be displayed.

REC INHI setting *(see page 69)*: OFF

To adjust the audio recording levels

When carrying out audio recording at a reference level
Leave the REC knobs pressed in. The audio signals will be recorded at a preset reference level (a reference –20 dB indication for an input of +4 dBm).

To manually adjust the recording levels
For each channel, press to protrude the REC knobs, and adjust so that the audio level indication is close to 0 dB for an average volume. Carry out the adjustment in E-E mode.

For details of selecting the E-E mode, see the description of the REC knobs (page 19) and the F6 (PB/EE) setting in function menu page P01: HOME (page 65).

To change the display range of the audio level indications
In function menu page P08: AUD INP, select F4 (MT.SCALE) *(see page 69)*.

To monitor the simultaneous playback of the recorded video and audio signals during recording
In function menu page P01: HOME, select F7 (CONFI) and set it to "ENABLE" *(see page 65)*. It is now possible to simultaneously monitor the video and audio signals being recorded.

To use the emphasis function
To add emphasis to the analog input audio signal or analog playback audio signal, select F1 (EMPHASIS) in function menu page P08: AUD INP and set it to "ON" *(see page 69)*.
When the signal to which emphasis has been applied is played back, it is automatically subjected to deemphasis processing.
Using the emphasis-deemphasis processing improves the dynamic range by reducing high-frequency noise.

4-1-2 Recording Timecode and User Bit Values

There are two ways of recording timecode, as follows:
- Setting an initial value, then recording the output of the internal timecode generator
- Recording the output of the internal timecode generator synchronized with an external timecode generator

To set an initial value then record the timecode

If necessary, change the settings in function menu page P02: TC *(see page 66)*.

To set an initial timecode value
Use the following procedure.

3,5 4,5   1 2 6 4,5
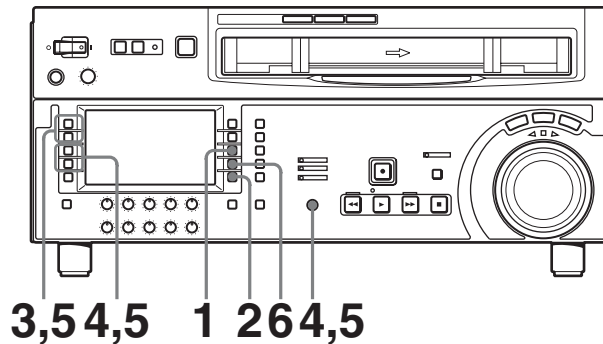
In function menu page P02: TC, set F1 (TCG SRC) to "INTERNAL" and F2 (TCG MODE) to "PRESET".

1 In function menu page P01: HOME, set F8 (COUNTER) to "TC".

2 Select F10 (TCG SET).

The function menu display changes as follows.
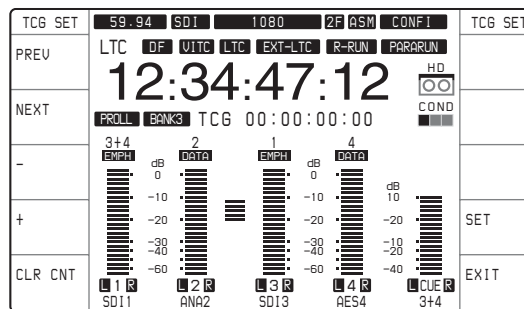
The first digit of the timecode value (8 digits: hours, minutes, seconds, and frames) flashes.

To set all digits to zero
Select F5 (CLR CNT).

3 Select F1 (PREV) or F2 (NEXT), and select the digit to be changed.

Selecting F2 (NEXT) moves the flashing digit position to the right, and selecting F1 (PREV) moves the flashing digit position to the left.

4 Turn the MULTI CONTROL knob or select F3 (–) or F4 (+) to change the value in the flashing digit position.

5 Until all the digits are set as required, repeat steps **3** and **4**.

6 Select F9 (SET).

When F3 (TCG RUN) in function menu page P02: TC is set to "FREE", the timecode value starts advancing immediately.

To set the timecode value to the real time
With the items in function menu page P02: TC set as follows, carry out the procedure of "Setting an initial timecode value". In steps **3** and **4**, set a value slightly after the current time as the initial value, then carry out step **6** at the instant the real time catches up with the setting.

    F1 (TCG SRC): INTERNAL
    F2 (TCG MODE): PRESET
    F3 (TCG RUN): FREE
    F4 (DROP FRM): DF (59.94i, 29.97PsF mode only)

To set a user bit value
The user bit values recorded on the timecode track provide for eight hexadecimal digits, which can be used to hold the date, time, or other information.
Use the following procedure.
In function menu page P02: TC, select and set F1 (TCG SRC) to "INTERNAL" and F2 (TCG MODE) to "PRESET", respectively.

1 In function menu page P01: HOME, set F8 (COUNTER) to "UB".

2 Carry out the procedure in steps **2** to **6** under the heading above, "Setting an initial timecode value".

Set values, using the hexadecimal digits 0 to 9 and A to F.

Note

If any of the settings of "REC START MARK MODE" in setup menu item 631 is set to "ON" (to write a recording start mark), then the user bits are overwritten with the shot mark data for 20 frames from the start of recording in crash record mode, assemble edit mode, or insert edit mode.

For details on the setup menu, see Chapter 9 "Setup Menus".

To synchronize the internal timecode generator with an external signal

Use this method to synchronize the timecode generators of multiple VTRs, or to record the playback timecode signal from an external VTR without deterioration of the signal waveform.
In this case the RUN and DF settings are ignored.
You can synchronize the internal timecode generator with either of the following external timecodes.

- The timecode output (LTC) of an external timecode generator or external VTR connected to the TIME CODE IN connector of the unit
- The timecode (LTC or VITC) in the HDSDI signal input to the unit

To synchronize the internal timecode generator with an external signal, use the following procedure.

TIME CODE IN connector
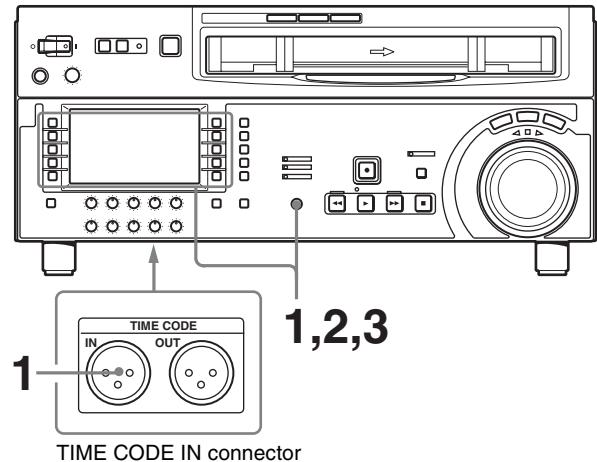
1 Set "TCG REGEN MODE" in setup menu item 605 to "TC&UB" or "TC".

2 To synchronize with an external timecode signal input to this unit's TIME CODE IN connector, connect an external timecode generator or external VTR's timecode output to the TIME CODE IN connector.

To synchronize with a timecode data contained in an HDSDI signal input to this unit, set F1 (VIDEO IN) to "SDI" in function menu page P01: HOME.

3 Set the timecode generator items as follows.

To synchronize with an external timecode signal input to this unit's TIME CODE IN connector:
- In function menu page P02: TC, set F1 (TCG SCR) to "EXT LTC".

To synchronize with the LTC data contained in an HDSDI signal input to this unit:
- Set F1 (TCG SRC) to "SDI IN".
- Set F2 (TCG MODE) to "RGN:LTC".

To synchronize with the VITC data contained in an HDSDI signal input to this unit:
- Set F1 (TCG SRC) to "SDI IN".
- Set F2 (TCG MODE) to "RGN:VITC".

The unit starts the internal timecode generator running in synchronization with the external timecode generator.
The internal timecode generator is synchronized, and even if the external timecode generator is

disconnected, the internal timecode generator
continues to run.

4-1-3 Recording Procedure

Use the following procedure.

1 2 3
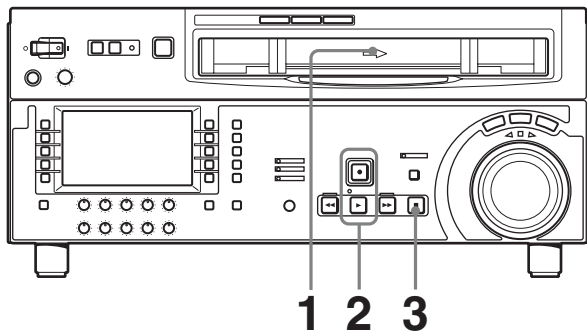
1 Insert a cassette.

*For details, see the section "To insert a cassette"
(page 32).*

2 Hold down the REC button, and press the PLAY
button.

Recording starts, the servo locks, and the SERVO
indicator lights.

3 To stop recording, press the STOP button.

If you record to the end of the tape
The tape is automatically rewound to the beginning, and
stops.
Setup menu item 125 can be set to disable automatic tape
rewind.

4-2 Playback

This section describes playback of video and audio.

4-2-1 Preparations for Playback

Switch and menu settings

Before beginning playback, make necessary switch and menu settings.

For details on each setting, see the pages indicated in parenthesis.

Turn on: POWER switch *(see page 12)*

REMOTE buttons *(see page 12)*: off
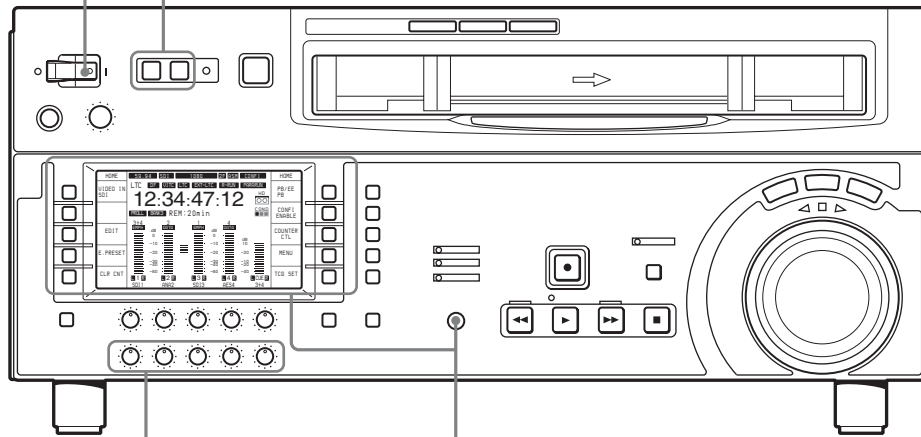
Adjust the audio playback levels *(see page 20)*.

Select the timecode to be displayed *(see page 66)*.
PB/EE setting *(see page 65)*: PB
Select the audio tracks to be monitored *(see page 69)*.
Select the time data to be displayed *(see page 66)*.

Time data selection

Displayed time data
F8 (COUNTER) in function menu page P01: HOME can be used to select CTL (control), timecode, or user bit values. When you select timecode, the data to be displayed is determined by the setting (LTC, AUTO, or VITC) of F10 (TCR) in function menu page P02: TC as follows.

TCR setting	Displayed data
LTC	LTC recorded on tape
AUTO	LTC or VITC (automatically switched)
VITC	VITC recorded on tape

Output timecode
The settings in setup menu item 606, F1 (TCG SRC) and F2 (TCG MODE) in function menu page P02: TC determine whether the timecode output from the TIME

CODE OUT connector is the timecode generated by the internal timecode generator (REGEN) or the playback timecode (TAPE).

For details of the TCG SRC, TCG MODE settings, see page 66.

4-2-2 Playback Procedures

This section describes the following playback functions available with this unit:
- Normal playback
  Playback at normal speed (×1)
- Playback in jog mode
  Variable speed playback, with the speed determined by the speed of rotating the search dial

- Playback in shuttle mode
  Variable speed playback, with the speed determined by the angular position of the search dial
- Playback in variable speed mode
  Variable speed playback, with the speed finely determined by the angular position of the search dial
- Playback using the capstan override function
  The playback speed is adjusted temporarily according to the angular position of the search dial, to align the playback phase with another VTR.
- DMC playback
  Playback at memorized varying speed.

Normal playback

First insert a cassette.

For details of how to insert a cassette, see Section "3-5-2 Inserting and Ejecting Cassettes" (page 32).

Cassette compartment

STOP button
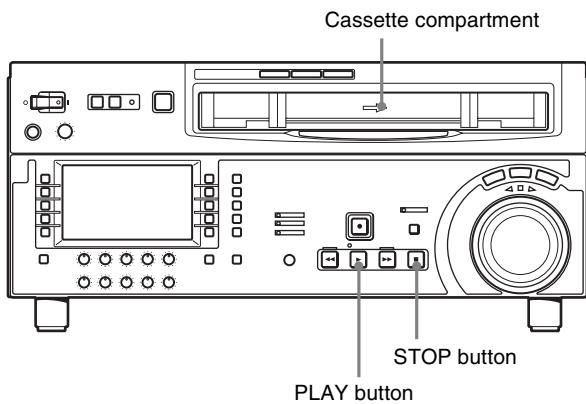
PLAY button

To start playback
Press the PLAY button.
Playback starts, the servo locks, and the SERVO indicator lights.

To stop playback
Press the STOP button.

If you play back to the end of the tape
The tape is automatically rewound, and stops.
The automatic rewind function can be disabled by changing the setting in setup menu item 125.

Playback in jog mode

In jog mode, you can control the speed of playback by the speed of rotating the search dial. The playback speed range is ±1 time normal speed.
The playback speed range can be ±3 times normal speed by changing the setting of setup menu item 116.
To carry out playback in jog mode, use the following procedure.

1 1,2,3
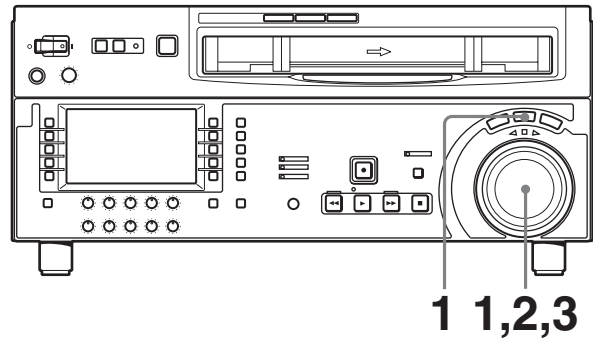
1 Press the JOG button or search dial so that the JOG button is lit.

  Pressing the search dial toggles between jog mode and shuttle mode.

2 Rotate the search dial in the desired direction, at the speed corresponding to the desired playback speed.

  Playback in jog mode starts.

3 To stop playback in jog mode, return the search dial to the center position, or press the STOP button.

  The function to toggle between jog mode and shuttle mode each time the search dial is pressed can be disabled by changing the setting in setup menu item 101.

Playback in shuttle mode

In shuttle mode, you can control the speed of playback by the angular position of the search dial. The range of playback speed is as follows.
- **HDCAM tape:** ±50 times normal speed (59.94i, 29.97PsF mode), ±58 times normal speed (50i, 25PsF mode), ±60 times normal speed (24PsF, 23.98PsF mode)
- **Digital Betacam tape:** ±50 times normal speed
- **MPEG IMX tape:** ±78 times normal speed
There are detents on the search dial at the still position and at the position for ±5 times normal speed.
To carry out playback in shuttle mode, use the following procedure.

1 3 1,2,3
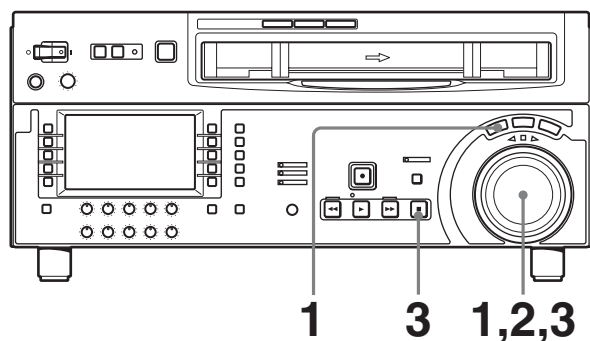
1 Press the SHUTTLE button or search dial so that the SHUTTLE button is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

2 Rotate the search dial to the desired angle corresponding to the desired playback speed.

Playback in shuttle mode starts.

3 To stop playback in shuttle mode, return the search dial to the center position, or press the STOP button.

The function to toggle between jog mode and shuttle mode each time the search dial is pressed can be disabled by changing the setting in setup menu item 101.

To return to normal-speed playback
Press the PLAY button.

To alternate between normal-speed playback and shuttle mode playback
Rotate the search dial to the position corresponding to the desired shuttle playback speed, then press the PLAY and SHUTTLE buttons alternately.
For intermittent shuttle mode playback, press the STOP and SHUTTLE buttons alternately.

Playback in variable speed mode

In variable speed mode, you can finely control playback speed within the following ranges:
• **HDCAM:** –1 to +2 times normal speed
• **Digital Betacam:** –1 to +3 times normal speed
• **MPEG IMX:** –1 to +3 times normal speed
There are detents on the search dial at the still position and at the position for ±1 times normal speed.
To carry out playback in variable speed mode, use the following procedure.

3 1 2,3
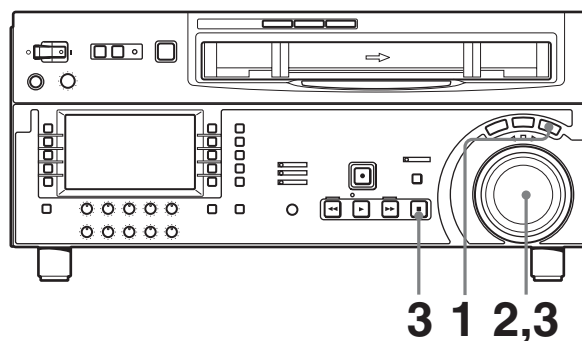
1 Press the VAR button, turning it on.

2 Rotate the search dial to the desired angle corresponding to the desired playback speed.

Playback in variable speed mode starts.

3 To stop playback in variable speed mode, return the search dial to the center position, or press the STOP button.

To return to normal-speed playback
Press the PLAY button.

To alternate between normal-speed playback and variable speed mode playback
Rotate the search dial to the position corresponding to the desired variable playback speed, then press the PLAY and VAR buttons alternately.
For intermittent variable speed mode playback, press the STOP and VAR buttons alternately.

Playback using the capstan override function

You can use the capstan override function to adjust the playback speed temporarily. This function is convenient for playback phase synchronization with another VTR playing back the same program.

1,2 1
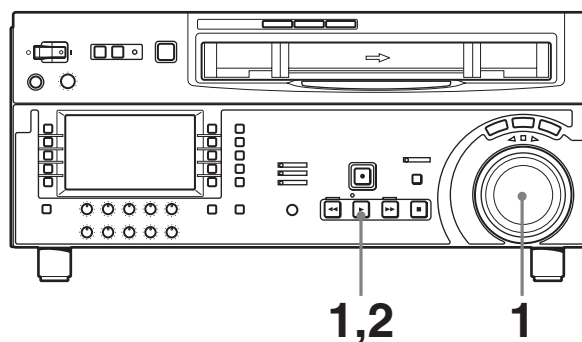
1 Hold down the PLAY button, and rotate the search dial in the desired direction to adjust the playback speed.

The range of speed adjustment is ±15% in steps of 1%. The SERVO indicator goes off.

2 When the adjustment is completed, release the PLAY button.

The tape transport returns to normal speed, and the SERVO indicator comes on again.

To carry out continuous capstan override playback

2,3   **3,4**
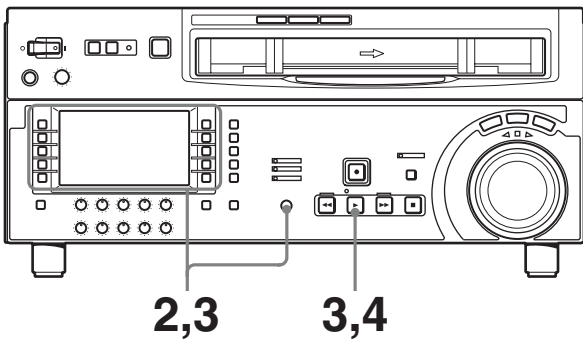
1 Set "TSO PLAY" in setup menu item 111 to "TSO".

2 With F4 (DMC) selected in function menu page P06: EDIT, turn the MULTI CONTROL knob to select the playback speed.

The selected playback speed is displayed in ancillary message display on the lower control panel of this unit as well as in the text information display section on the video monitor.

3 With F4 (DMC) selected, press the PLAY button.

4 Press the PLAY button or carry out any other operation to exit the tape speed override mode.

For details of setup menu operations, see Section "9-2 Setup Menu Operations" (page 75).

For details of character information displayed on the video monitor screen, see the descriptions of F5 (CHARA) in function menu page P04: MISC-1 (page 68) and setup menu item 005 (page 78).

4-2-3 DMC (Dynamic Motion Control) Playback

Overview

DMC playback allows you to vary the playback speed for a certain section of a tape, in variable speed mode (from –1 to +2 times normal speed) and store the varying speed in memory for later playback.

For example, during a live broadcast of a sporting event you can set the start and end points of highlights while recording, and then provide immediate DMC playback of those highlights.

During DMC playback the tape runs as shown in the following figure.
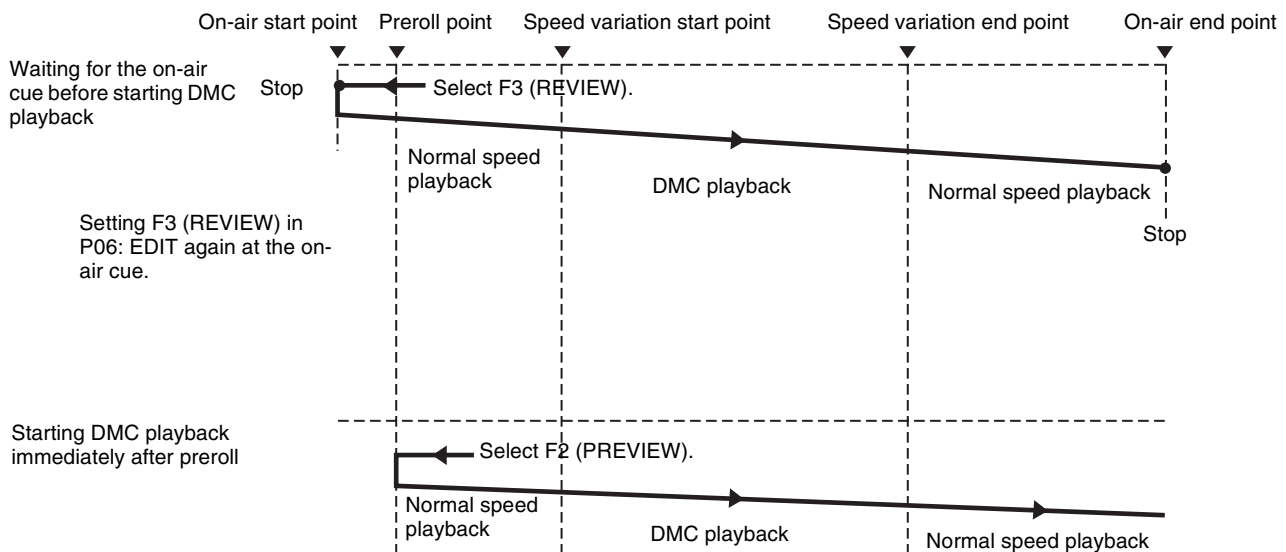
To store a varying playback speed in memory

To store the playback speed for DMC playback, use the following procedure.

1,4,2,5   7 3 3,4,6
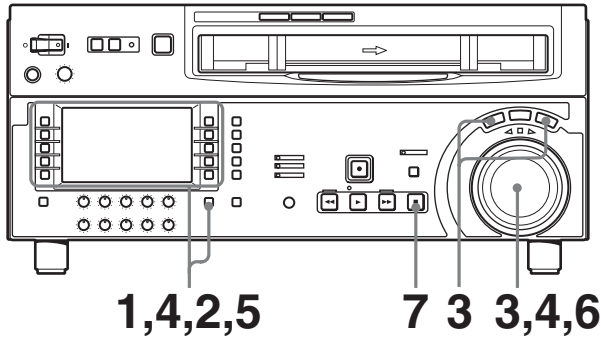
1 In function menu page P06: EDIT, select F4 (DMC).

2 Either while playing back the recorded tape, or during recording, press the SHIFT/ENTRY button and one of the following buttons simultaneously, to set the start and end points.
   • **On-air start point:** F7 (AUD IN) in function menu page P06: EDIT
   • **Speed variation start point:** F9 (IN) in function menu page P06: EDIT
   • **Speed variation end point:** F10 (OUT) in function menu page P06: EDIT
   • **On-air end point:** F8 (AUD OUT) in function menu page P06: EDIT
   The selected function menu items light.

3 Press the search dial, the SHUTTLE button or VAR button to enter shuttle or variable speed mode.

Note

Make sure that setup menu item 111 "TSO PLAY" is set to "DIS".

4 With F4 (DMC) selected, rotate the search dial to set the initial speed at the playback start point.

The speed you set appears in the tape information. During this period the tape does not move. When the initial speed setting is complete, release the F4 (DMC).

5 Holding down the SHIFT/ENTRY button, select F2 (PREVIEW).

The tape is prerolled and played back at the normal speed from the on-air start point to the speed variation start point.
On passing the speed variation start point, F4 (DMC) begins to flash, and playback begins at the speed set in step **4**.

6 Rotate the search dial to vary the playback speed.

While the F4 (DMC) is flashing, the speed variations are stored in memory. On passing the speed variation end point, the F4 (DMC) changes from flashing to continuously lit (pink), and the variable speed storing ends.

7 Press the STOP button to stop the tape.

If the F4 (DMC) is lit before the speed variation end point
This indicates that the memory became full at that point. It is therefore not possible to memorize more speed variations.
The maximum memory capacity is 120 seconds.

To correct the stored speed variation
Holding down the SHIFT/ENTRY button, select F2 (PREVIEW).
The interval between the speed variation start and end points is automatically played back at the stored speed. Operate the search dial to adjust the playback speed.

To set the initial speed to normal playback speed
In step **4** above, press the PLAY button.

To carry out DMC playback

There are two methods of starting DMC playback.
• Starting playback at the on-air cue from the on-air start point
• Starting playback immediately after preroll

Notes

• To avoid operating mistakes we recommend that you use the VTR in standalone mode when carrying out DMC playback.
• When using two VTRs connected for editing, you can only use the recorder VTR for DMC playback, and also only when neither the RECORDER nor PLAYER button is lit. (For this unit, this applies when F6 (R/P SEL) in function menu page P06: EDIT is not set.)

1,2
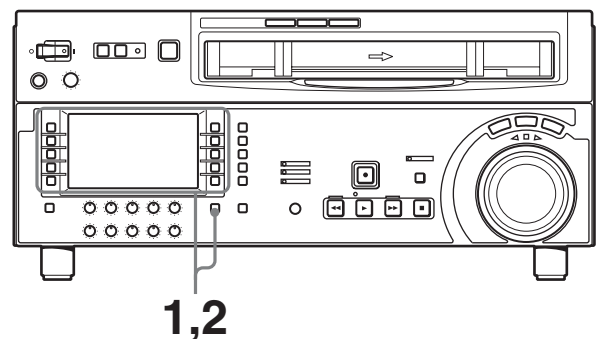
To start playback at the on-air cue from the on-air start point

Use the following procedure.

1 Holding down the SHIFT/ENTRY button, select F3 (REVIEW) in function menu page P06: EDIT.

F3 (REVIEW) lights, and the tape is cued up to the on-air start point. After the tape is cued up, F3 (REVIEW) flashes.

2 At the moment of the on-air cue, hold down the SHIFT/ENTRY button and select F3 (REVIEW) again.

F3 (REVIEW) lights, and playback starts at normal speed.
Between the speed variation start and end points, DMC playback is carried out at the stored speed, and then playback continues at normal speed and the tape stops at the on-air end point.

To start playback immediately after preroll

Holding down the SHIFT/ENTRY button, select F2 (PREVIEW) in function menu page P06: EDIT.
F2 (PREVIEW) is lit, and after preroll, DMC playback is carried out at the stored speed from the speed variation start point, then playback continues at normal speed from the speed variation end point.

To stop the tape during DMC playback

Press the STOP button.

To exit DMC playback mode

Press the F4 (DMC) button and the ALT/DELETE button simultaneously.

5-1 Automatic Editing

This section describes how to carry out automatic editing with this unit and another VTR connected to the REMOTE1-IN (9P) or REMOTE 1-OUT (9P) connector of this unit.

For details of preparations, see Section "3-1 Connections to External Devices" (page 27).

5-1-1 Overview

Editing mode

With this unit, you can use the following two edit modes for automatic editing.

• **Assemble editing**
  Successive portions of the edited result are recorded on the end of the already completed section.
  The CTL signal, video signal, audio signal, and timecode signal are all newly recorded on the tape.

• **Insert editing**
  New material is recorded at an intermediate point of an existing recording.
  The CTL signal is not overwritten. The video signal, audio signal, and timecode signal can all be recorded individually.

You can carry out DMC editing in both editing modes. In insert editing, split editing is also possible.

To use CTL to interpolate timecode values

When you are using timecode values as edit point addresses, the timecode must be recorded on the tape in correct time sequence (i.e. the sections must be in strictly ascending time order).
If the timecode values are all in correct time sequence, then if there are any discontinuities in the timecode, the unit interpolates them using the CTL count.

To record timecode

For automatic editing, regardless of the settings of F1 (TCG SRC) and F2 (TCG MODE) in function menu page P02: TC, timecode is recorded continuously from the timecode recorded before the edit IN point.
Using setup menu item *610*, it is also possible to record timecode according to the settings in the function menu.

Sequence of editing operations

The following flowchart outlines the sequence of operations in automatic editing with two VTRs.

Selecting the editing mode *(see page 45)*

↓

Setting the recorder and player edit points *(see page 45)*

↓

Previewing the edit segments *(see page 48)*

↓

Amending edit points as necessary *(see page 47)*

↓

Carrying out automatic editing *(see page 49)*

↓

Reviewing the editing results as necessary (REVIEW) *(see page 50)*
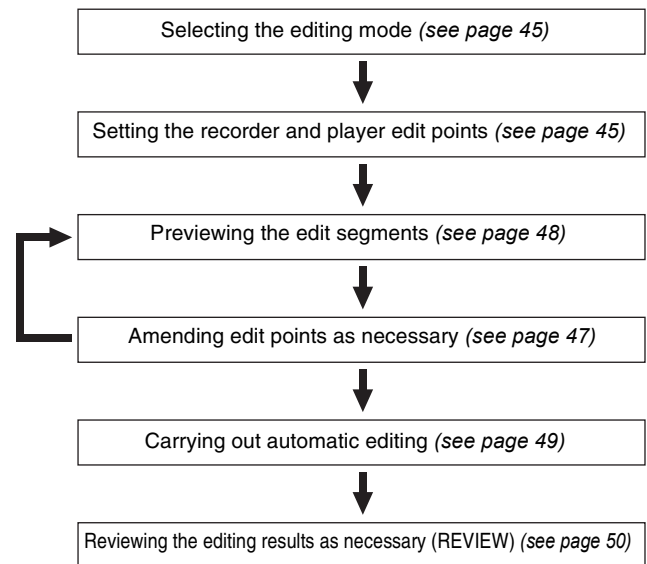
To use an editing control unit

When controlling this unit with an editing control unit, set an edit delay on the editing control unit so that the cut-in and cut-out commands are output 5 frames before the actual edit point.

5-1-2 Switch Settings

Before you start editing, make necessary switch settings.

Recorder settings

POWER switch: "❙" side (on) *(see page 12)*

REMOTE buttons *(see page 12)*: OFF

HDW-1800/D1800
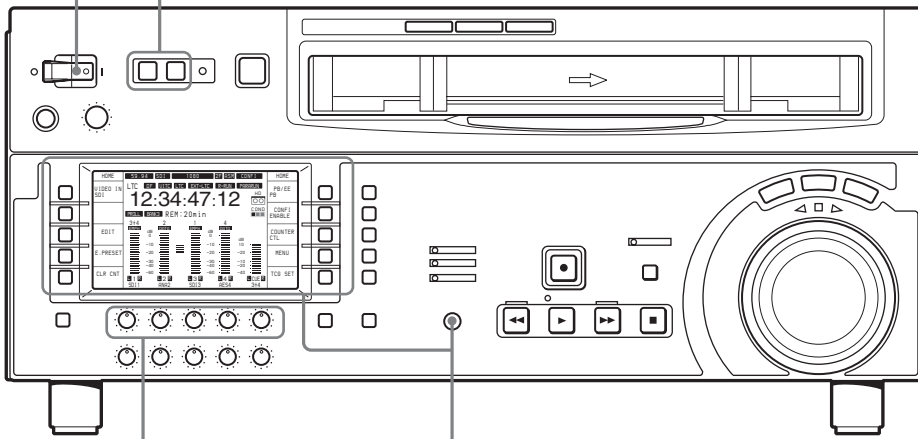
REC knobs *(see page 19)*: Adjust the audio recording levels.

Edit mode setting section *(see page 45)*: Select assemble edit mode or insert edit mode.
Audio selection function selector buttons *(see page 69)*: Select the input audio signal.
VIDEO IN setting *(see page 65)*: Select the input video signal.
REC INHI setting *(see page 69)*: OFF
COUNTER setting *(see page 66)*: TC or CTL

Player settings

POWER switch: "❙" side (on)

REMOTE buttons: 1(9P) button lights

HDW-A2100/M2100
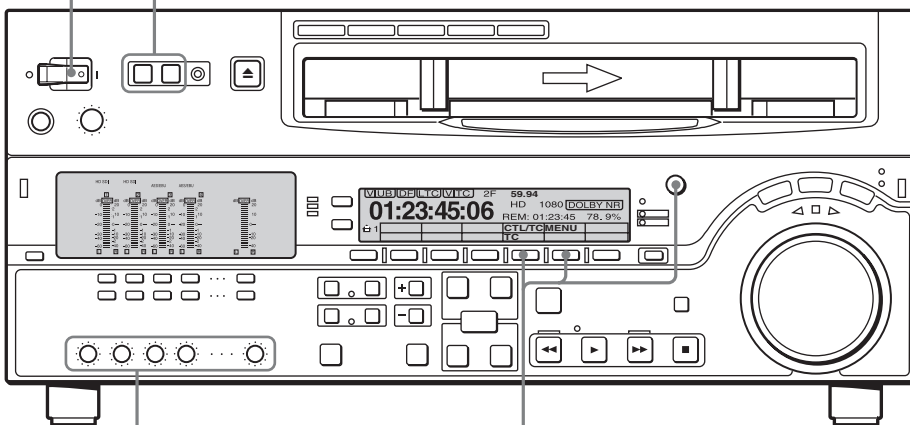
PB knobs: Adjust the audio playback levels.

CTL/TC setting: TC or CTL

5-1-3 Selecting the Editing Mode

To select the editing mode
Select assemble editing or insert editing.

F1 (REC INHI)
F5 (ASSEMBLE)
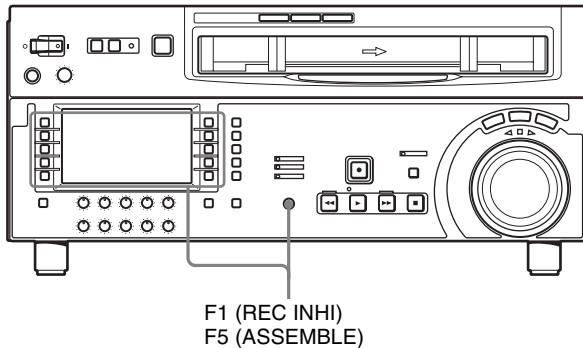
Depending on the editing mode, press the following buttons.
- **Assemble editing:** F5 (ASSEMBLE) in function menu page P07: E.PRESET
- **Insert editing:** Desired function in function menu page P07: E.PRESET (F2 (INS TC), F3 (INS CUE), and F6 (INS VID) to F10 (INS A4))

When you select edit mode and display function menu page P06: EDIT, the F9 (IN) and F10 (OUT) buttons begin to flash, indicating that the edit points need to be set.

5-1-4 Setting Edit Points

Set the edit points (IN and OUT points). To use split editing in insert mode, you can set the audio and video edit points individually.

To set an edit point

1,3   **2**
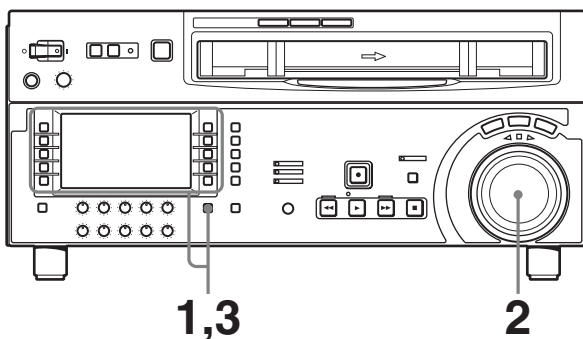
1 Select F6 (R/P SEL) in function menu page P06: EDIT to select the player or recorder to be set the edit points.

Each time F6 (R/P SEL) is selected, the target VTR changes.

2 Rotate the search dial in jog or shuttle mode, and position the tape at the required edit point.

For details of playback in jog or shuttle mode, see the sections "Playback in jog mode" (page 38) and "Playback in shuttle mode" (page 38).

3 At the point at which you want to set the edit IN or OUT point, hold down the SHIFT/ENTRY button and select F9 (IN) or F10 (OUT) in function menu page P06: EDIT.

When the IN point or OUT point is set, the F9 (IN) or F10 (OUT) is lit.

4 Repeat steps **1** to **3** until all the necessary edit points are set.

When the edit IN points are set on both the recorder and player, F2 (PREVIEW) and F1 (AUTOEDIT) flash, and preview or editing operation becomes possible.

To set the edit point automatically
Editing requires four edit points: each pair of IN and OUT points on both the recorder and player. Once any three of these points are defined, the last point is set automatically. For example, if you set the recorder IN and OUT points, and the player IN point, the player OUT point is set automatically.

Note

In the following cases, F7 to F10 (IN, OUT, AUD IN and AUD OUT) begin to flash and you cannot carry out automatic editing.
- The OUT point is before the IN point.
- All four of the recorder IN and OUT points and the player IN and OUT points have been set.

Use the ALT/DELETE button to delete a unnecessary edit point, or set the edit points correctly.

For details of deleting edit points, see the section "To delete an edit point" (page 47).

To set split edit points
In split editing, you can set the edit points for audio and video independently. Set the audio edit points using F7 (AUD IN) and F8 (AUD OUT) in function menu page P06: EDIT, and set the video edit points using F9 (IN) and F10 (OUT).
Note that split editing is only possible when the recording mode is insert editing.

1,2,4 **3**
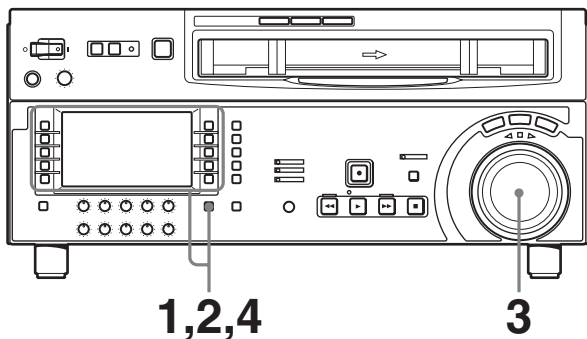
1 In function menu page P07: E.PRESET, select the desired function from F2 (INS TC), F3 (INS CUE) and F6 (INS VID) to F10 (INS A4).

2 In function menu page P06: EDIT, select F6 (R/P SEL) to select the VTR you want to set edit points.

3 Rotate the search dial in jog or shuttle mode to find the edit point.

For details of jog/shuttle mode playback, see the sections "Playback in jog mode" (page 38) and "Playback in shuttle mode" (page 38).

4 Holding down the SHIFT/ENTRY button, select F9 (IN), F10 (OUT), F7 (AUD IN) or F8 (AUD OUT) to set an edit point.

When the edit point is set, the selected button changes from flashing to continuously lit.

5 Repeat steps **2** to **4** to set the required edit points.

As each edit point is set, the corresponding button changes from flashing to continuously lit.

Note

During split editing, if you set six or more edit points for the recorder and player, F7 to F10 (AUD IN, AUD OUT, IN and OUT) begin to flash. Editing cannot be carried out in this state. Delete unnecessary edit points using the ALT/DELETE button.

For details of how to delete edit points, see the section "To delete an edit point" (page 47).

To set the edit points automatically in split editing

Split editing requires a total of eight edit points: four video edit points (player IN and OUT and recorder IN and OUT) and four audio edit points (player audio IN and OUT and recorder audio IN and OUT).
Once any five of these points are defined, the system automatically calculates and sets the remaining three points.

Specifically, once you have set three of the four video edit points and two of the four audio edit points, the remaining three edit points are set automatically, regardless of whether these points are for the recorder or player.

In the figure below, the edit points shown within boxes are already set. Other edit points (recorder audio OUT point, and player audio IN and video OUT points) are set automatically.
Note that any edit point can be deleted or corrected later regardless of whether it was set manually or automatically.
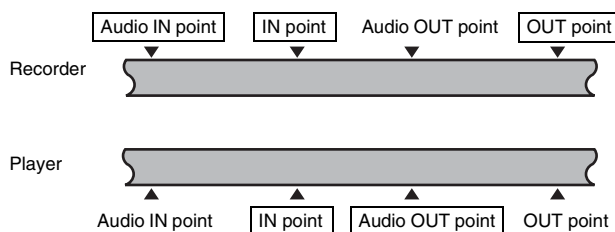
You can set audio cut in, crossfade, fade in, and fade out effects, including their durations, by menu selection.
For details, refer to the Installation Manual.

When the audio IN point is not set for insert editing of audio only

As long as the audio OUT point is set, the VTR is ready for preview or editing. In this case, the current tape position is automatically used as the audio IN point.

To use a VTR without a split editing function as the player

When it is not possible to set audio and video edit points individually on the VTR you are using as the player, you can carry out split editing by setting the audio IN and OUT points and three video edit points on the recorder (this unit).

To display the time data for an edit point

You can display the time data for an edit point in the time data display *(see page 17)*.
The edit points IN, OUT, AUDIO IN, and AUDIO OUT are displayed in the ancillary message display.

1,2
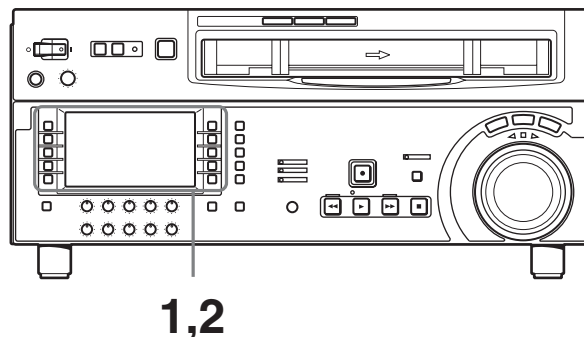
1 In function menu page P06: EDIT, select F6 (R/P SEL) to select the VTR on which you want to check the edit point.

2 According to the edit point you want to check, keep F9 (IN), F10 (OUT), F7 (AUD IN) or F8 (AUD OUT) selected in function menu page P06: EDIT.

While the function item is selected, the time data of the corresponding edit point is displayed in the upper line of the ancillary message display.

To display the duration of an edit segment

You can display the duration between two edit points in the following three cases, in the ancillary message display *(see page 17)*.
- When two edit points are set: the duration of the segment between the two points
- When only one edit point is set: the duration of the segment between the set edit point and the current tape position
- When no edit point is set: the duration of the previous edit segment

The duration is displayed in the ancillary message display, for example: "DUR 0:01:10:00".
Use the following procedure.

1 In function menu page P06: EDIT, select F6 (R/P SEL) to select the VTR you want to check the edit point.

2 In function menu page P06: EDIT, keep both F9 (IN) and F10 (OUT) or both F7 (AUD IN) and F8 (AUD OUT) selected.

While the function items are selected, the duration is displayed in the ancillary message display.

5-1-5 Modifying and Deleting Edit Points

If the edit points are not set correctly, for example if an OUT point is before a corresponding IN point, and it is not possible to carry out a preview or editing operation. In this case, modify the erroneous edit point, or delete and enter it correctly.

To modify an edit point

Use the following procedure.

1,2
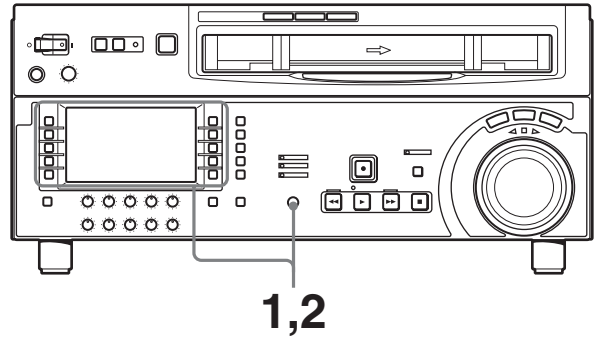
1 In function menu page P06: EDIT, select F6 (R/P SEL) to select the VTR you want to modify the edit point.

2 According to the edit point you want to modify, select F9 (IN), F10 (OUT), F7 (AUD IN) or F8 (AUD OUT) in function menu page P06: EDIT, and turn the MULTI CONTROL knob.

While the function item is selected, the time data of the corresponding edit point is displayed in the ancillary message display. Turn the MULTI CONTROL knob clockwise to increase the value by one frame or counterclockwise to decrease the value by one frame.

To delete an edit point

Use the following procedure.

1,2
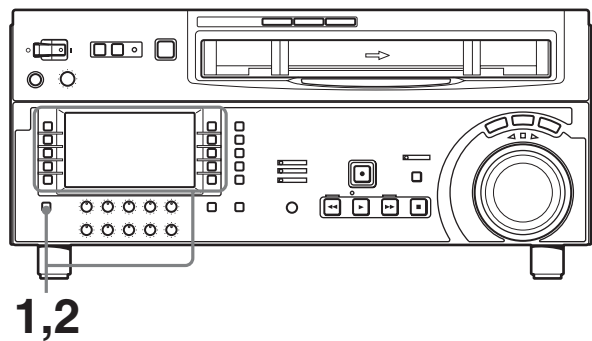
1 In function menu page P06: EDIT, select F6 (R/P SEL) to select the VTR you want to delete the edit point.

2 Holding down the ALT/DELETE button, select F9 (IN), F10 (OUT), F7 (AUD IN) or F8 (AUD OUT) in function menu page P06: EDIT according to the edit point you want to delete.

The edit point is deleted according to the selection.

5-1-6 Cuing up to Edit Points and Preroll

Use the following procedure.
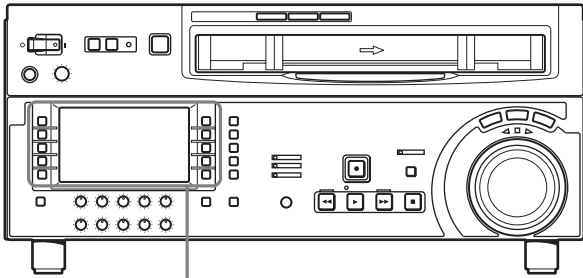
1,2

1 In function menu page P06: EDIT, select F6 (R/P SEL) to select the VTR you want to check the edit point.

2 • To cue up to an edit point
In function menu page P06: EDIT, select F9 (IN), F10 (OUT), F7 (AUD IN) or F8 (AUD OUT) according to the edit point you want to cue up, and select F5 (PREROLL).

This cues up to the selected edit point.

• To preroll
Select F5 (PREROLL).

The tape is rewound to a position 5 seconds before the edit IN point, and stops.

To change the preroll time
The factory default setting for the preroll time is 5 seconds, but you can use menu item 001 to change this to any value from 0 to 30 seconds. If you change the preroll time, make sure that the setting is not longer than the recording length before the edit IN point.
Note that for automatic editing, the preroll time setting on the recorder is prioritized.

For details of menu item 001, see Section "9-3 Items in the Basic Setup Menu" (page 78).

5-1-7 Preview

When you have set the edit points, F2 (PREVIEW) flashes, indicating that you can carry out a preview.
Use the following procedure.

1,2
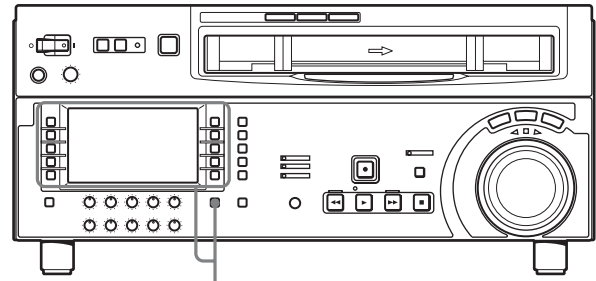
1 In function menu page P06: EDIT, select F6 (R/P SEL) to select the recorder (RECDER).

2 Holding down the SHIFT/ENTRY button, select F2 (PREVIEW).

F2 (PREVIEW) button changes from flashing to continuously lit, and the preview is carried out.
At the end of the preview, F2 (PREVIEW) flashes.

To stop the preview
Press the STOP button.
The tape stops at the position where you pressed the button.

To return to the preroll point
Select F5 (PREROLL).

To return to the IN point or OUT point
With F9 (IN) or F10 (OUT) selected, select F5 (PREROLL).

After the preview, adjust the edit points, and repeat the preview, if necessary.

For details of how to modify or delete edit points, see Section "5-1-5 Modifying and Deleting Edit Points" (page 47).

Monitor output

During a preview, you can monitor the video and audio signals on a monitor connected to the recorder as follows.
• From the preroll point to the IN point, you can monitor the playback image from the recorder.
• From the IN point to the OUT point, you can monitor the playback image from the player through the recorder in E-E mode.
• From the OUT point to the postroll point, you can monitor the playback image from the recorder.
The following figure illustrates the descriptions above.

| IN point | OUT point | |
| Playback (recorder) | E-E mode (player) | Playback (recorder) |

Chapter 5 Editing
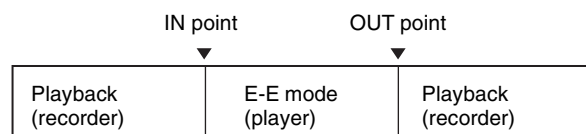
5-1-8 Carrying Out Automatic Editing
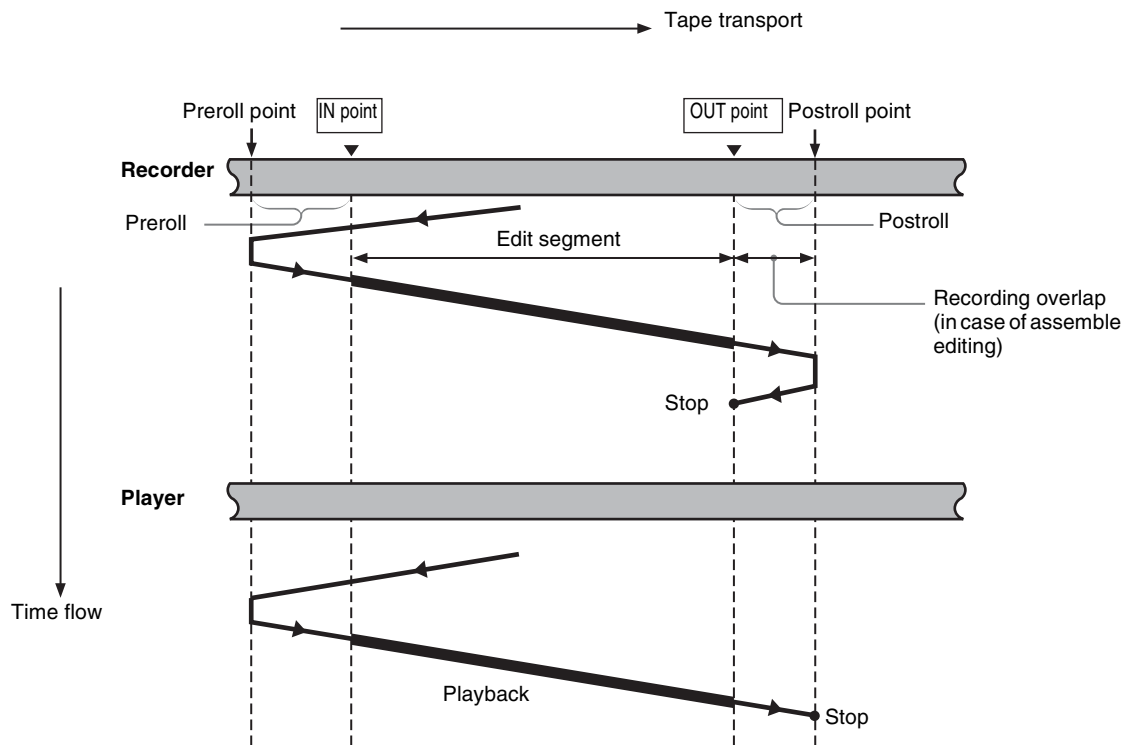
Overview

When you carry out automatic editing, the recorder and player operate as shown in the figure above, to record the video and audio signals between the IN and OUT points on the player to the segment between the IN and OUT points on the recorder.

Monitor output

Like in the preview, duing an automatic editing, you can monitor the video and audio signals as follows on a monitor connected to the recorder.

- From the preroll point to the IN point, you can monitor the playback image from the recorder.
- From the IN point to the OUT point, you can monitor the playback image from the player through the recorder in E-E mode.
- From the OUT point to the postroll point, you can monitor the playback image from the recorder.

The following figure illustrates the descriptions above.
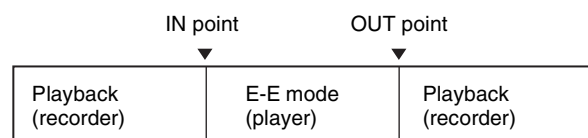
To monitor with a single monitor for video and audio on both player and recorder

You can edit efficiently even if only one monitor is available, by using the following procedure.

1 Connect the monitor to the recorder.

2 In the basic setup menu, set menu item 008 to "AUTO".

3 Select the player (PLAYER) using F6 (R/P SEL) in function menu page P06: EDIT on the recorder side.

This makes the recorder forcibly enter the E-E mode, and the player video and audio signals are output to the monitor.

Audio, video, and CTL signals need to be recorded in advance in the insert editing section on the tape. If the section in which these signals are not recorded correctly is used for insert editing, noise or breakup can occur in the audio and video when that section is played back.

To start automatic editing

When you finish setting the edit points, with F1 (AUTOEDIT) flashing, select F1.
F1 changes from flashing to continuously lit, and the automatic editing begins.
At the end of the automatic editing, F1 goes off.

F1 (AUTOEDIT)   SHIFT/ENTRY button
F2 (PREVIEW)
F3 (REVIEW)

ALT/DELETE button
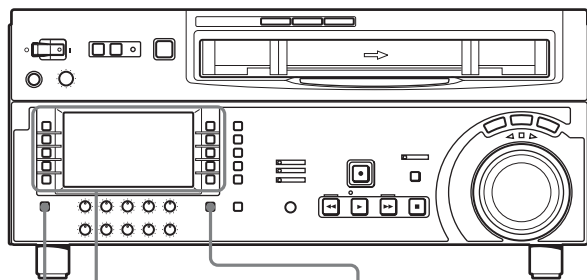
To change the OUT point during automatic editing

After starting the automatic editing, hold down the SHIFT/ENTRY button and select F10 (OUT) before the preset OUT point. The position where F10 was selected becomes a new edit OUT point, and editing ends.

To abandon automatic editing

Press the STOP button.
The automatic editing before reaching the OUT point is interruped. At the same time, F2 (PREVIEW) and F1 (AUTOEDIT) start flashing, and the unit returns to the state before the editing was started.
The edit IN and OUT points are preserved so that you can carry out a preview or automatic editing operation again by holding down the SHIFT/ENTRY button and selecting F2 or F1.

To review the editing results

After editing, you can check the editing results on the monitor.
To carry out a review, hold down the SHIFT/ENTRY button and select F3 (REVIEW) before you set any new edit point or modify any existing edit point.
The F3 lights, and the review is carried out.
At the end of the review the F3 goes off, and the tape returns to the OUT point and stops.

After automatic editing, to correct the edit points and reexecute the edit

Hold down the ALT/DELETE button and select F1 (AUTOEDIT) to recall the edit points. After adjusting the edit points select F1 to carry out the edit again.

For details of how to correct edit points, see Section "5-1-5 Modifying and Deleting Edit Points" (page 47).

5-2 DMC Editing

By controlling the player playback speed from the
recorder, you can carry out variable speed editing.

Tape transport during DMC editing
The following figure illustrates how the tapes run on the
player and recorder during DMC editing.

5-2-1 Overview

Conditions for DMC editing
DMC editing can be used with insert or assemble editing,
but not with audio split editing.
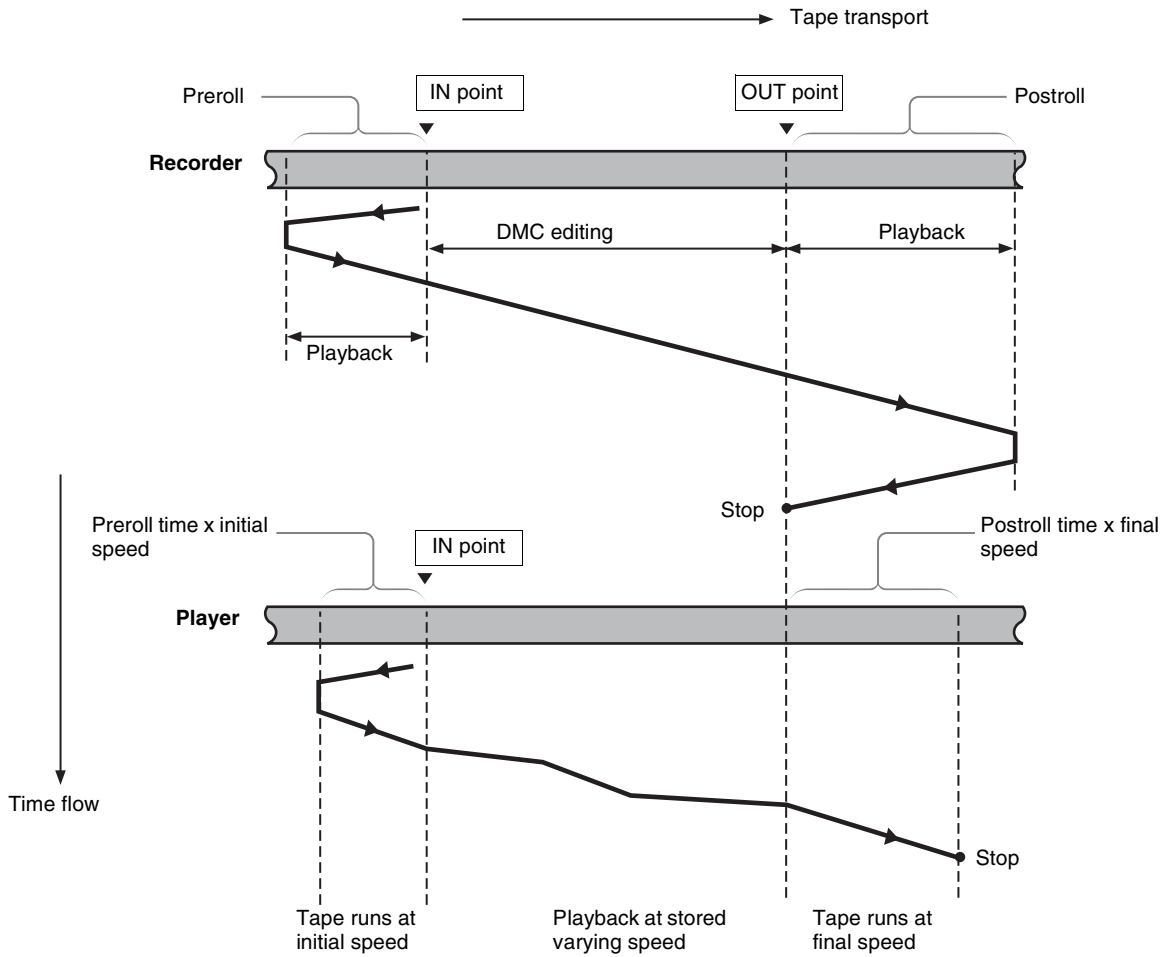
5-2-2 Carrying Out DMC Editing

To set the edit points and player speed
Use the following procedure.

1-9   4,8   6,9
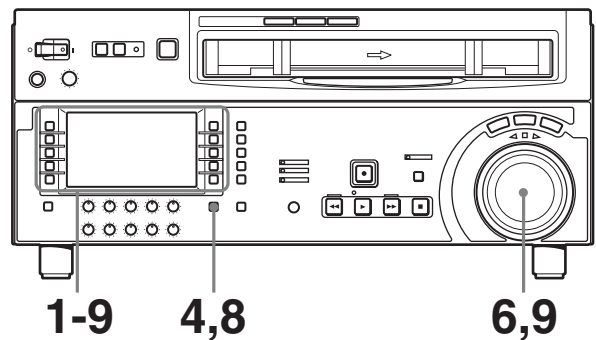
1 In function menu page P06: EDIT, select F6 (R/P SEL) to select the recorder (RECDER).

2 In function menu page P07: E.PRESET, select F5 (ASSEMBLE) or one INSERT button of F2 (INS TC), F3 (INS CUE), and F6 (INS VID) to F10 (INS A4).

3 In function menu page P06: EDIT, select F4 (DMC).

This unit switches to the DMC edit mode, and F4 (DMC) lights.

4 Holding down the SHIFT/ENTRY button, select F9 (IN) or F10 (OUT) to set an edit point.

5 Select F6 (R/P SEL) to select the player (PLAYER), and set the player edit IN point using the same procedure as step **4**.

Note

It is not possible to set the player OUT point.

6 With F4 (DMC) selected, rotate the search dial to set the initial speed.

To select normal playback speed as the initial speed
Press the PLAY button.

The speed you set appears in the tape information.

7 When the initial speed setting is complete, release the F4 (DMC).

8 Holding down the SHIFT/ENTRY button, select F2 (PREVIEW).

The tape is prerolled and then the recorder starts operating at normal speed and the player starts at the set initial speed.

9 On reaching the IN point, and F4 (DMC) begins to flash, rotate the search dial to change the playback speed.

While F4 (DMC) is flashing, the speed variations are stored in memory. On reaching the OUT point, the F4 (DMC) changes from flashing to continuously lit (pink), and the variable speed storing ends.

If the F4 (DMC) lights continuously before the OUT point
This indicates that the memory has become full at that point. Therefore, even before the OUT point is reached, it is not possible to store speed variation data in memory any more.
The maximum memory capacity is 120 seconds.

To exit the DMC edit mode

Holding down the ALT/DELETE button, select F4 (EDIT) in function menu page P07: E.PRESET.

To carry out the DMC editing

Holding down the SHIFT/ENTRY button, select F1 (AUTOEDIT) in function menu page P06: EDIT.
DMC editing is carried out at the stored varying speed. The stored playback speed settings are deleted from the unit's memory.

To check the editing results
Holding down the SHIFT/ENTRY button, select F3 (REVIEW).

Note

It may not be possible to achieve synchronization when the initial speed setting on a HDW-1800/D1800 player is double speed or higher and the playback speed range setting is "–1 ~ +2". In this case, set setup menu item 301 VAR SPEED RANGE FOR SYNCHRONIZATION on the player side to "~2.45".

5-3 Special Automatic Editing Methods

This section describes the following automatic editing methods:
- Quick editing
- Continuous editing
- Standalone editing
- Preread editing

5-3-1 Quick Editing

After selecting the edit mode, you can reduce editing time by setting the edit points and executing the editing at the same time.
Use the following procedure.
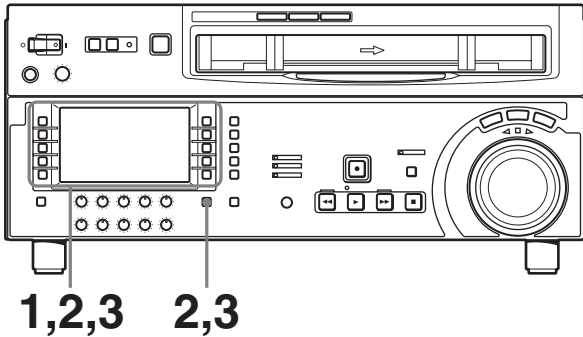
1 Select F6 (R/P SEL) in function menu page P06: EDIT to select the player or the recorder, and stop the tapes on both the player (PLAYER) and recorder (RECDER) at the positions you want to make the respective IN points.

2 Holding down the SHIFT/ENTRY button, select F1 (AUTOEDIT).

Editing starts.

3 While monitoring the editing on the monitor, hold down the SHIFT/ENTRY button and select F10 (OUT) at the position you want to make the edit OUT point.

Editing ends.
The point at which you started the editing will be the IN point, and the point at which you ended the editing will be the OUT point.

To preview
In step **1**, after setting the recorder or player edit IN point, hold down the SHIFT/ENTRY button and select F2 (PREVIEW).

5-3-2 Continuous Editing

After an automatic editing, the recorder automatically returns to the OUT point.
For the second and subsequent editing operations, you can continue editing by simply specifying the IN and OUT points on the player. In this case the current OUT point on the recorder will be the new IN point.
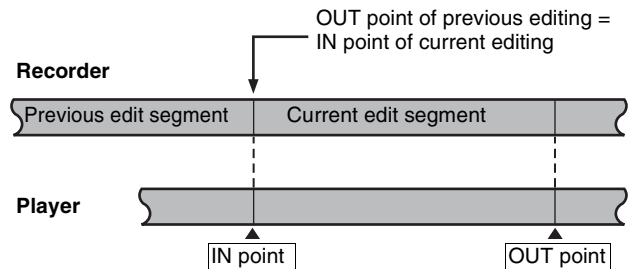
After automatic editing of one edit segment, to carry out continuous editing use the following procedure.

1 Set the player IN and OUT points.

Recorder OUT point for the previous editing will be the new IN point.

2 Holding down the SHIFT/ENTRY button, select F2 (PREVIEW) in function menu page P06: EDIT to carry out the preview.

3 Holding down the SHIFT/ENTRY button, select F1 (AUTOEDIT).

Editing starts.
When the editing is completed, the recorder stops at the OUT point, and the player stops 2 seconds after the OUT point.

By repeating this procedure, you can carry out continuous editing.
By setting setup menu item 326, you can make the previous OUT point automatically will be the new IN point.

5-3-3 Standalone Editing

This refers to editing using an external device as the player which cannot be remotely controlled via the REMOTE1-IN (9P) or REMOTE 1-OUT (9P) connector. For example,

you can record a color bar signal from a signal generator in the joints between the scenes of a finished tape.

To carry out standalone editing

Set the edit IN point with neither the recorder nor player selected with F6 (R/P SEL).

F1 (AUTOEDIT) flashes, and it is now possible to carry out automatic editing.

If necessary, you can also set the OUT point in advance.

5-3-4 Preread Editing

Video and digital audio signals already recorded on the tape can be used as an edit source for insert editing.
This type of editing is called "preread editing", and this unit uses the preread heads to read the signals in advance from the tape.

The read signals can be sent to a mixer for mixing, and can be recorded either on the original channels or on other digital audio channels.

For preread editing, set F3 (PREREAD) to "ON" in function menu page P04: MISC-1 *(see page 68)*.
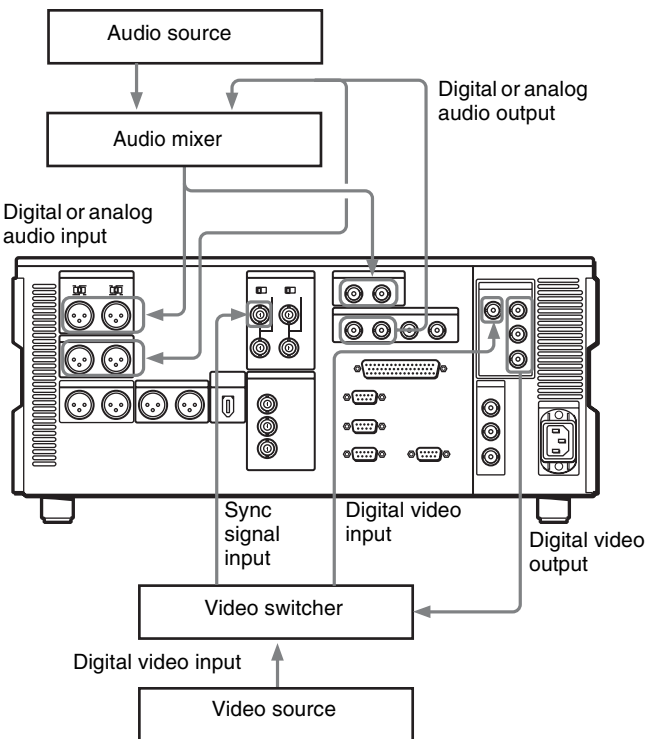
Notes

• In preread editing, if an input video signal is used as the reference signal, a loop connection between video input and output on this unit may cause acoustic feedback (howling). To prevent this, set F2 (REF VID) *(see page 67)* to "REF" in function menu page P03: VID

PROC and set setup menu item 309 to "AUTO1" *(see page 85)* so as to use an external reference signal.

• When the preread mode is selected, to prevent feedback due to the loop connection, no E-E video is output in any editing mode of this unit, however, if the loop connection remains and an E-E signal is output, feedback will occur.
To prevent this, select PB mode for the video and digital audio channels in all editing modes before the preread editing, as follows.

1 In function menu page P01: HOME, set F6 (PB/EE) to "PB".

2 In function menu page P04: MISC-1, set F3 (PREREAD) to "ON".

3 Make the necessary connections for the preread editing.

4 After selecting the desired insert edit mode, carry out the preread editing.

5 When the preread editing is completed, remove the connections.

6 Set the F3 (PREREAD) to "OFF".

7 Check that no loop connection remains.

Shot Mark Function   Chapter **6**

6-1 Overview

This unit can write shot marks or use shot marks recorded on HDCAM tape. Shot marks are indications at desired points on a tape which enable faster cuing.

Types of shot mark

This unit supports the following three types of shot mark. This chapter describes recording start marks and post marks as varieties of shot marks.

Shot mark type	Writing on a camcorder, etc.	Writing on this unit	Modifying and deleting on this unit
Recording start mark	Automatically written at the start of recording.	Written or not according to the menu setting for each recording mode (crash recording, assemble editing, insert editing). For each mode for which the setting is "ON", the mark is written automatically at the start of recording.	Possible
Shot mark 1 and shot mark 2	Written by a manual shot mark operation during recording or editing.	Written by a button operation during crash recording or assemble editing. A menu setting determines the type of mark to be written: shot mark 1, shot mark 2, or post mark.	
Post mark	Not written (Written only by this unit)	Written by a button operation during playback, stop, search, or recording (crash recording or assemble editing).	

First, the shot mark functions of this unit are described in simple terms.

To read shot marks

This unit reads in shot marks written on a tape and stores them in memory (to a maximum of 200).
When the data is stored in this unit, it is preserved even when the unit is powered off.

To write and erase shot marks

For recording start marks, a menu setting determines whether or not they are written each time recording starts. Shot mark 1, shot mark 2, and post mark can be written at any point on a tape, and also erased or rewritten.

Shot mark list operations

On the monitor, you can display a list of the shot marks read in by this unit, select required shot marks, delete shot marks, and so on. You can also add a memo mark (#) to a shot mark in the list.
During tape playback, you can add virtual shot marks to the list. This is not written on the tape itself and called virtual shot mark.

To cue up to shot marks

By selecting a desired shot mark from the shot mark list, you can cue up immediately to that position. By button operation, you can also cue up to the shot marks adjacent to the current tape position (index function).

6-2 Shot Mark Operations

This section describes the operations concerning reading and writing shot marks. Note that the following operations cannot be carried out by remote control.
Shot mark operations are carried out from function menu page P104: SHOT MRK. Select F3 (SHOT MRK) in function menu page P05: MISC-2 to open function menu page P104: SHOT MRK.

```
┌─────────────┬───────────────┬─────────────┐
│ SHOT MRK    │               │ SHOT MRK    │
│             │               │ MARK        │
│             │               │             │
│ REC/ERS     │               │ LIST        │
│ REC         │               │             │
│ REC         │               │             │
│ ▄▄▄▄        │               │             │
│             │               │             │
│             │               │             │
│             │               │ EXIT        │
└─────────────┴───────────────┴─────────────┘
```

6-2-1 Reading Shot Marks

To read in shot marks

With a cassette tape loaded and F7 (LIST) selected, press the F FWD or REW button.
While the shot marks are being read in, the F FWD or REW button flashes.
The unit searches to the end of the tape, then rewinds automatically.

For the procedure for listing the read shot marks, see page 57.

Note

It is possible to read in a maximum of 200 shot marks. When 200 shot marks have been read in, the ancillary message display on the control panel shows "SHOT LIST FULL", and the reading stops.
To cancel the message, press one of the tape transport buttons.

To stop reading
Press the STOP button.

To read shot marks from more than one cassette

After changing the cassettes, carry out the reading operation again.
Data written in the new cassette will be added as long as the total does not exceed 200 shot marks. For example, if

190 shot marks have already been read in, only 10 shot marks will be read from the new tape.
In the shot mark list *(see page 57)* the data from different cassettes is separated by a separator.

6-2-2 Writing Shot Marks

To write recording start marks during recording

In setup menu item 631 "REC START MARK MODE", select whether or not to write a recording start mark for each of the three recording modes (CRASH REC, ASSEMBLE, INSERT).
When you set a particular mode to "ON", a recording start mark is written on the tape each time you start recording in that mode.

Note

When using the insert edit mode, select F2 (INS TC) in function menu page P07: E.PRESET, turning it on.

To write shot mark 1, shot mark 2 or post marks

To select the type of shot mark to be written
In setup menu item 636 "MARK SELECT IN REC/ ASSEMBLE", select SHOT1, SHOT2 or POST mark.

Note

If any of the mode settings in setup menu item 631 "REC START MARK MODE" is set to "ON" (to write a recording start mark), then the user bits are overwritten with the shot mark data for 20 frames from the start of recording in crash recording mode, assemble edit mode or insert edit mode.

To write in crash recording or assemble editing

1 Holding down the SHIFT/ENTRY button, select F2 (REC/ERS) in function menu page P104: SHOT MRK to set "REC".

Note

A mark can be written only when F2 is set to "REC".

2 At the position you want to write the mark, hold down the SHIFT/ENTRY button and select F3 (REC).

A mark of the type selected in the setup menu item 636 is written.

2 1,2
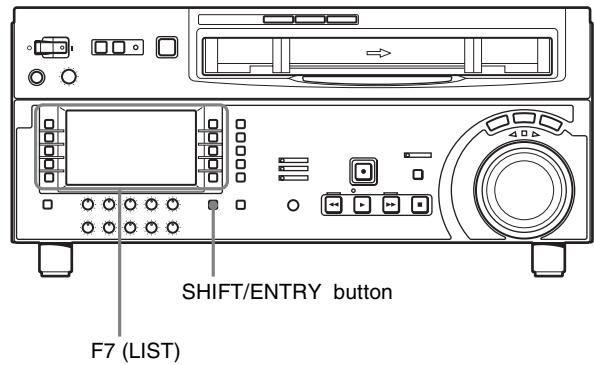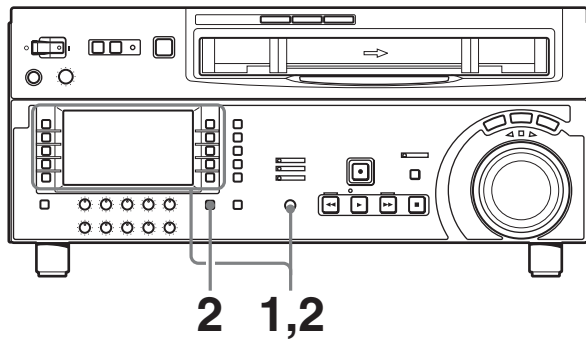
To write during playback, stop, or search

When this unit is in any of the playback, stop, or search modes, you can only write a post mark with following procedure.

1 Holding down the SHIFT/ENTRY button, select F2 (REC/ERS) to set "REC".

Note

A post mark can be written only when F2 is set to "REC".

2 At the position you want to write the mark, hold down the SHIFT/ENTRY button and select F3 (REC).

The mark selected in setup menu item 636 "MARK SELECT IN REC/ASSEMBLE" is written at the position where F3 (REC) was selected.

While the mark is being written, F3 (REC) lights in pink.

To erase a shot mark

Select the shot mark from the shot mark list, and then carry out the deletion.

For details of the procedure, see page 58.

6-2-3 Shot Mark List Operations

To display the shot mark list

Holding down the SHIFT/ENTRY button, select F7 (LIST) in function menu page P104: SHOT MRK.

SHIFT/ENTRY button

F7 (LIST)

All of the shot mark types for which setup menu item 635 "LISTING TYPE SELECT" is set to "ON" appear in list form.
Repeat the same procedure to close the list.

The function menu display changes as follows.

Example of list display

The following figure shows how the list is organized.

Current cursor position of shot mark/
total number of stored shot marks

Separator
between read-in
groups of shot
marks

Cursor
(current shot
mark position)

Position in list

Timecode

Shot mark type
R: recording start mark
S1: shot mark 1
S2: shot mark 2
V: virtual shot mark
P: post mark
#: memo mark
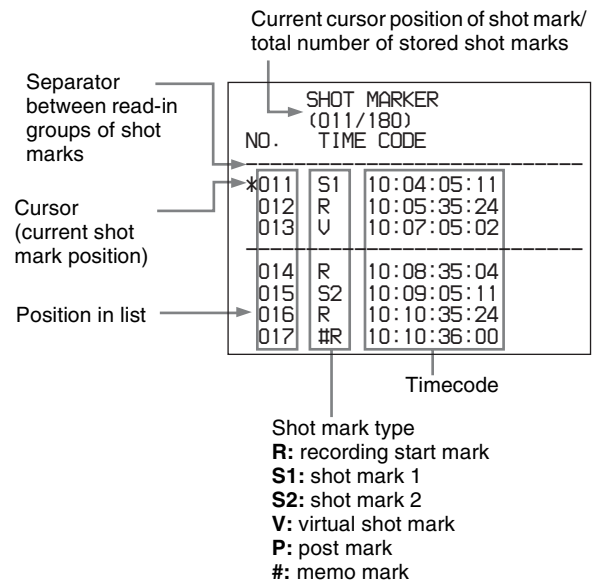
To select a shot mark

Turn the MULTI CONTROL knob to move the asterisk cursor to the desired shot mark.

To write virtual shot marks

With the unit is stopped and F2 (REC/ERS) set to "OFF", hold down the SHIFT/ENTRY button and select F6 (MARK) during playback or searching.

SHIFT/ENTRY button

F2 (REC/ERS)
F6 (MARK)
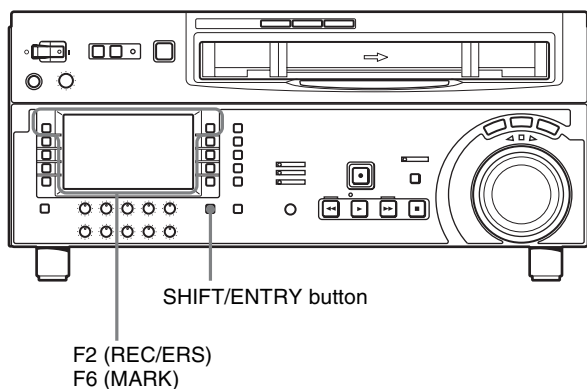
A virtual shot mark appears on the monitor as "V-MARK xxx" (xxx is the number). This is not written to the tape.

To add a memo mark (#)

Select the shot mark to which you want to add the memo mark, and select F1 (MEMO).
Repeat this operation to remove a memo mark.

To select the types of shot mark to be read in the list

For each types of shot mark (recording start mark, shot mark 1, shot mark 2, and post mark), you can specify whether it is read in.
In setup menu item 635 "LISTING TYPE SELECT", set the required types to "ON".

For details of setup menu item 635, see Section "9-4 Items in the Extended Setup Menu" (page 92).

With the following procedure, you can also specify whether shot marks that have been read are displayed or not.

1 With the shot mark list displayed, select F5 (SETTING).

You can now select the shot mark types.
The function menu display changes as follows.

2 Select F1 (PREV) or F2 (NEXT) to select a shot mark type.

3 Select F4 (ON) or F3 (OFF) to set "ON" (displayed) or "OFF" (not displayed).

4 To return to the shot mark list, select F10 (EXIT).

```
        SHOT MARKER
         (007/022)
  NO.        TIME CODE
  005  SC  00:00:11:00
  ─────────────────────────
  *REC START MARK       ON
   SHOT MARK 1          ON
   SHOT MARK 2          OFF
   POST MARK            ON
   VIRTUAL MARK         ON
   STOP CODE            OFF
```

To delete a shot mark from the list

To delete an individual shot mark
Use the following procedure.

3   **1,2,3**
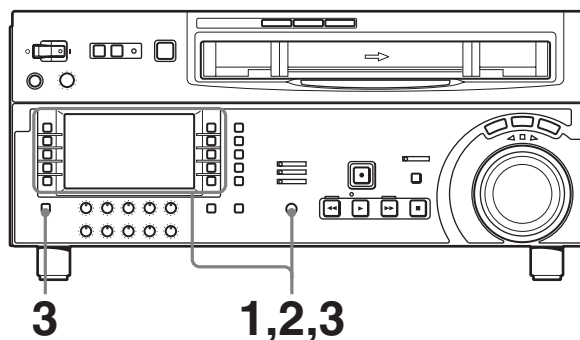
1 With the shot mark list displayed, turn the MULTI CONTROL knob to select the shot mark to be deleted.

2 Select F6 (MARK).

While F6 is selected, an "X" (deletion target identifier) appears after the selected shot mark number to be deleted.

To delete more than one shot mark, keep F6 (MARK) selected and turn the MULTI CONTROL knob to select all the target shot marks.

3 With F6 (MARK) selected, press the ALT/DELETE button.

This deletes the shot marks marked with an "X".

To delete the entire list
Holding down the ALT/DELETE button, select F7 (LIST). This deletes all the shot marks from the list. This does not erase marks from the tape.

To erase shot marks from the tape

To erase a shot mark, use the following procedure.

Note

If you erase a shot mark from the tape, it cannot be read back in.

1 Display the shot mark list.

2 Holding down the SHIFT/ENTRY button, select F2 (REC/ERS) to display "ERASE".

You can now delete shot marks.

3 Turn the MULTI CONTROL knob to select on the list the shot mark you want to erase.

4 Holding down the SHIFT/ENTRY button, select F4 (ERASE).

During the erasure F4 (ERASE) lights in pink.

5 When the shot mark has been erased, close the shot mark list.

The F2 (REC/ERS) setting returns to "OFF" when shot mark erasure is complete.

6-2-4 Cuing Up to Shot Marks

To cue up to a selected shot mark

Use the following procedure.

1,2
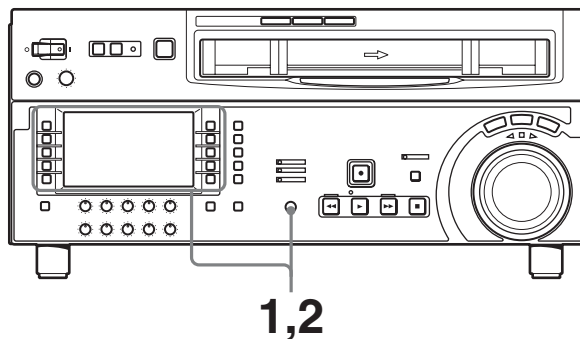
1 Turn the MULTI CONTROL knob to select the desired shot mark from the shot mark list.

2 Select F9 (PREROLL).

To cue up to shot marks adjacent to the current tape position (index function)

1 In setup menu item 630 "SEARCH TYPE SELECT" allows you to select one of ALL, REC, SHOT1 SHOT2, and POST.

2 With F6 (MARK) selected, press the F FWD button or REW button.

While the tape is running, the F FWD button or REW button flashes.

When the shot mark is detected, its type is displayed in the ancillary message display on the lower control panel and in the text information display section on the video monitor.

For details on the video text information, see the description of F5 (CHARA) in function menu page P04: MISC-1 (page 68) and the description in setup menu item 005 (page 78).

Note

You cannot use the above procedure to cue up to a virtual shot mark.

UMID Functions

Chapter **7**

7-1 Overview

The UMID (Unique Material Identifier) is a type of meta-data in video and audio materials. It has been internationally standardized in SMPTE Standard 330M. This unit supports recording and output of UMIDs.
The UMID is made up of a section called the "Basic" and a section called the "Source Pack". The Basic section contains information such as the device that recorded the material and whether the material is the original or a copy. The Source Pack section contains information about when/where/who recorded the material.
A UMID with a Basic section only is called a "Basic UMID". A UMID with both Basic and Source Pack sections is called an "Extended UMID". The following figure shows a general overview of the information contained in a UMID.

```
UMID ──┬── Basic ──────────┬── Instance Number
       │                    │   "Whether the material is
       │                    │    a copy or the original".
       │                    │
       │                    └── Material Number
       │                        "What device the original
       │                         was recorded on".
       │
       └── Source Pack ─────┬── Date/Time
                            │   "When the material was
                            │    recorded".
                            │
                            ├── Spatial Co-ordinates
                            │   "Where the material was
                            │    recorded".
                            │
                            └── Stored Ownership
                                "Who recorded the
                                 material".
```
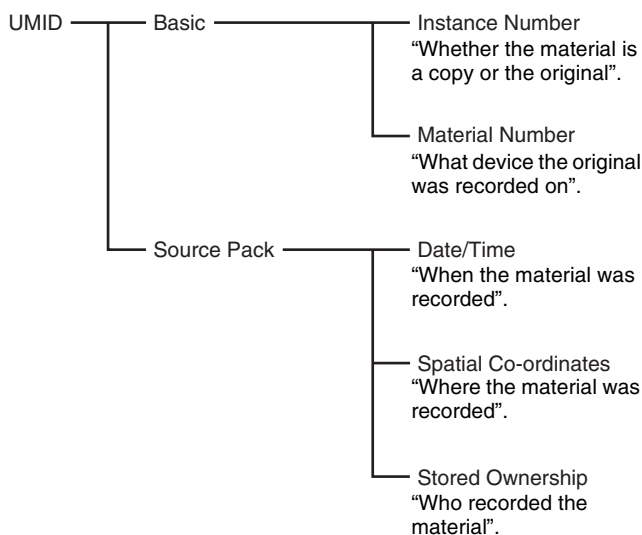
7-2 Recording UMIDs

UMIDs can be recorded when recording video signals with this unit. You can select whether to inherit (copy) the UMID contained in input signals, or automatically or forcibly generate a new UMID.

To select the type of UMID to record

Select whether to record a Basic UMID or an Extended UMID by using setup menu item 655 "UMID RECORDING".

For more information about setup menu item 655, see page 93.

To select whether to inherit or generate the UMID

When recording a UMID, you can select whether to inherit (copy) the UMID contained in input signals, or generate a new UMID. Make this selection by using setup menu item 656 "MATERIAL NO.".

For more information about setup menu item 656, see page 93.

To select the Instance Number generation method when inheriting UMIDs

If you select to inherit the UMID contained in input signals, almost all information in the UMID is copied without change, but the Instance Number changes to a value which indicates that "this UMID is a copy". The new value can be generated from a 16-bit pseudo-random number with the addition of the number of copies (1 byte), or it can be generated from a 24-bit pseudo-random number. Select the method used to generate the Instance Number by using setup menu item 654 "UMID GENERATE METHOD".

For more information about setup menu item 654, see page 93.

To select the SDI VANC line to inset the UMID

You can select the VANC [1] line of the SDI signal into which the generated UMID should be inserted. Make this selection by using setup menu item 653 "UMID HD VANC LINE".

1) VANC: Vertical ancillary (data)

For more information about setup menu item 653, see page 92.

To set Stored Ownership

To set Stored Ownership (data in the Source Pack which indicates "who") when generating a UMID, use setup menu item 029 "STORED OWNERSHIP" and following procedure.

For more information about basic setup menu operations, see Section "9-2 Setup Menu Operations" (page 75).

1 Set setup menu item 029 to "on" and select F9 (SET).

```
        ITEM-029

      STORED OWNERSHIP

*COUNTRY          - ABCD
 ORGANIZATION     - EFGH
 USER             - IJKL
```
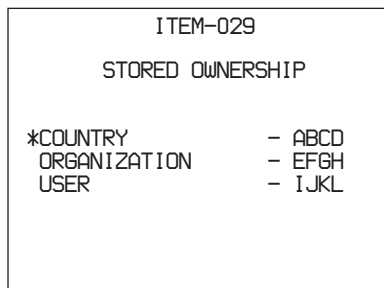
2 Use F1 (PREV) or F2 (NEXT) to select the item you want to set (COUNTRY, ORGANIZATION, or USER).

3 Select F6 (SELECT).

4 The setting is a character string (in this example "ABCD" when COUNTRY was selected). Select any character to change in the string by using F1 (PREV) and F2 (NEXT).

The selected character flashes.

5 Turn the MULTI CONTROL knob to display the desired character in the position of the flashing character.

6 Repeat steps **4** and **5** for all the characters that you want to change.

7 Select F9 (SET).

The changed settings are confirmed.

8 • If you do not change the other items, select F10 (EXIT).

• If you change the other items, (COUNTRY and ORGANIZATION) , select F5 (ITEM) and repeat as in steps **2** to **7**.

Note

If you changed other setup menu items before setting the Stored Ownership, the changes are confirmed by step **7**.

To cancel changes and exit the setup menu
Select F10 (EXIT) before finishing step **6**.

To set the time zone

The UMID uses the UTC (Coordinated Universal Time) time standard. Setting this unit's built-in calendar clock to the local time, and then setting a time zone to indicate the difference from global UTC standard time allows correct UMIDs to be generated.
To set the time zone, display the HOME page of the function menu and use the following procedure.

For more information about function menu operations, see Section "8-1-2 Function Menu Operations" (page 64).

1 Holding down the SHIFT/ENTRY button, select F9 (MENU).

The error logger screen appears.

For more information about the error logger, refer to the Maintenance Manual Volume 1.

2 Select F5 (SETTING).

The "OFFSET TO UTC" item appears.

```
        ERROR LOGGER
         (014/023)
 014 REFERENCE MISSING
 015 A PB DATA ERROR
 016 V PB DATA ERROR

 TAPE ERROR            ON
 WARNING               ON
 CONDITION             ON
*OFFSET TO UTC     +09:00
  Push SET button
 2001 12 24  23:59:59
```
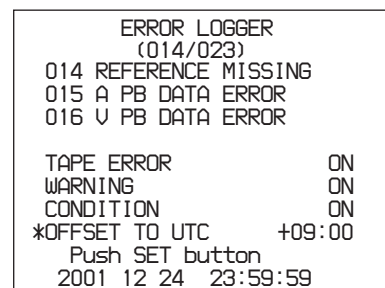
3 Use F1 (PREV) or F2 (NEXT) to select "OFFSET TO UTC", and use the MULTI CONTROL knob or F3 (–) and F4 (+) to set the offset to UTC time.

For example, if the local time is 9 hours in advance of UTC, set to "+9:00".

4 Select F9 (SET).

The settings are confirmed.

7-3 UMID Output and Display

This section explains how to output and display UMIDs.

7-3-1 UMID Output Settings

You can select whether to output UMIDs or not, and select either Basic UMID or Extended UMID to output. Make these settings using setup menu item 651 "UMID OUTPUT".

For more information about setup menu item 651, see page 92.

7-3-2 UMID Display

During recording or playback, UMID data can be displayed and checked in the menu display section of the control panel and on the video monitor.

To display the UMID

In function menu page P05: MISC-2, select F2 (UMID).

For more information about function menu operations, see Section "8-1-2 Function Menu Operations" (page 64).

The UMID appears in the menu display of the control panel and on the video monitor.

For examples of the UMID displayed on the video monitor, see the next section "UMID display on the video monitor".

To exit UMID display

Select F10 (EXIT).

UMID display on the video monitor

The video monitor connected to the LCD and the COMPOSITE VIDEO OUTPUT 3 (SUPER) or SDI OUTPUT 3 (SUPER) connector on the connector panel displays all UMID items at once. Following is an explanation of each line in the display.

```
        UMID INFORMATION
INSTANCE 24PRS XX-XX-XX————————❶
MATERIAL SMPTE————————————————❷
  XX-XX-XX-XX-XX-XX-XX-XX⎤
  XX-XX-XX-XX-XX-XX-XX-XX⎦————❸
DATE/TIME 20XX/XX/XX⎤
  XX:XX:XX:XX +XX:XX⎦————————❹
ALTITUDE XXXXXXXXm————————————❺
LONGITUDE EXXX XX'XX.XX————————❻
LATITUDE  SXXX XX'XX.XX————————❼
ORGANIZATION XXXX————————————❽
USER XXXX    COUNTRY XXXX————————❾
```
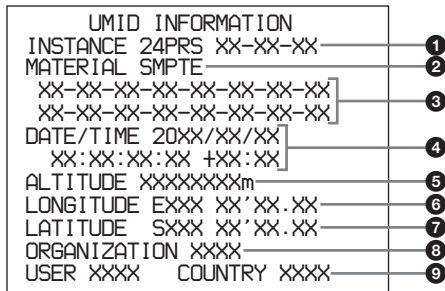
❶ **Instance Number generation method and Instance Number**

The generation method is displayed as follows.

CP+16: "16-bit PRS (pseudo-random sequence) + Copy No." method

24PRS: 24-bit PRS method

others: Other than the above

When menu item 656 "MATERIAL NO." is set to "NEW", it is generated by SMPTE method.

❷ **Material Number generation method**

SMPTE: SMPTE method

IEEE 1394 ZONE: IEEE 1394 ZONE method

IEEE 1394 RND: IEEE 1394 RND method

others: Other than the above

❸ **Material Number**

The material number is displayed in hexadecimal in two lines.

The following items, ❹ to ❾, are contained in the Source Pack.

❹ **Date/Time**

Date/Time data is displayed in two lines.
The upper line shows the MJD (Modified Julian Date) contained in the Source Pack converted to UTC.
The lower line shows the data in unit count format (hours : minutes : seconds : frame) converted to UTC.

Note

The function for converting unit count to UTC works only when the unit rate is 2 (24 frames), 3 (24/1.001 frames), 4 (25 frames), 6 (30 frames), or 7 (30/1.001 frames). For other unit rates, the unit rate number and unit rate are displayed in hexadecimal.

❺ **Altitude**

XXXXXXXXm: Altitude data indicating the distance from the center of the earth is displayed in this format.

S+XXXXXXXm Y+D: Altitude data indicating the distance from sea level is displayed in this format. The meaning of the characters and strings shown is as follows.

- "S" (1st character): Indicates position data from a Sensor. "R" is shown for position data from the recording device (Recorder), and "T" is shown for Target position data.
- "+" (2nd character): Indicates higher than sea level. "–" indicates lower than sea level.
- "XXXXXXXm" : Altitude data (unit: meter).
- "Y": The number of satellites used to calculate position data (hexadecimal).
- "D": DOP (dilution of precision) value.
- "+" (between Y and D): Displayed when a supportive geodetic apparatus was used. A space (blank) is displayed when no supportive geodetic apparatus was used.

❻ **Longitude**

Following "W" to indicate west longitude or "E" to indicate east longitude, the longitude is displayed in degrees, minutes, and seconds (seconds are displayed up to 2 decimal places).

Example: "E134 59'23.00" for "East longitude 134 degrees 59 minutes 23.00 seconds"

❼ **Latitude**

Following "N" to indicate north latitude or "S" to indicate south latitude, the latitude is displayed in degrees, minutes, and seconds (seconds are displayed up to 2 decimal places).

Example: "N34 59'23.32" for "North latitude 34 degrees 59 minutes 23.32 seconds"

Function Menu

Chapter **8**

8-1 Overview

The function menu allows you to make frequently made settings other than those made with the basic operation buttons, such as selection of input video signals and editing of timecode.

8-1-1 Function Menu Configuration

The function menu consists in function menu pages P01 to P10 which can be defined by the user and function menu pages P100 to P118 which cannot be defined by the user.

Function menu ——— User-definable function
menu pages (P01 to P10)

——— Non-user-definable function
menu pages (P100 to P118)
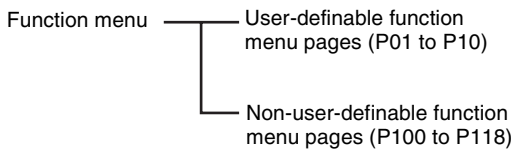
The factory default definitions in function menu pages P01 to P10 are set by factory default as shown below.

    P01: HOME
    P02: TC
    P03: VID PROC
    P04: MISC-1
    P05: MISC-2
    P06: EDIT
    P07: E.PRESET
    P08: AUD INP
    P09: reserve 1 (no functions defined)
    P10: reserve 2 (no functions defined)

Note

The explanations in this manual are based on the factory default settings.
The following shows an example display of the function menu page P01: HOME.

Menu item (function)
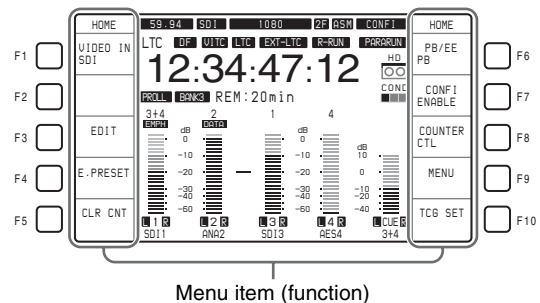
In the figure above, "VIDEO IN" (input video signal selection) is selected as the function button item corresponding to the F1 button and "SDI" (HD Serial Digital Interface signal) is selected as the setting for "VIDEO IN".

8-1-2 Function Menu Operations

To display the function menu
If the LCD is in video display mode (without the function menu displayed), press the DISPLAY button to switch the LCD mode to function display mode or function & video display mode.

Note

Function menu operations are not possible in video display mode.

To select function menu settings with the function buttons

You can select the next setting under each button name by pressing the corresponding function button (F1 to F10). The functions assigned to some function buttons change when the buttons are pressed together with the SHIFT/ENTRY or ALT/DELETE button. You can also define new combinations so that the function assigned to the function button is executed only when the button is pressed together with the SHIFT/ENTRY or ALT/DELETE button.

When a menu item setting flashes

You can change the setting value by turning the MULTI CONTROL knob.

To change the function menu page

Press one of the menu page selection buttons (P1 to P5) to change the function menu page to the corresponding page. By default the following pages are assigned to the menu page selection buttons.
- **P1:** Changes the function menu page to P01: HOME.
- **P2:** Changes the function menu page to P02: TC.
- **P3:** Changes the function menu page to P03: VID PROC.
- **P4:** Changes the function menu page to P08: AUD INP.
- **P5:** PAGE DOWN

Each time the menu page selection button P5: PAGE DOWN is pressed, the function menu page changes in the order P01 → P02 → P03 → P04 → P05 → P06 → P07 → P08 → P01.
When this button is pressed with the SHIFT/ENTRY button held down, the function menu page changes in the reverse order.
All of the function buttons in function menu pages P09 and P10 are undefined when the unit is shipped from the factory. If you try to display a page with no function assigned using the P5: PAGE DOWN, the target page is skipped to change to the next displayable function menu page. For example, in the factory default configuration described above, the display order is "P08 → P01".

Settings which do not appear in the menu display

In function menu page P01: HOME (*see the figure in Section "8-1-1 Function Menu Configuration"*), the settings for F9 (MENU) and F10 (TCG SET) do not appear in the lower part of the function button display area. When you press the F9 or F10 button, the function menu page changes to allow you to set the menu items for F9 or F10, respectively.

For more information about changing (user-defining) the functions of function buttons and menu page selection buttons and the settings of user-definable function menu pages, refer to the Maintenance Manual Volume 1.

8-2 Function Menu Item List

The function menu has the following items.

8-2-1 User-Definable Function Menu Pages (P01 to P10)

Functions on these function menu pages can be changed to user-defined functions. Standard functions are already set on the eight function menu pages P01 to P08, when the unit is shipped from the factory.
The function menu pages and function buttons are provided with the functions by factory default as follows.

Note

The explanations in this manual are based on the factory default standard settings.

P01: HOME

This is a function menu page for setting basic items.

Item	Setting
F1 (VIDEO IN)	Selects the input video signal. **SDI:** HDSDI signal **SG (normally not displayed):** Test signal from the internal test signal generator *(For details, see setup menu item 710 on page 94.)* To change to SG, hold down the ALT/DELETE button, then select F1.
F2	(No function assigned)
F3 (EDIT)	Jump to P06: EDIT (editing control page).
F4 (E.PRESET)	Jump to P07: E.PRESET (edit preset page).
F5 (CLR CNT)	Tape counter clear
F6 (PB/EE)	Select the video and audio signals output during fast forward, rewind, stop, and standby. **PB:** Playback signals **EE:** E-E mode signals
F7 (CONFI)	Select whether or not to use the CONFI playback function when recording. [a] **ENABLE:** Use the CONFI playback function. **DISABL:** Do not use the CONFI playback function.

Item	Setting
F8 (COUNTER)	Select the time data to display in time data display *(see page 17)*. **TC:** Playback timecode read by the internal timecode reader, or recording timecode. The LTC or VITC time data type indicator *(see page 18)* lights.[b] **UB:** User bits data of playback timecode or recording timecode. The LUB or VIUB time data type indicator lights, depending on whether the timecode is LTC or VITC.[b] **CTL:** The running time of the tape being played back or recorded, as calculated from a count of CTL signals recorded on the tape. The time is displayed in Hours:Minutes:Seconds:Frames format.
F9 (MENU)	Puts the system into setup menu mode *(see Chapter 9)*. (Jump to P108: SETUP (TOP)) When the current setup menu settings are the same as the contents of any of menu banks 1 to 4, or the factory defaults, the corresponding indication (BANK1), (BANK2), (BANK3), (BANK4) or (DEFLT) appears below the time data display on the LCD.
F10 (TCG SET)	• When F8 (COUNTER) is set to "TC", a screen appears that allows you to set the initial value of the timecode generated by the internal timecode generator *(see page 17)*.[c] • When F8 (COUNTER) is set to "UB", a screen appears that allows you to set the timecode user bits *(see page 17)*.[c]

a) CONFI playback during editing is possible only when the following menu items are set to the indicated settings.
  • Setup menu item 304 is set to "1F"
  • Setup menu item 727 is set to "EXT"
  • Setup menu item 810 is set to "EXT"
b) The selection of LTC or VITC depends on the setting of F10 (TCR) in function menu page P02: TC.
c) Setting screen is not displayed when F1 (TCG SRC) is set to "INTERNAL" and F2 (TCG MODE) is set to "PRESET" in function menu page P02: TC.

P02: TC

This is a function menu page for setting items relating to timecode.

Item	Setting
F1 (TCG SRC)	Select the signal source of the timecode with which the internal timecode generator synchronizes. **INTERNAL:** Synchronizes according to the initial preset value set by control panel operation or by control from the device connected to the REMOTE1-IN (9P) connector, or synchronize with the timecode of the playback tape. **EXT LTC:** Synchronizes with the external timecode signal input to the TIME CODE IN connector. **VID IN:** Synchronizes with the timecode data superimposed on the HDSDI signal input to the HDSDI INPUT connector or on the MPEG TS signal input to the HDV IN connector (when an optional HKDW-105 i.LINK (HDV) Input Board is installed).
F2 (TCG MODE)	Select one of the following for timecode regenerated by the internal timecode generator. **PRESET:** Presets the initial value of timecode generated by the internal timecode generator, as specified by control panel operation or by control from the device connected to the REMOTE1-IN (9P) connector. This operation is enabled when F1 (TCG SRC) is set to "INTERNAL". **RGN: LTC:** Regenerates by synchronizing with the LTC timecode value read by the internal timecode reader. **RGN: VITC:** Regenerates by synchronizing with the VITC timecode value read by the internal timecode reader.
F3 (TCG RUN)	Select one of the following running modes for the internal timecode generator. **FREE:** Timecode continues to increase as long as the unit is powered on, regardless of the unit's operating mode. **REC:** Timecode increases during recording only. If you select this mode, you should also set F1 (TCG SRC) to "INTERNAL", and set F2 (TCG MODE) to "PRESET" in this menu page.
F4 (DROP FRM)	In 59.94i, 29.97PsF mode, select drop-frame or non-drop-frame mode for the timecode generator and the CTL counter. **DF:** Drop-frame mode **NDF:** Non-drop-frame mode
F5	(No function assigned)
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9	(No function assigned)

Item	Setting
F10 (TCR)	Select the type of timecode to display in the time data display. **LTC:** Display LTC. **AUTO:** Display VITC when tape speed is 1/2 or less of normal speed, and LTC otherwise. **VITC:** Display VITC.

P03: VID PROC

This is a function menu page for setting items relating to video processing.

Item	Setting
F1 (VIDEO IN)	Select the input video signal. **SDI:** HDSDI signal **SG:** Test signal from the internal test signal generator *(Normally not displayed. For details, see setup menu item 710 (page 94).)* To change to SG, hold down the ALT/DELETE button, then press the F1 button.
F2 (REF VID)	Select the reference signal of this unit, according to the settings in setup menu items 309 and 334, and this unit's operating state. **REF:** Use the signal input to a REF. VIDEO INPUT connector as the reference signal. When recording, input digital audio signals and video signals must be synchronized with this signal. **INPUT:** Use the input video signal as the reference signal.
F3 (SYNC PHS)	Set the HD output signal sync phase. With the displayed setting flashing, turn the MULTI CONTROL knob to adjust the output signal sync phase across the range ±15 μs relative to this unit's input reference signal. (The value indication ranges from –128 to +127.) Adjust this item when you want to adjust the output signal sync phase precisely to match a reference signal, or when connecting this unit and other VTRs to a device such as a switcher to carry out operations such as special effects editing.

Item	Setting
F4 (SYNC FIN)	Set the HD output signal sync phase (fine adjustment). With the displayed setting flashing, turn the MULTI CONTROL knob to adjust the output signal sync phase across the range ±200 ns relative to this unit's input reference signal. (The value indication ranges from 0 to 1028.) Adjust this item when you want to adjust the output signal sync phase precisely to match a reference signal, or to make further fine adjustment when connecting this unit and other VTRs to a device such as a switcher to carry out operations such as special effects editing.
F5 (V.PROC)	Select the control method or setting for the internal digital video processor. **LOCAL:** Change the settings of the internal digital video processor by using this function menu. **MENU:** Change the settings of the internal digital video processor by using F9 (MENU) in function menu page P01: HOME. (For making the settings in the setup menus) **Note** When controlling the unit from the HKDV-503/900, set this item to "MENU".
F6 (VID LEVL)	Set the HD/SD video signal output level (–∞ to +3 dB). **PRESET:** Regardless of manually set values, the video signal output level is set to the standard value. **Manual setting:** With the displayed setting flashing, turn the MULTI CONTROL knob to adjust the video signal output level.
F7 (CHR LEVL)	Set the HD/SD chroma signal output level (–∞ to +3 dB). **PRESET:** Regardless of manually set values, the chroma signal output level is set to the standard value. **Manual setting:** With the displayed setting flashing, turn the MULTI CONTROL knob to adjust the chroma signal output level.
F8 (HUE) (59.94i mode)/ (CHR PHAS) (50i mode)	Set the hue. **PRESET:** Regardless of manually set values, the hue is set to the standard value. **Manual setting:** With the displayed setting flashing, turn the MULTI CONTROL knob to adjust the value across the range ±30°.

Item	Setting
F9 (SETUP LV) (59.94i mode)/(BLK LEVL) (50i mode)	Set the HD/SD output setup level (59.94i mode) or black level (50i mode) **PRESET:** Regardless of manually set values, the level is set to the standard value. **Manual setting:** With the displayed setting flashing, turn the MULTI CONTROL knob to adjust the setup level across the range ±30 IRE (59.94i mode) or to adjust the black level across the range ±210 mV (50i mode).
F10 (PRESET)	Function for setting the level control to "PRESET (UNITY)"

P04: MISC-1

This is a function menu page for setting other items.

Item	Setting
F1 (CAPSTAN)	Select the number of fields for capstan lock in playback and editing. **In 59.94i, 29.97PsF system** **2F:** The capstan servo locks in units of 2 fields. • For tape output, color framing may not match the reference signal selected with F2 (REF VID) in P03:VID PROC. • In assemble editing, color framing may not be continuous at edit points. **4F:** The capstan servo locks in units of 4 fields. • For tape output, color framing matches the reference signal selected with F2 (REF VID) in P03:VID PROC. • In assemble editing, color framing is continuous at edit points. **In 50i, 25PsF system** **2F:** The capstan servo locks in units of 2 fields. • For tape output, color framing may not match the reference signal selected with F2 (REF VID) in P03:VID PROC. • In assemble editing, color framing may not be continuous at edit points. **4F:** The capstan servo locks in units of 4 fields. • For tape output, color framing may not match the reference signal selected with F2 (REF VID) in P03:VID PROC. • In assemble editing, color framing may not be continuous at edit points. **8F:** The capstan servo locks in units of 8 fields. • For tape output, color framing matches the reference signal selected with F2 (REF VID) in P03:VID PROC. • In assemble editing, color framing is continuous at edit points. The setting is fixedly "2F" when the system frequency is 23.98PsF or 24PsF.

Item	Setting
F2	(No function assigned)
F3 (PREREAD)	Specify whether to preread (read before write) in insert editing. **ON:** Preread depending on the setting in setup menu item 319. **OFF:** Do not preread.
F4	(No function assigned)
F5 (CHARA)	Specify whether to superimpose the text information including timecode, menu settings, and error messages over the video signals output from the HDSDI OUTPUT3 (SUPER) connector, SDI OUTPUT3 (SUPER) connector and COMPOSITE VIDEO OUTPUT3 (SUPER) connector. **ON:** Superimpose. **OFF:** Do not superimpose.
F6 (T-INFO)	Select the content of tape information to display in the ancillary message display. **TOTAL:** Display total recorded time. **REMAIN:** Display remaining time.
F7	(No function assigned)
F8	(No function assigned)
F9	(No function assigned)
F10	(No function assigned)

P05: MISC-2

This is a function menu page for setting other items.

Item	Setting
F1	(No function assigned)
F2 (UMID)	Displays UMID information during recording or playback. *For details of UMID, see Chapter 7.*
F3 (SHOT MRK)	Jump to P104: SHOT MRK (shot mark page).
F4	(No function assigned)
F5	(No function assigned)
F6	(No function assigned)
F7	(No function assigned)
F8 (FREEZE)	Freeze an image while selected when setup menu item 904 for setting the freeze operation is set to "MOMNT". When setup menu item 904 is set to "LATCH", the freeze continues even after this button is released. When this button is pressed again in the freeze on state, the freeze image is updated and the freeze restarts.
F9 (FREZ OFF)	Release an image from the freeze off state when setup menu item 904 is set to "LATCH".
F10	(No function assigned)

P06: EDIT

This is a function menu page for executing the functions about the editing operation.

Item	Setting
F1 (AUTOEDIT)	AUTO EDIT function
F2 (PREVIEW)	AUTO EDIT PREVIEW function
F3 (REVIEW)	AUTO EDIT REVIEW function
F4 (DMC)	DMC function
F5 (PREROLL)	Preroll function
F6 (R/P SEL)	External control mode (recorder/ player) selection
F7 (AUD IN)	Audio edit IN point functions
F8 (AUD OUT)	Audio edit OUT point functions
F9 (IN)	Edit IN point functions
F10 (OUT)	Edit OUT point function

P07: E.PRESET

This is a function menu page for setting items relating to edit preset.

Item	Setting
F1 (REC INHI)	Specify whether to inhibit recording to tape. **ON (ALL/CRASH/VIDEO/AUDIO):** Inhibit recording to tape depending on the setting in setup menu item 310. **OFF:** Do not inhibit recording to tape.
F2 (INS TC)	Edit preset setting for timecode track
F3 (INS CUE)	Edit preset setting for CUE track
F4 (EDIT)	Jump to P06: EDIT (editing control page).
F5 (ASSEMBLE)	Assemble edit preset setting
F6 (INS VID)	Edit preset setting for video track
F7 (INS A1)	Edit preset setting for A1 track
F8 (INS A2)	Edit preset setting for A2 track
F9 (INS A3)	Edit preset setting for A3 track
F10 (INS A4)	Edit preset setting for A4 track

P08: AUD INP

This is a function menu page for setting items relating to audio input.

Item	Setting
F1 (EMPHASIS)	Specifiy whether to add audio emphasis to analog audio input signals. **ON:** Add audio emphasis. **OFF:** Do not add audio emphasis.
F2 (AUD MIX)	Jump to P102: AUD MIX (audio mix/swap setting page).
F3 (AUD MONI)	Jump to P100: AUD MONI (audio monitor setting page).
F4 (MT.SCALE)	Meter scale setting (FULL/FINE)

Item	Setting
F5	(No function assigned)
F6 (AUDIO SG)	Turn internal audio test signals on and off. (Toggle ON and OFF when selected with the ALT/DELETE button held down.) **ON:** Generate internal audio test signals. (Select the signal waveform type in advance using setup menu item 808.) **OFF:** Do not generate internal audio test signals.
F7 (INP A1)	CH1 input selection
F8 (INP A2)	CH2 input selection
F9 (INP A3)	CH3 input selection
F10 (INP A4)	CH4 input selection

8-2-2 Non-User-Definable Function Menu Pages (P100 to P118)

No functions can be changed in the function menu pages described in this section.

P100: AUD MONI

This is a function menu page for making audio monitor output settings.

Item		Setting
F1 (TRACK 1)		Selection of track 1 for monitoring
F2 (TRACK 2)		Selection of track 2 for monitoring
F3 (TRACK 3)		Selection of track 3 for monitoring
F4 (TRACK 4)		Selection of track 4 for monitoring
F5	(TRCK CUE)	Selection of CUE track for monitoring[a]
	(TRCK CHG)	Track selection change [b] (To TRACK 5, 6, 7 or 8)
F6		(No function assigned)
F7		(No function assigned)
F8		(No function assigned)
F9 (MONI CH)		Selection of monitor output channel operation
F10 (RETURN)		Return to P08: AUD INP

a) For HDCAM and Digital Betacam tapes.
b) For MPEG IMX tapes.

P101: AUD MONI (sub)

This is a sub page for making MPEG MIX audio monitor output settings.

Item	Setting
F1 (TRACK 5)	Selection of track 5 for monitoring
F2 (TRACK 6)	Selection of track 6 for monitoring
F3 (TRACK 7)	Selection of track 7 for monitoring

Item	Setting
F4 (TRACK 8)	Selection of track 8 for monitoring
F5 (TRCK CHG)	Track selection change
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9 (MONI CH)	Selection of monitor output channel operation
F10 (RETURN)	Return to P08: AUD INP

P102: AUD MIX

This is a function menu page for switching audio input selections and making audio mixing settings.

Item	Setting
F1 (INP A1)	Selection of input channel for mixing
F2 (INP A2)	Selection of input channel for mixing
F3 (INP A3)	Selection of input channel for mixing
F4 (INP A4)	Selection of input channel for mixing
F5 (CLR MIX)	Function for clearing the mix/swap settings
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9 (REC TRAC)	Specify the audio track (1 to 4) using this item (REC TRAC) and specify the audio input channel from which signals are recorded to the specified audio track using F1 (INP A1) to F4 (INP A4). When the F1 to F4 buttons are pressed simultaneously, a maximum of two input channels can be mixed and recorded to a single audio track. When F5 (CLR MIX) is selected, all track settings are restored to the factory default values.
F10 (RETURN)	Return to P08: AUD INP

P104: SHOT MRK (Top page)

This is a function menu page for executing shot mark functions.

Item	Setting
F1	(No function assigned)
F2 (REC/ERS)	Settings for the shot mark recording/ erasing operation
F3 (REC)	Shot mark recording operation start function
F4	(No function assigned)
F5	(No function assigned)
F6 (MARK)	MARK button function
F7 (LIST)	LIST button function

Item	Setting
F8	(No function assigned)
F9	(No function assigned)
F10 (EXIT)	Return to the previous page

For details on shot mark operations, see Chapter 6 "Shot Mark Function".

P105: SHOT MRK (LIST page)

This is a function menu page for displaying shot mark information in list form.

Item	Setting
F1 (MEMO)	Marking at selected points
F2 (REC/ERS)	Settings for the shot mark recording/ erasing
F3 (REC)	Shot mark recording operation start function
F4 (ERASE)	Shot mark erasing operation start function
F5 (SETTING)	Jump to P106: SHOT MRK (shot mark list setting page).
F6 (MARK)	MARK button function
F7 (LIST)	LIST button function
F8	(No function assigned)
F9 (PREROLL)	Function for cueup selected points
F10 (EXIT)	Return to the previous page.

For details on the operations about the shot mark, see Chapter 6 "Shot Mark Function".

P106: SHOT MRK (LIST sub-page)

This is a function menu page for making settings for the shot mark list display page.

Item	Setting
F1 (PREV)	Item selection (previous item)
F2 (NEXT)	Item selection (next item)
F3 (OFF)	Item setting OFF
F4 (ON)	Item setting ON
F5	(No function assigned)
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9	(No function assigned)
F10 (EXIT)	Return to the previous page.

For details on the operations about the shot mark, see Chapter 6 "Shot Mark Function".

P107: TCG SET

This is a function menu page for setting timecode generator values.

Item	Setting
F1 (PREV)	Select the digit to the left.
F2 (NEXT)	Select the digit to the right.
F3 (–)	Decrement data.
F4 (+)	Increment data.
F5 (CLR CNT)	Clear (reset) data.
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9 (SET)	Confirm data and return to the previous page.
F10 (EXIT)	Cancel data changes and return to the previous page.

P108: SETUP (TOP)

This is a function menu page (top page) for making setup menus settings.

For more information about setup menu operations, see Chapter 9 "Setup Menus".

Item	Setting
F1	(No function assigned)
F2	(No function assigned)
F3 (CATEG –)	Category jump (–) function for setup menu items
F4 (CATEG +)	Category jump (+) function for setup menu items
F5	(No function assigned)
F6 (SELECT)	Jump to the setup menu setting change/ sub-item selection page.
F7	(No function assigned)
F8	(No function assigned)
F9 (SET)	Confirm setup menu setting changes and return to the previous page.
F10 (EXIT)	Cancel setup menu setting changes and return to the previous page.

P109: SETUP (SELECT1)

This is a function menu page for changing the settings of setup menu items.

Item	Setting
F1	(No function assigned)
F2	(No function assigned)
F3	(No function assigned)
F4	(No function assigned)

Item	Setting
F5 (RETURN)	Jump to P108: SETUP (TOP).
F6 (SELECT)	Jump to the sub-item setting change page.
F7	(No function assigned)
F8	(No function assigned)
F9 (SET)	Confirm setup menu setting changes and return to the previous page.
F10 (EXIT)	Cancel setup menu setting changes and return to the previous page.

P110: SETUP (SELECT2)

This is a function menu page for changing the settings of setup menu items.

Item	Setting
F1	(No function assigned)
F2	(No function assigned)
F3 (–)	Change setup menu setting value (–).
F4 (+)	Change setup menu setting value (+).
F5 (RETURN)	Jump to P108: SETUP (TOP) or P109: SETUP (SELECT1).
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9 (SET)	Confirm setup menu setting changes and return to the previous page.
F10 (EXIT)	Cancel setup menu setting changes and return to the previous page.

P111: ERR.LOG (TOP)

This is a function menu page (top page) for displaying error logs.

For more information about error log operations, refer to the Maintenance Manual Volume 1.

Item	Setting
F1 (ERROR)	List display of error description (initial setting)
F2 (DATE)	List display of error occurrence date and time
F3 (TC)	List display of timecode at error occurrence
F4 (DETAIL)	Display of error details
F5 (SETTING)	Jump to the logger settings page.
F6 (CLR LOG)	Clear all logs.
F7	(No function assigned)
F8	(No function assigned)
F9	(No function assigned)
F10 (EXIT)	Return to the previous page.

P112: ERR.LOG (SETTING1)

This is a function menu page for selecting items to be displayed on the error log screen.

Item	Setting
F1 (PREV)	Select the previous item (left/up).
F2 (NEXT)	Select the next item (right/down).
F3 (OFF)	Set an OFF/ON setting item to "OFF" (multi-control).
F4 (ON)	Set an OFF/ON setting item to "ON" (multi-control).
F5	(No function assigned)
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9	(No function assigned)
F10 (EXIT)	Return to the previous page.

P113: ERR.LOG (SETTING2)

This is a function menu page for making error log settings.

Item	Setting
F1 (PREV)	Select the previous item (left/up).
F2 (NEXT)	Select the next item (right/down).
F3 (−)	Change the numeric value of a setting item (decrement).
F4 (+)	Change the numeric value of a setting item (increment).
F5	(No function assigned)
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9 (SET)	Confirm the numeric value setting changes.
F10 (EXIT)	Return to the previous page.

Note

F9 (SET) appears when a setting item has been changed.

P114: WARNING

This is a function menu page for displaying warnings.

Item	Setting
F1	(No function assigned)
F2	(No function assigned)
F3 (C EDIT)	Jump to the warning cancellation page.
F4	(No function assigned)
F5 (ERRLOG)	Jump to the error logger screen.
F6	(No function assigned)
F7	(No function assigned)

Item	Setting
F8	(No function assigned)
F9	(No function assigned)
F10 (EXIT)	Return to the previous page.

P115: WARN.EDT

This is a function menu page for setting the warning information display items.

Item	Setting
F1	(No function assigned)
F2	(No function assigned)
F3	(No function assigned)
F4 (ON/OFF)	Enable or disable warnings.
F5	(No function assigned)
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9	(No function assigned)
F10 (SAVE)	Confirm the changes and return to the previous page.

P116: MAINTE

This is a function menu page for maintenance menu operations.

For more information about maintenance menu, refer to the Maintenance Manual Volume 1.

Item	Setting
F1	(No function assigned)
F2	(No function assigned)
F3	(No function assigned)
F4	(No function assigned)
F5	(No function assigned)
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9 (SET)	Select and execute an item.
F10 (EXIT)	Return to the previous page.

P117: UMID

This is a function menu page for displaying UMID information.

For more information about UMID, see Chapter 7 "UMID Functions".

Item	Setting
F1	(No function assigned)
F2	(No function assigned)
F3	(No function assigned)
F4	(No function assigned)
F5	(No function assigned)
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9	(No function assigned)
F10 (EXIT)	Return to the previous page.

P118: SETUP (TC/UB SETTING)

This is a function menu page for selecting timecode (TC) or user bit (UB) digits to set in the setup menu.
This is for setting the ID code and starting TC in setup menu items 603 and 621, respectively.

Item	Setting
F1 (PREV)	Select the previous TC/UB digit.
F2 (NEXT)	Select the next TC/UB digit.
F3	(No function assigned)
F4	(No function assigned)
F5 (ITEM)	Return to the setup menu item screen.
F6	(No function assigned)
F7	(No function assigned)
F8	(No function assigned)
F9 (SET)	Confirm the TC/UB data value and return to the previous page.
F10 (EXIT)	Cancel the setup menu setting changes and return to the previous page.

Setup Menus

9-1 Setup Menu Configuration

This unit has the following setup menus.
- Basic setup menu
- Extended setup menu

In this manual, both the basic setup menu items and extended setup menu items are also referred to simply as setup menu items or menu items.

Configuration of the basic setup menu

The basic setup menu comprises the following groups of items.

Item group	Function	Refer to
Items 001 to 019	Settings relating to the preroll time, superimposed text information, changing system frequency, etc.	*Page 78*
Items B01 to B20	Settings relating to the menu banks for saving menu settings	*Page 80*

Configuration of the extended setup menu

The extended setup menu comprises the following groups of items.

Item group	Function	Refer to
Items 100 to 199	Settings relating to control panels	*Page 81*
Items 200 to 299	Settings relating to the remote control interface	*Page 83*
Items 300 to 399	Settings relating to editing operations	*Page 84*
Items 400 to 499	Settings relating to preroll	*Page 87*
Items 500 to 599	Settings relating to tape protection	*Page 88*
Items 600 to 650	Settings relating to the timecode generator	*Page 89*

Item group	Function	Refer to
Items 651 to 699	Settings relating to the UMID	*Page 92*
Items 700 to 799	Settings relating to video control	*Page 93*
Items 800 to 899	Settings relating to audio control	*Page 96*
Items 900 to 999	Settings relating to digital processing	*Page 98*

For the menus that appear only when the optional HKDW-104/105 board is installed, refer to the Instruction Manual supplied with the optional board.

9-2 Setup Menu Operations

To display setup menus
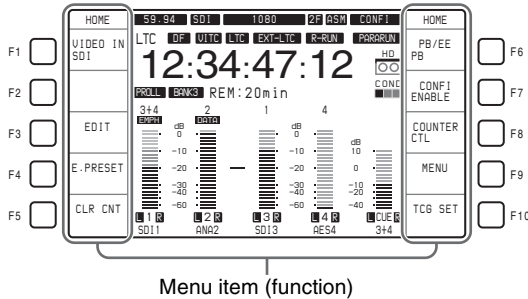
Menu item (function)

Display function menu page P01: HOME, and select F9 (MENU).
The LCD enters character display mode and displays the currently selected setup menu item.
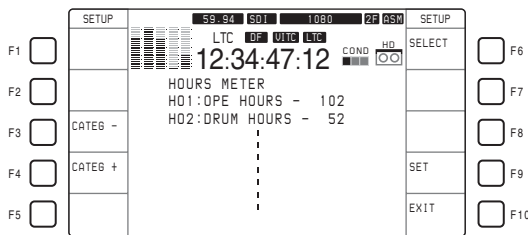
For basic operations in the menu item, see page 64.

To display menus on the monitor
Connect the monitor to the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector, SDI OUTPUT 3 (SUPER) connector or HDSDI OUTPUT 3 (SUPER) connector of this unit, and set F5 (CHARA) to "ON" in function menu page P04: MISC-1. When a setup menu appears on the monitor, a cursor indicates the currently selected menu item.

Group name for the currently selected item

Cursor indicating the currently selected item

HOURS METER
HO1:OPE HOURS -   102
HO2:DRUM HOURS -   52
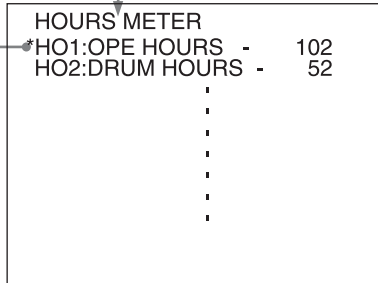
To display a desired menu item

Display the setup menu in the menu display section and turn the MULTI CONTROL knob.
You can jump to the first item of each menu item group by selecting F3 (CATEG –) or F4 (CATEG +).

To display a desired sub-item
When the selected menu item contains sub-items, you can select a desired sub-item as follows.

1 With the desired menu item selected, select F6 (SELECT).

The display changes to show the sub-item names.

2 Turn the MULTI CONTROL knob to select a desired sub-item.

To chang menu item setting values

The procedure for changing menu item setting values varies depending on whether the selected menu item has sub-items or not.

To change the settings of menu items without sub-items
After selecting a desired menu item using the procedure described in the section "Displaying a desired menu item" *(see page 75)*, use the following procedure.

1 Select F6 (SELECT).

The current setting value of the selected menu item appears.

2 Select F3 (–) or F4 (+), or turn the MULTI CONTROL knob to select the desired setting value.

To select another menu item and change its setting value
Select F5 (RETURN) to display the menu item list, and repeat the procedure for selecting a menu item and changing its setting value.

3 When all required changes have been made, select F9 (SET).

The new settings are confirmed.

To cancel changes and exit the setup menu
Select F10 (EXIT).
When F9 (SET) is not selected, all changes are cancelled.

To change the settings of menu items with sub-items
After selecting a desired sub-item using the procedure described in the section "To displaying a desired sub-item" on *page 75*, use the following procedure.

1 Select F6 (SELECT).

The cursor moves to the setting value of the selected sub-item.

2 Select F3 (–) or F4 (+), or turn the MULTI CONTROL knob to select a desired setting value.

To select another sub-item and change its setting value
Select F5 (RETURN) to move the cursor to a sub-item name and repeat the procedure for selecting a desired sub-item and changing its setting value.

To select another menu item and change its setting value
Select F5 (RETURN) twice in succession to display the menu item list, and repeat the procedure for selecting a desired menu item and changing its setting value.

3 When all required changes have been made, select F9 (SET).

The new settings are confirmed.

To cancel changes and exit from the setup menu
Select F10 (EXIT).
When F9 (SET) is not selected, all changes are cancelled.

To reset the menu settings to their factory default values (menu item B20)

Use the following procedure.

1 Carry out steps **1** to **3** of the procedure described in the section "To change the settings of menu items without sub-items" on *page 75* to set menu item B20 "RESET SETUP" to "ON".

The message "Push SET button!" appears.

2 Select F9 (SET).

3 Select F9 (SET) again.

The menu settings are saved.

To recall the BANK4 settings (menu item B20)

To set the current menu settings to the BANK4 settings, carry out the following operation.

1 Carry out steps **1** to **3** of the procedure described in "To change the settings of menu items without sub-items" *(page 75)*, then set menu item B20 "RESET SETUP" to "bank-4".

The message "Push SET button!" appears.

2 Select F9 (SET).

The display returns to the menu item list.
The current menu settings are set to the settings in BANK4.

3 Select F9 (SET) again.

The settings are saved, exiting from the setup menu.

To switch the system frequency (menu item 013)

To switch the system frequency among 59.94i, 50i, 29.97PsF, 25PsF, 24PsF and 23.98PsF, proceed as follows.

Notes

- Before carrying out this operation, consult the person responsible for system installation.
- When this unit enters 24PsF or 23.98PsF mode, SDI (D1) and composite signals are not output.

1 Carry out steps **1** to **3** of the procedure described in "To change the settings of menu items without sub-items" *(page 75)* to set menu item 013 "SYSTEM FREQUENCY SELECT" to "ON".

The menu display changes to allow switching of the system frequency among 59.94i, 50i, 29.97PsF, 25PsF, 24PsF and 23.98PsF.

2 Switch the setting, then select F9 (SET).

3 Turn the unit off.

Next time the unit is powered on, it will operate in the selected mode.

To switch the line conversion function (menu item 018)

To change the setting for line conversion (OFF TAPE or 720P) when the unit is equipped with an optional HKDW-104 Pull-down/720P Board and is in a mode other than 24PsF, 23.98PsF, 24PD, and 23.98PD2, carry out the operation described below.

Note

Consult with the administrator responsible for system installation before carrying out the following procedure.

1 Perform steps **1** to **3** of the procedure described in the section "To change the settings of menu items without

sub-items" on page 75, to set setup menu item 018 "ACTIVE LINE SELECT" to ON.

The menu display changes to allow switching of the setting for line conversion between OFF TAPE and 720P.

2 Select OFF TAPE or 720P, then select F9 (SET).

3 Turn the unit off.

The next time the unit is turned on, it will operate in the new mode.

Menu bank operations (menu items B01 to B13)

This unit saves menu settings in what are termed "menu banks". Saved sets of menu settings can be recalled for use as required.

To save the current active menu settings
Set one of menu items B11 "SAVE BANK 1" to B13 "SAVE BANK 3" to "ON", depending on the menu banks you want to save in, then select F9 (SET).

To recall settings from a menu bank
When recalling the settings saved in one of menu banks 1 to 3, set one of the corresponding menu items B01 "RECALL BANK 1" to B03 "RECALL BANK 3" to "ON", then select F9 (SET).
To recall the settings saved in menu bank 4, select "bank-4" with menu item B20 "PRESET SETUP".

For details about menu bank 4, refer to the Maintenance Manual.

The current active setup menu settings as well as settings saved in menu banks are stored in separate storage areas: one for 59.94i, 29.97PsF, 23.98PsF modes and the other for 50i, 25PsF, 24PsF modes.
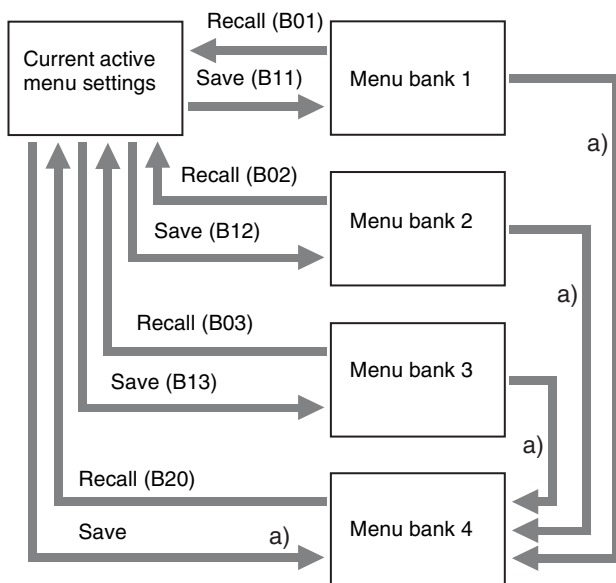
a) Use maintenance menu item 122.

9-3 Items in the Basic Setup Menu

The basic setup menu contains the following items.

In the "Settings" column of the table, the factory default settings are underlined.

Item number	Item name	Settings
001	PREROLL TIME	**0S to <u>5S</u> to 30S:** Set the preroll time in the range from 0 to 30 seconds. A preroll time of at least 5 seconds is recommended when using this unit for editing.
002 [a]	CHARACTER H-POSITION	Adjust the horizontal position of the character information output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector, SDI OUTPUT 3 (SUPER) connector, or HDSDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. **0 to <u>1E</u> to 3C (59.94i, 29.97PsF, 23.98PsF mode)/0 to <u>1B</u> to 36 (50i, 25PsF, 24PsF mode):** The hexadecimal value 00 is for the far left of the screen and increasing the value moves the position of the characters to the right.
003 [a], [b]	CHARACTER V-POSITION	Adjust the vertical position of the first line of the character information output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector, HDSDI OUTPUT 3 (SUPER) connector, and SDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. **0 to <u>57</u> to 6C (59.94i, 29.97PsF, 23.98PsF mode)/0 to <u>70</u> to 88 (50i, 25PsF, 24PsF mode):** The hexadecimal value 00 is for the top of the screen and increasing the value lowers the position of the characters.
004	SYNCHRONIZE	When editing using this unit as a controller and an external VTR connected to this unit via a 9-pin remote control cable, this item determines whether or not to operate the two units in phase synchronization. **OFF:** Do not operate in phase synchronization. **<u>ON</u>:** Operate in phase synchronization.
005	DISPLAY INFORMATION SELECT	Determine the type of text information to be output from the COMPOSITE VIDEO OUTPUT 3 (SUPER), SDI OUTPUT 3 (SUPER) and HDSDI OUTPUT 3 (SUPER) connectors when F5 (CHARA) is set to "ON" in function menu page P04: MISC-1. **<u>T&STA</u>:** Time data display information and the unit's status **T&UB:** Time data display information and the user bits **T&CTL:** Time data display information and CTL **T&T:** Time data display information and timecode (LTC or VITC) **TIME:** Timecode (LTC or VITC) only If there is an overlap between the setting of this item and the setting of the control panel, it is automatically avoided. For example, if CTL is selected on the control panel and this menu item setting is "T&CTL", then CTL and LTC are output.
006	LOCAL FUNCTION ENABLE	Determine which buttons on the control panel are enabled when this unit is controlled from external equipment. **DIS:** All buttons and switches are disabled. **<u>S&E&P</u>:** Only the STOP button, EJECT button, P1 to P5 and DISPLAY buttons are enabled. **ENA:** All buttons and switches are enabled. **MAP:** Follow the LOCAL KEY MAP setting. *For information about setting the LOCAL KEY MAP, see menu item 023 "LOCAL KEY MAP" (page 80).*
007	TAPE TIMER DISPLAY	Determine whether to display the CTL count in 12-hour mode or 24-hour mode. **<u>+ −12H</u>:** 12-hour mode **24H:** 24-hour mode
008	MONITORING SELECTION FOR VTR-TO-VTR EDIT	For two-VTR editing with the monitor connected only to the recorder, determines whether the recorder is forced into E-E mode when the recorder's PLAYER button is pressed to view the player's playback signals on the monitor. **<u>MANU</u>:** Do not force the recorder into E-E mode. **AUTO:** Set the recorder to E-E mode, so that the playback signals of the player are output to the video monitor.

Item number	Item name	Settings
009 [c]	CHARACTER TYPE	Determine the type of characters such as timecode output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector, SDI OUTPUT 3 (SUPER) connector, or HDSDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. **WHITE:** White letters on a black background **BLACK:** Black letters on a white background **W/OUT:** White letters with black outline **B/OUT:** Black letters with white outline
011 [c]	CHARACTER V-SIZE	Determine the vertical size of characters such as timecode output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector, SDI OUTPUT 3 (SUPER) connector, or HDSDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. **x1:** Standard size **x2:** 2 times the standard size
012 [d]	CONDITION DISPLAY VIDEO MONITOR	Determine whether the channel condition should be displayed as part of the display of superimposed information. **DIS:** Do not display. **ENA:** Display.
013	SYSTEM FREQUENCY SELECT	Determine whether to enable switching of the system frequency among 59.94i, 50i, 29.97PsF, 25PsF, 24PsF and 23.98PsF. **OFF:** Disable switching. **ON:** Enable switching. When "ON" is selected, the menu display changes to allow switching of the setting among 59.94i, 50i, 29.97PsF, 25PsF, 24PsF and 23.98PsF. *For the procedure for switching the system frequency, see page 76.* **Note** For the basic and extended setup menus, settings are saved for 59.94i, 29.97PsF, 23.98PsF mode and the other for 50i, 25PsF, 24PsF modes separately. When you switch systems, all menu items change to the current menu values of the selected mode. (These are different from the settings for the mode before switching.)
018	ACTIVE LINE SELECT (enabled only when the optional HKDW-104 board is installed, and disabled in 24PsF, 23.98PsF, 24PD, and 23.98PD2 mode)	Determine whether to enable switching of the number of active lines for HDSDI outputs (OFF TAPE/720P). **OFF:** Disable switching. **ON:** Enable switching. *When "ON" is selected, the menu display changes to enable switching between OFF TAPE and 720P.For details on the procedure for switching the ACTIVE LINE, see "To switch the line conversion function (menu item 018)" (page 76).*

Item number	Item name		Settings
023	LOCAL KEY MAP		When "MAP" is selected in setup menu item 006 and the unit is controlled from another device, you can select the operable buttons on the control panel from the following sub-items. The settings of each sub-item are as follows.
	Sub-item		**DIS:** Disable the buttons. **ENA:** Enable the buttons.
	1	STOP	Select whether to enable or disable the STOP button.
	2	PLAY	Select whether to enable or disable the PLAY button.
	3	REC	Select whether to enable or disable the REC button.
	4	STANDBY	Select whether to enable or disable the STANDBY button.
	5	EJECT	Select whether to enable or disable the EJECT button.
	6	JOG	Select whether to enable or disable the JOG button.
	7	SHUTTLE	Select whether to enable or disable the SHUTTLE button.
	8	VAR	Select whether to enable or disable the VAR button
	9	FF/REW	Select whether to enable or disable the F FWD and REW buttons.
	10	F-KEY	Select whether to enable or disable the function selection buttons (F1 to F10) and audio level control knobs.
	11	P-KEY/DISPLAY	Select whether to enable or disable the menu page selection buttons (P1 to P5) and DISPLAY button.
029	STORED OWNERSHIP		Select whether to set the UMID item Stored Ownership. **off:** Do not set. **on:** Set. To set Stored Ownership, display this item in the menu display, and select F9 (SET) to move to the Stored Ownership setting screen. *For details, see the section "To set Stored Ownership" (page 61).*
037	LAST ERROR LOG NUMBER DISPLAY		Specify whether the number of errors should be displayed as part of superimposed text information. The number of errors is displayed to the right of time data as a value like "E01". When the number of errors exceeds 99, it is displayed as "E--". **OFF:** Do not display the number of errors. **ON:** Display the number of errors without blinking. **BLINK:** Display the number of errors, and indicate errors by blinking. (The display blinks during the error and for 5 seconds afterwards.)
B01	RECALL BANK 1		Set to "ON" to recall menu settings from menu bank 1.
B02	RECALL BANK 2		Set to "ON" to recall menu settings from menu bank 2.
B03	RECALL BANK 3		Set to "ON" to recall menu settings from menu bank 3.
B11	SAVE BANK 1		Set to "ON" to save the current menu settings to menu bank 1.
B12	SAVE BANK 2		Set to "ON" to save the current menu settings to menu bank 2.
B13	SAVE BANK 3		Set to "ON" to save the current menu settings to menu bank 3.
B20	RESET SETUP		Set to "ON" to reset the current menu settings to factory default values.

a) When setting items 002 and 003, watch the monitor screen, and adjust to the required state.

b) **Note**

When displaying timecode values, there is a slight time delay. Therefore, when creating a tape for off-line editing, the information inserted in the upper half of the screen may be delayed by one frame.

c) When setting items 009 and 011, watch the monitor screen, and adjust to the required state.

d) The channel condition is displayed as a string like "V–A–" beneath the superimposed time data information.
V: Video rotary head channels
A: Audio rotary head channels

There are three symbols for channel condition: "–" (good), "*" (slightly poor), and "■" (poor).

9-4 Items in the Extended Setup Menu

The extended setup menu contains the following items.
In the "Settings" column of the table, the factory default settings are underlined.

Menu items in the range 100 to 199, relating to the control panels

Item number	Item name	Settings
101	SELECTION FOR SEARCH DIAL ENABLE	Select how the unit enters the search mode. **DIAL:** Turning the search dial switches to search mode at all times except during recording/editing. **KEY:** Pressing one of the JOG, SHUTTLE, and VAR buttons switches to search mode.
102	MAXIMUM TAPE SPEED	Select the fast forward and rewind speed and also search mode speed during tape playback. **MAX:** Carry out fast forward, rewind, and search at the maximum speeds. **MX/24:** Carry out fast forward and rewind at the maximum speeds, and search at up to 24 times normal speed. **MX/35:** Carry out fast forward and rewind at the maximum speeds, and search at up to 35 times normal speed. **x24:** Carry out fast forward and rewind at 24 times normal speed, and search at up to 24 times normal speed. **x35:** Carry out fast forward and rewind at 35 times normal speed, and search at up to 35 times normal speed. **Maximum fast forward and rewind speed (example in 59.94i or 29.97PsF mode)** • HDCAM cassette/Digital Betacam cassette: 50 times normal speed • MPEG IMX cassette: 78 times normal speed **Maximum search mode speeds (example in 59.94i or 29.97PsF mode)** • HDCAM cassette/Digital Betacam cassette: 50 times normal speed • MPEG IMX cassette: 78 times normal speed
104	AUDIO MUTING TIME	Select the length of time for audio muting when the unit switches to playback from stop or from still playback in the search mode. **OFF:** Set the audio muting time to zero (i.e. no muting). **0.1S to 1.0S:** Set the audio muting time from 0.1 to 1.0 second, in 0.1-second increments.
105	REFERENCE SYSTEM ALARM	Select whether to display a warning when the video/audio reference signal selected by OUTREF in function menu is not supplied or is out of phase with the input video signal. **OFF:** No warning. **ON:** Flash the STOP button as a warning.
106	CAPSTAN LOCK (Invalid in 24PsF or 23.98PsF mode)	Select the capstan servo lock mode. **PANEL:** The capstan servo lock mode is determined by CAPSTN in function menu. **2F:** The capstan servo locks every two fields regardless of the setting of CAPSTN in function menu. **4F:** The capstan servo locks every four fields regardless of CAPSTN in function menu. **8F (In 50i, 25PsF mode only):** The capstan servo locks every eight fields regardless of the setting of CAPSTN in function menu. **Note** When operating in 24PsF or 23.98PsF mode, 2F is selected automatically and this item is not displayed.

Item number	Item name		Settings
107	REC INHIBIT LAMP FLASHING		Select whether to flash the REC INHI indicator when RECINH in function menu is set to "OFF" and the record inhibit plug on the cassette is pressed in. **OFF:** Do not flash. **ON:** Flash.
108	AUTO EE SELECT		Select the VTR modes in which input video and audio signals are automatically handled in E-E mode when a cassette is inserted and PB/EE in function menu is set to "EE". **S/F/R:** In STOP/EJECT/F.FWD/REW modes **STOP:** In STOP/EJECT modes
109	FORCED EE WHEN TAPE UNTHREAD		Select whether or not the setting of PB/EE in function menu controls the PB/EE setting for output signals during tape threading and unthreading, and when no cassette is inserted. **OFF:** Control. **ON:** No control (always E-E signal).
111	TSO PLAY		Select whether or not to enable tape speed override mode. **DIS:** Disabled **TSO:** Enabled
116	JOG DIAL RESPONSE		Select the tape speed characteristics for the search dial rotation rate (VTR commands). **TYPE1:** Tape speed varies linearly over the range −1 to +1. **TYPE2:** Tape speed varies stepwise as shown in figure "TYPE 2" [a] below over the range −3 to +3. (Characterized by a zone around −1 and +1 where the tape speed is independent of the search dial rotation rate. When playing back an HDCAM tape, however, tape speed characteristic figure "TYPE 4" [c] below applies.) **TYPE3:** Tape speed varies linearly over the range −3 to +3 (±2 during HDCAM tape playback), as shown in figure "TYPE 3" [b] below. **TYPE4:** Tape speed varies stepwise as shown in figure "TYPE4" [c] below over the range −2 to +2. (Characterized by a zone around −1 and +1 where the tape speed is independent of the search dial rotation rate)
118	KEY INHIBIT SWITCH EFFECTIVE AREA		Select which switches and buttons can be operated when the KEY INHI switch on the switch panel is set to "ON". The following sub-items control different sets of switches and buttons independently.
	Sub-item		
	1	REMOTE SELECT	Select whether or not the REMOTE 1(9P)/2(50P) buttons in the upper control panel are enabled. **DIS:** Disabled **ENA:** Enabled
	2	F-KEY (FUNCTION KEY)	Select whether to enable the selection buttons (F1 to F10 and P1 to P5, DISPLAY) in the lower control panel of this unit. **DIS:** Disabled **ENA:** Enabled
	3	CONTROL PANEL	Select which switch and button operations can be carried out from the lower control panel of this unit. **DIS:** All switches and buttons are disabled. **ENA:** All switches and buttons are enabled.

Item number	Item name	Settings
119	VARIABLE SPEED LIMIT IN KEY PANEL CONTROL	Select the playback speed range in variable speed playback with the control panel of this unit. **OFF:** –1 to +2 times normal speed **ON:** 0 to 1 times normal speed
120	CTL LOCK IN VAR/SHTL	Select whether the tape transport should be phase-locked to the CTL signal during playback in variable speed or shuttle mode. **OFF:** Not phase-locked. **ON:** Phase-locked at the following speeds: –1, –0.5, 0.5, 1.0 and 2.0 times normal speed.
121	DT MODE	Select field or frame mode for variable speed playback. **FIELD:** Always field playback **FRAME:** Frame playback in the noiseless playback speed range; otherwise field playback. Frame playback provides higher-density in still pictures than field playback. **Note** For HDCAM tapes recorded in PsF mode, playback is automatically carried out in frame mode.
125	AUTO REWIND	Select whether or not to rewind the tape automatically when recording or playback reaches the end of a tape. **DIS:** Not rewind **ENA:** Rewind
130	DISPLAY DIMMER CONTROL	Set the brightness of LCD. **0 to 7:** Set in this range. 0 is the brightest, and 7 the dimmest.
139	LOST LOCK DISPLAY ON CONTROL PANEL	Select whether to display the message "LOST LOCK" on the control panel when the lock is lost. **OFF:** No display **ON:** Display
149	INFORMATION DISPLAY	Select whether to include Information Display mode as one of the LCD display modes. In Information Display mode, the following information is displayed together with the display of function information. • SYS: (system frequency)(number of HD output lines) • PB: (tape playback frequency) (number of tape playback lines) [a] • VIDEO IN SG: Output of the internal video test signal generator (setup menu item 710) • AUDIO IN SG: Operation of the internal audio test signal generator (setup menu item 808) **DIS:** Do not include Information Display mode. **ENA:** Include Information Display mode. When this item is set to "ENA", Information Display mode is selected first when the unit is powered on. Press the DISPLAY button to switch to another mode.

a) When the HDW-D1800 is playing back an SD tape, (tape format name) is displayed instead of (tape playback frequency) (number of tape playback lines).

Menu items in the range 200 to 299, relating to the remote control interface

Item number	Item name	Settings
201	PARA RUN	Select whether to make syncronous operation for two or more VTRs. **DIS:** No synchronized operation **ENA:** Make syncronous operation **Note** To make syncronous operation for two or more VTRs, set item 201 to "ENA" on all VTRs.

Item number	Item name		Settings
202	CF FLAG REPLY (In 50i, 24PsF or 25PsF mode only)		Select the mode for locking to the color framing sent from the remote controller. **8F:** Eight-field locking mode **4F/8F:** Four- or eight-field locking mode
211	REMOTE1 PORT		Select how to use the REMOTE 1-IN(9P)/REMOTE 1-OUT(9P) connectors on the connector panel. **I&O:** Both the IN and OUT connectors are effective whether in local or remote mode. **IN:** Only the IN connector is effective whether in local or remote mode. **OUT:** Only the OUT connector is effective whether in local or remote mode. **PANEL:** Enable to select I&O, IN, or OUT using the function menu. **Note** If you select "PANEL", first set the user-defined function button RMT1 in any function menu page. *For details on how to set the user-defined function buttons in function menu page, refer to the Maintenance Manual Volume 1.*
212	VIDEO REMOTE CONTROL SELECT		Make settings for control from such as HKDV-900/503 via the VIDEO CONTROL (9P) connector.
	Sub-item		
	1	IMAGE ENHANCER (HDW-D1800 only)	Select whether to control the upconverter or downconverter when controlling the image enhancer. **down:** Control the downconverter. **up:** Control the upconverter. **u&d:** Control both the upconverter and downconverter.
	2	D2 SETUP	Select the menu item to be controlled by the SETUP dial with the D2 button on the HKDV-900/503 pressed. **setup:** Sub-item (OUTPUT LEVEL) of menu item 713 (VIDEO SETUP REFERENCE LEVEL) **Black:** Menu item 718 (SETUP(BLACK) LEVEL) *For details, see the description of menu item 718 (see page 95).* **Notes** • After changing this setting, power off this unit or HKDV-900/503 and power it on again. • This setting is valid only in 59.94i or 29.97PsF mode.

Menu items in the range 300 to 399, relating to editing operations

Item number	Item name	Settings
301	VAR SPEED RANGE FOR SYNCHRONIZATION	Select the playback speed range in variable speed playback mode from a remote controller connected to the REMOTE-1 IN(9P) connector or REMOTE-1 OUT(9P) connector. **–1 ~ +2:** –1 to +2 times normal speed for HDCAM tape. –1 to +3 times normal speed for Digital Betacam and MPEG IMX tapes. **~ 2.45:** –1.5 to +2.45 times normal speed for HDCAM tape. –1.5 to +3.45 times normal speed for Digital Betacam and MPEG IMX tapes.

Chapter 9 Setup Menus

Item number	Item name	Settings
302	CAPSTAN RE-LOCKING DIRECTION	**In 59.94i, 29.97PsF mode** Select whether the capstan servo should lock by accelerating or decelerating when F1 (CAPSTAN) in function menu page P04: MISC-1 is set to "4F". **DECEL:** Lock by decelerating. **ACCEL:** Lock by accelerating.
		In 50i, 25PsF mode Select whether the capstan servo should lock by accelerating or decelerating when F1 (CAPSTAN) in function menu page P04: MISC-1 is set to "4F" or "8F". **DECEL:** Lock by decelerating. **ACCEL:** Lock by accelerating.
304	EDIT FIELD SELECT	Select with which fields to start and end editing. **1F:** Start editing with field 1 and end with field 2. **2F:** Start editing with field 2 and end with field 1. **1F/2F:** Start and end editing depending on the timing of command reception. **Note** 1F is always selected in PsF mode.
305	SYNC GRADE	Select the target phase synchronization accuracy when editing in phase-synchronized mode with menu item 004 set to "ON". **ACCUR:** ±0 frame accuracy **ROUGH:** ±1 frame accuracy
306	DMC INITIAL SPEED	Select the initial speed automatically set in DMC editing. **MANU:** The speed determined by the rotation of the search dial **PLAY:** Normal playback speed **STILL:** Stationary **±0.03 to ±1, +2:** Speed set in this range (select from +2, ±1, ±0.5, ±0.2, ±0.1, ±0.03)
307	AUTO-DELETION FOR INCONSISTENT DATA	Select the operation of this unit when an erroneous edit point is set. **MANU:** A warning is given by flashing the name of the edit point button for the erroneous edit point in the lower control panel. Delete or correct the erroneous edit point manually. **NEG&E:** When edit points are set incorrectly, such as when an OUT point is before an IN point, or an audio OUT point is before an audio IN point, or when too many edit points are specified, the previously set edit point is deleted automaically. **NEG:** When edit points are set incorrectly, such as when an OUT point is before an IN point, or an audio OUT point is before an audio IN point, the previously set edit point is deleted automaically. When too many edit points are specified, a warning is given by flashing the name of the edit point button for the unnecessary edit point in the control panel. **Note** Pressing the button corresponding to an edit point to be deleted and the DELETE button simultaneously deletes the edit point. Editing is not executed if an erroneous edit point is set (the name of an edit button is flashing).
309	SERVO/AV REFERENCE SEL	Select the servo reference signal. **AUTO1:** During recording, the input video signal is used as the servo reference signal. During playback, the signal selected by F2 (REF VID) in function menu page P03: VID PROC is used as the servo reference signal. If the signal selected by the F2 (REF VID) in function menu page P03: VID PROC is not connected, an internal reference signal is used. **AUTO2:** When F2 (REF VID) in function menu page P03: VID PROC is set to "REF", and any of F2 (INS TC), F3 (INS CUE), and F5 (ASSEMBLE) to F10 (INS A4) in function menu page P07: E.PRESET is lit, the reference signal for video/audio signal processing is locked to the input video signal. **EXT:** The servo reference signal is forced to be "EXT" (an external reference video input signal is used).

Item number	Item name	Settings
310	REC INHIBIT	Select the conditions under which recording is inhibited when F1 (REC INHI) is set to "ON" in function menu page P07: E.PRESET. **ALL:** All tape recording is inhibited. **CRASH:** Normal tape recording is inhibited. Select this setting for assemble editing. **VIDEO:** Recording of video and CTL signals is inhibited. **AUDIO:** Recording of audio and CTL signals is inhibited. **Note** When F1 (REC INHI) is set to "ON" in function menu page P07: E.PRESET, the REC INHI indicator on the lower control panel lights. If an operation inhibited by this item is attempted, the REC INHI indicator flashes.
311	ANALOG AUDIO EDIT PRESET REPLACE FOR CH1	Select how to activate edit preset of each digital audio channel (CH 1 to CH 4, and CUE) on this unit using the analog audio preset function of the editor or remote controller when using an editor (PVE-500, BVE-600, etc.) or a remote controller which cannot control digital audio edit preset.
312	ANALOG AUDIO EDIT PRESET REPLACE FOR CH2	
313	ANALOG AUDIO EDIT PRESET REPLACE FOR CH3	The edit preset of each digital audio channel (CH1 to CH4 and CUE) of this unit is set to "ON" or "OFF" according to the analog audio preset specified by the editor or remote controller. **NODEF**: No definition. **CH1:** Follow edit preset of analog channel 1.
314	ANALOG AUDIO EDIT PRESET REPLACE FOR CH4	**CH2:** Follow edit preset of analog channel 2. **CH1+2:** Follow edit preset of analog channel 1 or 2. The default settings for each item are as follows:
315	ANALOG AUDIO EDIT PRESET REPLACE FOR CUE	**311:** CH1 **312:** CH2 **313:** NODEF **314:** NODEF **315:** NODEF
317	AUDIO EDIT MODE	Select the type of audio transition used for digital audio editing. **CUT:** Cut editing (audio discontinuity at edit point, and possible noise during playback) **CROSS:** Cross-fade **FI/FO:** Fade in and fade out **t:** Time set by menu item 803 "DIGITAL AUDIO FADE TIME"
318	EDIT RETRY	For two-VTR editing, and when this unit is used as the recorder. Select the operation if the recorder was not synchronized in time. **OFF:** Editing is not carried out, and the unit stops. **ON:** The editing is automatically retried (up to twice).

Item number	Item name	Settings
319	PREREAD SELECT	Specify the preread operation. **A/V:** Preread for both audio and video. **AUDIO:** Preread for audio only. **VIDEO:** Preread for video only. The preread operation is enabled when F3 (PREREAD) in function menu page P04: MISC-1 is set to "ON" or by a command from the 9-pin remote control interface.
326	AUTOMATIC IN ENTRY AFTER AUTO EDIT	Select whether to automatically set the OUT point of the previous edit as the next IN point after automatic editing. **OFF:** No automatic setting **R:** Set recorder IN point automatically. **R & P:** Set recorder IN point automatically, and also player IN point in two-VTR editing.
334	EE REFERENCE CONTROL	Specify how to select the reference video signal in E-E mode. **NORMAL:** Select according to the table in Section "3-2-1 Selecting Reference Sync Signal Depending on Operational Status" *(page 28)*. **INPUT:** In E-E mode select the input video signal. Otherwise, select according to the table in Section "3-2-1 Selecting Reference Sync Signal Depending on Operational Status" *(page 28)*.
336	EDIT PRESET INHIBIT IN KEY PANEL CONTROL	Specify which buttons are disabled in the editing mode setting section on the lower control panel. **OFF:** Enable all buttons. **TC:** Disable the TC button.
337	EXTERNAL REFERENCE SELECT	Select the signal used when this unit is set up by setup menu item 309 and function menu page P03: VID PROC to use an external reference video signal as reference. **HD:** Use a high definition reference video signal as reference. Input a tri-level (positive and negative) sync signal to a REF. VIDEO INPUT connector. **SD:** Use a reference video signal. Input a video signal with chroma burst (VBS) or a monochrome video signal (VS) to a REF. VIDEO INPUT connector. **Note** When operating in 24PsF or 23.98PsF mode, "HD" is selected.
338	OUTPUT AUDIO/TC PHASE SELECT	Set the audio (AES/EBU and analog) and timecode output phase. **HD:** Sync with HDSDI output phase. **SD:** Sync with SD output phase. **Note** When operating in 24PsF or 23.98PsF mode, "HD" is selected.

Menu items in the range 400 to 499, relating to preroll

Item number	Item name	Settings
401	FUNCTION MODE AFTER CUEUP	Select the mode of the unit after a cueup operation. **STOP:** Stop (the "stop mode") **STILL:** Still playback (in search mode) **Note** When controlling this unit from an editor with the standard constants set, select "STOP".
402	TIME REFERENCE FOR PREROLL	Select whether or not to use CTL signal to count timecode before a discontinuity when prerolling a tape with timecode discontinuities. **CTL:** Count timecode using CTL signal. **TC:** Do not count timecode using CTL signal.

Item number	Item name	Settings
403	AUTOMATIC PREROLL REFERENCE ENTRY	Select whether the IN point is automatically set by pressing the PREROLL button, when the IN point is not set on starting preroll. **DIS:** Do not set IN point automatically. **ENA:** Set IN point automatically.
405	CUEUP BY CTL	Select the tape transport mode when cuing. This setting is valid only when CTL/TC is set to "CTL". **CAP.:** During cueup, the tape runs with "pinch ON" (maximum tape speed 10 times normal). **REEL:** During cueup, the tape runs with "pinch OFF". As the tape approaches the cue up point and the tape speed drops, the tape transport switches to the "pinch ON" state.[a] To give priority to editing accuracy, select "CAP.".

a) When controlled from an editor (BVE-2000/9100 etc.), selecting "REEL"
  allows high-speed cueup.

Menu items in the range 500 to 599, relating to tape protection

Item number	Item name	Settings
501	STILL TIMER	Select the time delay from when the tape stops (either the "stop mode" or the still playback mode in search mode) until the unit automatically switches to the tape protection mode, in order to protect the video heads and tape. **0.5S to 8M to 30M:** Set the value in the range 0.5 seconds to 30 minutes.
502	TAPE PROTECTION MODE FROM SEARCH	Select the protection mode to protect the video heads and tape when in the still playback mode in search mode (jog/shuttle). **STEP:** Step forward at 1/30 times normal speed every 2 seconds. **STDBY:** Switch to Standby OFF mode (the unit not on standby). **T.REL:** Switch to tension release mode (the tape tension slackened).
503	TAPE PROTECTION MODE FROM STOP	Select the operation of the protection mode to protect the video heads and tape when stopped (the "stop mode"). **STDBY:** Switch to Standby OFF mode (the unit not on standby). **T.REL:** Switch to tension release mode (the tape tension slackened). **STEP:** Step forward at 1/30 times normal speed every 2 seconds.
504	DRUM ROTATION IN STANDBY OFF	Select whether the drum rotates in Standby OFF mode. **OFF:** Drum does not rotate. **ON:** Drum rotates.
505	STILL TENSION	Select the tape tension state in the still playback mode. **NORML:** Normal tape tension is maintained during still playback mode, ready for playback. **LOOSE:** Reduce the tape tension further from the NORML setting. (Select "LOOSE" when the unit is on standby for a long period of still playback, for example, in a library management system (LMS).) **Note** When "LOOSE" is selected and the tape tension is reduced, playback cannot be guaranteed.

Menu items in the range 600 to 650, relating to the timecode generator

Item number	Item name	Settings
601	VITC POSITION SEL-1 (Invalid in 24PsF or 23.98PsF mode)	**In 59.94i, 29.97PsF mode** Select a line to insert the VITC in. (For SD output) **12H to <u>16H</u> to 20H:** Select any line from 12 to 20. **Note** You can insert the VITC signal in two lines. To insert it in two lines, set both menu items 601 and 602.
		In 50i, 25PsF mode Select a line to insert the VITC in. (For SD output) **9H to <u>19H</u> to 22H:** Select any line from 9 to 22. **Note** You can insert the VITC signal in two lines. To insert it in two lines, set both menu items 601 and 602.
602	VITC POSITION SEL-2 (Invalid in 24PsF or 23.98PsF mode)	**In 59.94i, 29.97PsF mode** Select a line to insert the VITC in. (For SD output) **12H to <u>18H</u> to 20H:** Select any line from 12 to 20. **Note** You can insert the VITC signal in two lines. To insert it in two lines, set both menu items 601 and 602.
		In 50i, 25PsF mode Select a line to insert the VITC in. (For SD output) **9H to <u>21H</u> to 22H:** Select any line from 9 to 22. **Note** You can insert the VITC signal in two lines. To insert it in two lines, set both menu items 601 and 602.
603	ID CODE PRESET	Select whether to set the ID code. **<u>OFF</u>:** Do not set. **ON:** Set. **To set the ID code:** Select F9 (SET) with this menu item displayed in the menu display, to enter the ID code setting mode. Select F1 (PREV) or F2 (NEXT) for digit selection. When all required digits have been set correctly, select F9 (SET) again to save the ID code and exit the ID code setting mode.
604	ID CODE SW	Select whether to record the ID code, set using menu item 603 in the user bits. **<u>OFF</u>:** Record the normal data in the user bits. **ON:** Record the ID code in the user bits.
605	TCG REGEN MODE	Select the signals to be regenerated when the timecode generator is in regeneration mode (i.e., when F2 (TCG MODE) in function menu page P02: TC is set to "RGN: LTC" or "RGN: VITC"). **<u>TC&UB</u>:** Both the timecode and user bit signals are regenerated. **TC:** Only the timecode signal is regenerated. **UB:** Only the user bit signal is regenerated.
606	TC OUTPUT SIGNAL IN REGEN MODE	Select the signal output from the TIME CODE OUT connector during normal (×1) speed playback: **<u>TAPE</u>:** During playback, the playback timecode signal is output without regeneration. **REGEN:** The playback timecode is output after regeneration.

Item number	Item name	Settings
607	U-BIT BINARY GROUP FLAG	Specify how to use the user bits in the timecode generated by the timecode generator. **000:** Character set not specified **001:** 8-bit characters compliant with ISO 646 and ISO 2022 **010:** Undefined **011:** Undefined **100:** Undefined **101:** SMPTE 262M Page/line multiplex system **110:** Undefined **111:** Undefined
608	PHASE CORRECTION	Select whether to carry out phase correction control on the LTC generated by the timecode generator. **OFF:** No control **ON:** Carry out control.

609	TCG CF FLAG	Select whether the color framing flag is set in the blank bit of the timecode data.
		OFF: Not set.
		ON: Set.
		AUTO: Control the color framing flag setting as follows according to the operation mode of the timecode generator (TCG).
		  - When the TCG is in INT-PSET mode: Set the color framing flag in the blank bit of generated timecode data.
		  - When the TCG is in INT-LTC or INT-VITC mode and the number of fields for capstan lock is 4F or 8F: Set the color framing flag in the blank bit of generated timecode data.
		  - When the TCG is in other than the above modes: Do not set the color framing flag in the blank bit of generated timecode data.
		
		For more information about the TCG operation mode, see TCG mode (page 18). For details on settings of the TCG, see the description of function menu page P02: TC (page 66). For details on settings of the number of fields for capstan lock, see the description of function menu page P04: MISC-1 (page 68).

610	REGEN CONTROL MODE	Select whether timecode is automatically regenerated. **AS&IN:** In automatic editing in assemble mode or insert mode with this unit as a recorder (AUTO EDIT), regardless of the settings of F1 (TCG SRC) and F2 (TCG MODE) in function menu page P02: TC, the timecode generator regenerates according to the timecode on the tape. **ASSEM:** In automatic editing (AUTO EDIT) in assemble mode with this unit as a recorder, regardless of the settings of F1 (TCG SRC) and F2 (TCG MODE) in function menu page P02: TC, the timecode generator regenerates according to the timecode on the tape. **MANU:** Regardless of whether this unit is the recorder or player, the timecode generator operates in accordance with the settings of F1 (TCG SRC) and F2 (TCG MODE) in function menu page P02: TC. **FULL:** Whether in local or remote operation and regardless of the settings of F1 (TCG SRC) and F2 (TCG MODE) in function menu P02: TC, when any of F2 (INS TC), F3 (INS CUE), and F5 (ASSEMBLE) to F10 (INS A4) in function menu page P07: E.PRESET is lit, the timecode generator regenerates according to the timecode played back from the tape.
617	LTC OUTPUT PHASE	Set the output phase of timecode signals (LTC). **TCG/R:** Output the playback timecode signal during playback. When the edit preset function is on, and when recording, output the timecode signal generated by the internal timecode generator. **INPUT:** Use the same phase as the input video. **OUTPT:** Use the same phase as the output video. **AUTO:** Use the same phase as the input video when editing, and otherwise, use the same phase as the output video (when playback, recording, etc.)

Item number	Item name	Settings
618	UPCONV EMBEDDED VITC (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode.)	Select the source for HDSDI embedded VITC which is output after up-conversion during playback of SD-format tape. **VITC:** Select VITC recorded on SD-format tape. **LTC:** Select LTC recorded on SD-format tape.
620	TC CONVERT 24F -> 25F (In 50i or 25PsF mode only.)	Select whether to convert playback timecode to 25F timecode during playback of tape recorded in 24PsF or 23.98PsF mode. **OFF:** Do not convert timecode. **ON:** Convert timecode.
	TC CONVERT 25F -> 24F (In 24PsF or 23.98PsF mode only.)	Select whether to convert playback timecode to 24F timecode during playback of tape recorded in 50i or 25PsF mode. **OFF:** Do not convert timecode. **ON:** Convert timecode.
621	24F STARTING TC SEL (In 50i or 25PsF mode only)	Select one of the following settings for 24F starting TC for timecode conversion from 24F to 25F. **OFF:** Do not set. **ON:** Set. **To set the 24F starting TC** Select F9 (SET) with this menu item displayed in the menu display, to enter the starting TC setting mode. Select F1 (PREV) or F2 (NEXT) for digit selection. When all required digits have been set correctly, select F9 (SET) again to save the starting TC and exit the starting TC setting mode.
	25F STARTING TC SEL (In 24PsF or 23.98PsF mode only)	Select one of the following settings for 25F starting TC for timecode conversion from 25F to 24F. **OFF:** Do not set. **ON:** Set. **To set the 25F starting TC** Select F9 (SET) with this menu item displayed in the menu display, to enter the starting TC setting mode. Select F1 (PREV) or F2 (NEXT) for digit selection. When all required digits have been set correctly, select F9 (SET) again to save the starting TC and exit the starting TC setting mode.
622	24F JUMPING TC SEL (In 50i or 25PsF mode only)	Select one of the following settings for 24F jumping TC for timecode conversion from 24F to 25F. **–3H:** Set JUMPING TC to "STARTING TC –3H". **–2H:** Set JUMPING TC to "STARTING TC –2H". **–1H:** Set JUMPING TC to "STARTING TC –1H". **+1H:** Set JUMPING TC to "STARTING TC +1H". **+2H:** Set JUMPING TC to "STARTING TC +2H". **+3H:** Set JUMPING TC to "STARTING TC +3H". **0H:** Set JUMPING TC to "STARTING TC".
	25F JUMPING TC SEL (In 24PsF or 23.98PsF mode only)	Select one of the following settings for 25F jumping TC for timecode conversion from 25F to 24F. **–3H:** Set JUMPING TC to "STARTING TC –3H". **–2H:** Set JUMPING TC to "STARTING TC –2H". **–1H:** Set JUMPING TC to "STARTING TC –1H". **+1H:** Set JUMPING TC to "STARTING TC +1H". **+2H:** Set JUMPING TC to "STARTING TC +2H". **+3H:** Set JUMPING TC to "STARTING TC +3H". **0H:** Set JUMPING TC to "STARTING TC".
630	SEARCH TYPE SELECT	**ALL:** Search all shot marks during index search. **REC:** Search recording start marks during index search. **SHOT1:** Search shot mark 1 during index search. **SHOT2:** Search shot mark 2 during index search. **POST:** Search post marks during index search.

Item number	Item name		Settings
631	REC START MARK MODE		
	Sub-item		
	1	CRASH REC	**OFF:** Do not write recording start marks. **ON:** Write recording start marks during normal recording.
	2	ASSEMBLE	**OFF:** Do not write recording start marks. **ON:** Write recording start marks during assemble editing.
	3	INSERT	**OFF:** Do not write recording start marks. **ON:** Write recording start marks during insert editing.
635	LISTING TYPE SELECT		
	Sub-item		
	1	REC START MARK	**OFF:** Do not read recording start marks. **ON:** Read recording start marks.
	2	SHOT MARK 1	**OFF:** Do not read shot mark 1. **ON:** Read shot mark 1.
	3	SHOT MARK 2	**OFF:** Do not read shot mark 2. **ON:** Read shot mark 2.
	4	POST MARK	**OFF:** Do not read post marks. **ON:** Read post marks.
636	MARK SELECT IN REC/ASSEMBLE		**SHOT1:** Write shot mark 1 during recording and assemble editing. **SHOT2:** Write shot mark 2 during recording and assemble editing. **POST:** Write post marks during recording and assemble editing.

Menu items in the range 651 to 699, relating to the UMID

Item number	Item name	Settings
651	UMID OUTPUT	Select the UMID type to be output. **off:** Do not output UMID. **BASIC:** Output Basic UMID. **EXTND:** Output Extended UMID. **Note** Even if "EXTND" is selected, Basic UMID is output if Basic UMID is recorded on the tape being played back.
653	UMID HD VANC LINE	Specify the HDSDI signal VANC line into which the generated UMID should be inserted. **9, 572 14,577 19,582** **10,573 15,578 20,583** **11,574 16,579** **12,575 17,580** **13,576 18,581** **Note** The output VANC line during playback follows the setting for recording.

Item number	Item name	Settings
654	UMID GENERATE METHOD	Select the Instance Number. generation method when the UMID is inherited. **COPY No.+16bit PRS:** Copy No. + 16-bit random number **24bit PRS:** 24-bit random number **Note** When menu item 656 is set to "NEW" (an Instance Number indicating that "this is the original" is generated), the same value (all zeros) is generated regardless of which of the above methods is selected.
655	UMID RECORDING	Select the UMID type to be recorded to tape. **off:** Do not record UMID. **BASIC:** Record Basic UMID. **EXTND:** Record Extended UMID.
656	MATERIAL NO.	Select whether to inherit the UMID in the input signal when recording a UMID. **INPUT:** Inherit the UMID in the input signal, if it is contained. • Even when "INPUT" is selected, a new UMID is generated if the input signal does not contain UMID data (same as when "NEW" is selected). • When recording with inherited data, the Instance Number is newly generated according to menu item 654 and changed to a value that indicates that "this is a copy". • When the UMID in the input signal is a Basic UMID, the Basic UMID is recorded, even if menu item 655 is set to "EXTND". • When the UMID in the input signal is an Extended UMID, the recorded UMID follows the setting of menu item 655. **NEW:** Generate a new UMID, regardless of whether or not the input signal contains a UMID. • The Basic section does not change during recording. • An Instance Number indicating that "this is the original" is generated. • The Source Pack Date/Time (when) changes with each frame. • The Source Pack Spatial Co-ordinates (where) are not recorded. • The Source Pack Stored Ownership (who) can be set. *(See the section "To set Stored Ownership" (page 61)).*

Menu items in the range 700 to 799, relating to video control

Item number	Item name		Settings
703	BLANK LINE SELECT		Select blanking on or off for individual lines in the vertical blanking interval of the SD video signal.The Y/C signal and odd/even fields are blanked simultaneously.
	Sub-Item		
	0	ALL LINE	**- - -:** Specify the blanking for each line individually. **BLANK:** Regardless of the setting of other sub-items, blank all lines which can be specified in this menu item. **THROU:** Regardless of the setting of other sub-items, switch off blanking for all lines which can be specified in this menu item.
In 59.94i mode (59.94i or 29.97PsF)	12 ... 19	LINE 12 ... LINE 19	Specify blanking for lines 12 to 19. **BLANK:** Carry out blanking. **THROU:** Switch off blanking.
	20	LINE 20	Specify blanking for line 20. **BLANK:** Carry out blanking. **HALF:** Carry out half-blanking. **THROU:** Switch off blanking.
In 50i mode (50i or 25PsF)	9 ... 22	LINE 9 ... LINE 22	Specify blanking for lines 9 to 22. **BLANK:** Carry out blanking. **THROU:** Switch off blanking.
	23	LINE 23	Specify blanking for line 23. **HALF:** Carry out half-blanking. **THROU:** Switch off blanking.

Item number	Item name	Settings
705	EDGE SUBCARRIER REDUCER MODE (HDW-D1800 only)	During recording and playback of a composite signal, in the playback circuit the edge subcarrier reducer (ESR) is automatically switched on or off according to the VTR operation. When recording a "Non-Standard" signal, for example, if the color edges are not as good as with a proper signal, the ESR can be forced on. This item makes this selection. **<u>AUTO</u>:** ESR is switched on and off automatically. **ON:** ESR operation is forced on.
707	FORCED VERTICAL INTERPOLATION OFF	The "Y-add" [a] function is normally switched on automatically during jog or variable speed playback. This item selects whether to force the "Y-add" function off. **<u>AUTO</u>:** Automatically switch the "Y-add" function on. **OFF:** Force the "Y-add" function off.
710	INTERNAL VIDEO SIGNAL GENERATOR	Select the test signal to be output from the internal test signal generator. **OFF:** No test signal is generated. (The VTR operates normally.) **<u>CB</u>:** Color bar signal **MLTBS:** Multi-burst signal **10STP:** 10-step signal **PLSBR:** Pulse and bar signal **RAMP:** Ramp signal **BLACK:** Black signal To select the video test signal, display function menu page P03: VID PROC, hold down the ALT/DELETE button, then select F1 (VIDEO IN). To cancel the signal selection, select F1 (VIDEO IN).
713	VIDEO SETUP REFERENCE LEVEL (In 59.94i or 29.97PsF mode only)	Set the video setup level to be added to the composite output signal. **Note** The setup level specified in this menu item has no effect on the setting of F9 (SETUP LV/BLK LEVL) in function menu page P03: VID PROC.
	Sub-Item	
	OUTPUT LEVEL (59.94i mode)	The setup level specified for this sub-item is added to the output signal. **0.0%, <u>7.5%</u>**

a) The "Y-add" function is a circuit operation to interpolate the video signal vertically during jog or variable speed playback for reducing the vertical movement of the playback picture.

Menu items in the range 700 to 799, relating to video control (continued)
(Menu items in the range 715 to 720, settings for controlling the SD video processing according to the menu settings)

Item number	Item name	Settings
715	VIDEO GAIN CONTROL	Adjust the video output level. **0 to <u>800H</u> to B50H** **Note** This item is valid for both HD and SD outputs.
716	CHROMA GAIN CONTROL	Adjust the chroma output level. **0 to <u>800H</u> to B50H** **Note** This item is valid for both HD and SD outputs.
717	CHROMA PHASE CONTROL	Adjust the chroma phase. **0 to <u>80H</u> to FFH** **Note** This item is valid for both HD and SD outputs.

Item number	Item name	Settings
718	SETUP(BLACK) LEVEL	(Has no effect in 24PsF or 23.98PsF mode) Adjust the SD setup level (black level). **0 to 110H to 220H** **Note** This item is valid for both HD and SD outputs when sub-item "D2 SETUP" of menu item 212 "VIDEO REMOTE CONTROL SELECT" is set to "Black".
719	SYSTEM PHASE SYNC	Adjust the SD output signal sync phase. **0 to 80H to FFH**
720	SYSTEM PHASE SC	Adjust the SD output signal subcarrier phase. **0 to 3FFH**

Notes

- For menu items 715 to 718 or 740 to 747, set F5 (V.PROC) in function menu item P03: VID PROC to "MENU". When it is set to "MENU", all controls for video output processing on the control panel are disabled.

- When menu item 337 is set to "SD", changing the settings of menu items 719 and 720 changes the phase of HD output signals as well as that of SD.
  After changing these settings, use F3 (SYNC PHS) and F4 (SYNC FIN) in function menu page P03: VID PROC, or menu items 745 and 746 to readjust the phase of HD output signals.

Menu items in the range 700 to 799, relating to video control (continued)

Item number	Item name	Settings
726	H BLANKING WIDTH	Select the horizontal blanking width of the video output signal. **NAROW:** Digital blanking (narrow) **WIDE:** Analog blanking (wide) When "WIDE" is selected, the horizontal blanking width complies with RS170A, and normally the blanking is widened and the image becomes narrower. It is recommended to select "NAROW" at editing, then select "WIDE" for broadcast transmission to output a signal conforming to the standard.
727	VIDEO EDIT PREVIEW SWITCHER	Set the output phase for the video playback signal when any of F2 (INS TC), F3 (INS CUE), and F5 (ASSEMBLE) to F10 (INS A4) in function menu page P07: E.PRESET is lit. **INT:** The video playback signal output phase is the same as the output phase in E-E mode. Use this setting when editing with a single VTR, or when previewing while monitoring the VTR output signal. **EXT:** The video playback signal output phase is the same as the phase of an input video signal or external reference signal.
728	OUTPUT SCH PHASE	Control the subcarrier H phase. **0 to 800H to FFFH**
732	COMPOSITE MODE	Select the chroma filter through which the composite video signals are output. **WIDE:** Output via SMPTE WIDE. **STD:** Output via SMPTE STANDARD (NARROW).
740	MASTER LEVEL (HD)	Adjust the Y, P_B, and P_R levels of the high-definition video signal output from the HDSDI OUTPUT connector simultaneously. **0.0%(0H) to 100% (800H) to 141.3% (B4EH)**
741	Y LEVEL (HD)	Adjust the Y level of the high-definition video signal output from the HDSDI OUTPUT connector. **0.0% (0H) to 100% (800H) to 141.3% (B4EH)**
742	PB LEVEL (HD)	Adjust the P_B level of the high-definition video signal output from the HDSDI OUTPUT connector. **0.0% (0H) to 100% (800H) to 141.3% (B4EH)**

Menu items in the range 700 to 799, relating to video control (continued)

Item number	Item name	Settings
743	P_R LEVEL (HD)	Adjust the P_R level of the high-definition video signal output from the HDSDI OUTPUT connector. **0.0% (0H) to 100% (800H) to 141.3% (B4EH)**
745	SETUP LEVEL (HD)	Adjust the setup level of the high-definition video signal output from the HDSDI OUTPUT connector. **0 to 110H to 220H**
746	SYNC PHASE (HD)	Control the H sync phase of the high-definition video signal output from the HDSDI OUTPUT connector according to the menu. **0 to 80H to FFH**
747	SYNC PHASE FINE (HD)	Fine control the H sync phase of the high-definition video signal output from the HDSDI OUTPUT connector according to the menu. **0 to 3FFH**

Menu items in the range 800 to 899, relating to audio control

Item number	Item name	Settings
801	DIGITAL JOG SOUND	Turns the digital jog sound on and off. **OFF:** Digital jog sound is turned off. Audio of digital channels not subjected to speed correction is output. When the tape stops, after one second the audio is muted. **ON:** Digital jog sound is turned on. When the tape speed is in the range x–1 to x+1, speed correction is carried out, and the same jog sound as a conventional analog VTR is output.
802	DIGITAL AUD MUTING IN SHUTTLE MODE	Set the digital audio muting conditions during shuttle playback. **OFF:** Not muted. **CUEUP:** Muted during cueup or preroll operations. **FULL:** Muted in shuttle mode.
803	DIGITAL AUDIO FADE TIME	Specify the time for cross-fade or fade in/out editing of digital audio signals. **5ms, 10ms, 15ms, 20ms, 25ms[a), 50ms[b), 85ms, 115ms[c)** **Note** The cross-fade or fade in/out operation means that the recording is rewritten from the OUT point for the length specified by this setting. Even at the minimum 5ms setting, a length of recording corresponding to a field is rewritten. To avoid rewriting, set menu item 317 "AUDIO EDIT MODE" to "CUT". In this case there is an audio discontinuity at the edit point. There is no effect on the recorded video signal.
805	AUDIO MONITOR OUTPUT MIXING	Select the audio mixing method used for digital audio signals supplied to the MONITOR OUTPUT connector. **ADD:** Simple addition **RMS:** Root-mean-square **AVE:** Simple average
806	LEVEL METER SCALE	Select the digital audio level display mode. **PEAK0:** Display the audio level as negative values with the maximum level set to "0 dB". **REF.0:** Display the audio level as positive and negative values with the reference level set to "0 dB".
807	AUDIO OUTPUT PHASE	Select the output timing of digital audio playback signals (HDSDI, SDI and AES/EBU only). The reference position is 80H; when the setting is less than 80H, the output timing is advanced, and when it is higher than 80H, the output timing is delayed. (at 80H, 128 samples = approx. 2.7 ms, and 1 sample = approx. 20 μs) **0 to 80 to FF:** Set in this range.

Item number	Item name		Settings
808	INTERNAL AUDIO SIGNAL GENERATOR		Select the operation of the internal audio test signal generator. **OFF:** No operation **SILNC:** Silent signal **1KHZ:** At 1 kHz, –20 dB FS sine wave is supplied to all audio input channels. To output the internal audio test signal, display function menu page P08: AUD INP, hold down the ALT/DELETE button, then select F6 (AUDIO SG). To cancel the signal output, hold down the ALT/DELETE button and select F6 (AUDIO SG). **Note** When the system frequency is 24PsF or 23.98PsF, the frequency of the internal audio test signal is reduced 4% of the normal frequency.
810	AUDIO EDIT PREVIEW SWITCHER		Set the output phase for the audio playback signal when any of F2 (INS TC), F3 (INS CUE), and F5 (ASSEMBLE) to F10 (INS A4) in function menu page P07: E.PRESET is lit. **INT:** The audio playback signal output phase is the same as the output phase in the E-E mode. Select this setting when editing with a single VTR, or when previewing while monitoring the VTR output signal. **EXT:** The audio playback signal output phase is the same as the phase of an input video signal or external reference video signal.
822	NON-AUDIO INPUT		Specify the tracks used to record non-audio data for tracks 1 and 2, and tracks 3 and 4.
	Sub-item		
	1	Tr1/Tr2	Select the audio recording format. **audio:** Normal data signals **burst:** Data signals of burst systems such as Dolby-E (compressed into frame units) **cont:** Data signals of continuous systems such as AC-3 (compressed without regard to frames) **Note** It is not possible to combine burst and cont selections for sub items 1 and 2.
	2	Tr3/Tr4	
823	NON-AUDIO FLAG PB (HDW-D1800 only)		Controls the non-audio flag when the playback format is Digital Betacam.
	Sub-item		
	1	CH1/CH2	During playback (except E-E mode), set the digital audio non-audio flag as follows. **OFF:** OFF (the data is audio) **ON:** ON (the data is non-audio) **AUTO:** As follows • Tape data has been read and confirmed: "ON" or "OFF", according to the data. • Tape data has not been confirmed: Current state is maintained.
	2	CH3/CH4	**Note** In the HDCAM format, the non-audio flag follows the setting of maintenance menu item M372 during recording and E-E mode. *For more information about the maintenance menu item M372, refer to the Maintenance Manual.*
824	ANALOG LINE OUTPUT SELECT		Select the analog audio signals (tracks 1 to 8) to be assigned to audio output channels 1 and 2. **tr1/2:** Tracks 1 and 2 assigned to audio output channels 1 and 2. **tr3/4:** Tracks 3 and 4 assigned to audio output channels 1 and 2. **tr5/6:** Tracks 5 and 6 assigned to audio output channels 1 and 2 (HDW-D1800 only). **tr7/8:** Tracks 7 and 8 assigned to audio output channels 1 and 2 (HDW-D1800 only).

Chapter 9 Setup Menus

Item number	Item name		Settings
825	AUDIO ADVANCE MODE		Set the audio output phase. **OFF:** Same as the video output phase **ON:** One frame ahead of the video output phase
826	AUDIO PB VOLUME SELECT (HDW-D1800 only)		Selects which PB knobs are assigned for the playback of digital audio channels.
	Sub-item		
	0	ALL CH	**DEFAULT:** Use the following settings. **CH1:** Control knob 1 **CH2:** Control knob 2 **CH3:** Control knob 3 **CH4:** Control knob 4 **CH5:** UNITY **CH6:** UNITY **CH7:** UNITY **CH8:** UNITY **UNITY:** Set all channels to "UNITY", and disable the PB knobs. **MENU:** Use the following menu settings.
	1	CH1	**UNITY:** Set playback level to "UNITY". **vol 1:** Assign playback level control to control knob 1. **vol 2:** Assign playback level control to control knob 2 **vol 3:** Assign playback level control to control knob 3. **vol 4:** Assign playback level control to control knob 4.
	2	CH2	
	3	CH3	
	4	CH4	
	5	CH5	
	6	CH6	
	7	CH7	
	8	CH8	
833	CUE AUDIO INPUT SELECT		Select which digital audio channels are recorded in the CUE channel. **OFF:** Do not record. **CH1+2:** Record audio channels 1 and 2. **CH3+4:** Record audio channels 3 and 4. **CH1:** Record audio channel 1. **CH2:** Record audio channel 2.

a) Cross-fade time is 24 ms.
b) Actual value is 49 ms.

c) Actual value is 114 ms.

Menu items in the range 900 to 999, relating to digital processing

Item number	Item name	Settings
901	VIDEO OUTPUT DATA	Select the number of quantization bits for video output. **8bit:** Set the bit length to 8 bits. **10bit:** Set the bit length to 10 bits.
903	FREEZE MODE	Set the freeze mode and timing for image freezing. **FIELD:** Freeze a video field. Field may be odd or even, according to the timing. **FLD1:** Freeze an odd field. **FLD2:** Freeze an even field. **FRM12:** Freeze a frame consisting of an odd field and following even field. **FRM21:** Freeze a frame consisting of an even field and following odd field. Odd and even fields are distinguished by the reference video signal. Changing the menu setting during a freeze does not affect the freeze image. The setting is reflected the next time a freeze is carried out. To freeze an image, use F8 (FREEZE) in function menu page P05: MISC-2. *For details, see menu item 904.*

Item number	Item name		Settings

904	FREEZE CONTROL FROM KEY PANEL		Select how the buttons used to freeze an image function.
			MOMNT: Select F8 (FREEZE) in function menu page P05: MISC-2 carries out a freeze. The freeze ends when the button is released.
			LATCH: Select the F8 (FREEZE) carries out a freeze. The freeze continues even after the button is released.
			• To update the freeze image
			  Select F8 (FREEZE) again.
			• To end the freeze
			  Select F9 (FREZ OFF).

905	AUTO FREEZE CONTROL		Set the auto freeze function operation (conditions for cancelling a freeze, etc.). In dynamic tracking (DT) playback (VAR, JOG, PLAY or SHTL mode), if there is a sudden worsening of the channel condition (entry into unrecorded area), this function detects the sudden worsening and freezes the image. **DIS:** Disable the auto freeze function. **MODE1:** Automatically cancel the freeze when signals which can be normally played back are restored. **MODE2:** Automatically cancel the freeze upon start of playback after stopping. • The automatic freeze mode is set by menu item 903. • The freeze is ended immediately, regardless of the above settings, when this unit is switched to any of the following modes: Edit preset function on Cue up Recording
906	STOP FREEZE CONTROL		Select whether the STOP FREEZE function should operate. **DIS:** Do not operate. **ENA:** Operate. **stby:** Operate only in standby mode.
918 [a]	SLOW PROCESS MODE (enabled only when the optional HKDW-104 board is installed)		Select whether to increase the vertical resolution during slow playback by activating the relevant filter. **OFF:** Do not increase the vertical resolution during slow playback. **ON:** Increase the vertical resolution during slow playback.
920	SD-SDI H-ANC CONTROL (Invalid in 24PsF or 23.98PsF mode) [b]		Select whether to add information to the SD output.
	Sub-item		
	1	AUDIO 5CH-8CH	**ON:** Add digital audio data CH5 to CH8. **OFF:** Do not add digital audio data CH5 to CH8.
	2	RP188 ATC	**ON:** Add RP188 timecode data. **OFF:** Do not add RP188 timecode data.

921	ASPECT FLAG (Invalid in 50i, 25PsF, 24PsF or 23.98PsF mode) [b]		Select whether to add the 16:9/Squeeze ID signal provided for by ARIB TR-B17 to the down-converted SD output when an HDCAM tape is played back. Also select whether to switch the upconverter mode when a 16:9/Squeeze ID signal is detected on an SD playback tape.
			OFF: Do not add the 16:9/Squeeze ID signal to the SD signal down-converted from HD.
			  When an SD tape is played back, the upconverter mode follows setup menu item 950 regardless of detection of the ID signal on the tape.
			ON: Add the 16:9/Squeeze ID signal to SD output down-converted from HD in Squeeze mode.
			  When an SD tape is played back, automatically switch the upconverter mode change by detecting the ID signal on the tape. If the 16:9/Squeeze ID signal is not detected on the SD tape, the upconverter mode follows setup menu item 950.

Item number	Item name	Settings
930	DOWN CONVERTER MODE (Invalid in 24PsF or 23.98PsF mode) b)	Select the downconverter mode. **crop:** Select the edge-crop mode. **l-box:** Select the letter box mode. **squez:** Select the squeeze mode.
931	DOWN CONVERT LETTER BOX MODE (Invalid in 24PsF or 23.98PsF mode) b)	Select the aspect ratio of the downconverter output when menu item 930 is set to "l-box". **16:9:** Set the aspect ratio of the HD-SD converter output to 16:9. **14:9:** Set the aspect ratio of the HD-SD converter output to 14:9. **13:9:** Set the aspect ratio of the HD-SD converter output to 13:9.
932	H CROP POSITION (DC) (Invalid in 24PsF or 23.98PsF mode) b)	Adjust the "H-crop" (the horizontal position when cropping in the edge crop mode) of the downconverter output when menu item 930 is set to "crop". **–120 to 0 to 120**
934	CROSS COLOR (DC) (Invalid in 24PsF or 23.98PsF mode) b)	Adjust the downconverter cross color. **0 to 8 to 15**
935	DETAIL GAIN (DC) (Invalid in 24PsF or 23.98PsF mode) b)	Adjust the downconverter image enhancer. Adjust the sharpness of edge enhancement. **0 to 20H to 7FH**
936	LIMITER (DC) (Invalid in 24PsF or 23.98PsF mode) b)	Adjust the downconverter image enhancer. Adjust the maximum detail level added to emphasize the original signal. **0 to 20H to 3FH**
937	CRISP THRESHOLD (DC) (Invalid in 24PsF or 23.98PsF mode) b)	Adjust the downconverter image enhancer. Set the threshold amplitude at which low amplitude signals are not emphasized. **0 to FH**
938	LEVEL DEPEND THRESHOLD (DC) (Invalid in 24PsF or 23.98PsF mode) b)	Adjust the downconverter image enhancer. Set the luminance range for edge enhancement. **0 to 8 to FH**
939	H DETAIL FREQUENCY (DC) (Invalid in 24PsF or 23.98PsF mode) b)	Adjust the downconverter image enhancer. Set the center frequency for edge enhancement. **2.6MHz to 3.4MHz to 3.9MHz to 4.6MHz**
940	H/V RATIO (DC) (Invalid in 24PsF or 23.98PsF mode) b)	Adjust the downconverter image enhancer. Set the horizontal/vertical ratio for edge enhancement. **0 to 3 to 7**
941	GAMMA LEVEL (DC) (Invalid in 24PsF or 23.98PsF mode) b)	Adjust downconverter image enhancer. Adjust the slope of the correction curve. **0 to 80H to 100H**
942	V FILTER SELECT (Invalid in 24PsF or 23.98PsF mode) b)	Set the vertical interpolation filter coefficient for downconverter output. The vertical resolution increases as the larger value is selected. **1 to 3**
943	CROSS COLOR CRISP (Invalid in 24PsF or 23.98PsF mode) b)	Set the cross color crisp level for downconverter output. **0 to 4 to FH**
944	D/C LEGALIZE (Invalid in 24PsF or 23.98PsF mode) b)	Select whether the limiter operates on downconverter output to limit illegal video data, such as data that would result in a Gamma error. (The negative parts of Y signals are also limited.) **OFF:** Limiter does not operate. **ON:** Limiter operates.

Menu items in the range 900 to 999, relating to digital processing (Continued)

Item number	Item name	Settings
945	D/C COLOR MODE (Invalid in 24PsF or 23.98PsF mode) b)	Select the color balance characteristics of the downconverter, which differ slightly depending on the VTR model. **MODE1:** Select the color balance characteristics of models in the HDW-1800/SRW-5000 Series. **MODE2:** Select the color balance characteristics of models in the HDW-F500/HDW-2000 Series. c)
950	UP CONVERTER MODE (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Select the upconverter mode. **crop:** Select the edge-crop mode. **l-box:** Select the letter box mode. **squez:** Select the squeeze mode.
951	H CROP POSITION (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Adjust the "H-crop" (the horizontal position when inserting in edge crop mode) of the upconverter output when menu item 950 is set to "crop". **–120 to 0 to 120**
952	LETTER BOX POSITION (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Adjust the vertical position cropped in the letter box mode for upconverter output when menu item 950 is set to "l-box". **–120 to 0 to 120**
953	UP CONVERTER PROCESS SELECT (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Select the original picture to use when converting SD to HD. **FIELD:** Use field picture. **FRAME:** Use frame picture. **adapt (standard mode):** Set the ratio of converting from frames or fields to the standard ratio when up-converting. **adap2 (still playback priority mode):** Set a higher ratio of converting from frames when up-converting. **adap3 (motion priority mode):** Set a higher ratio of converting from fields when up-converting.
954	DETAIL GAIN (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Adjust the upconverter image enhancer. Adjust the sharpness of edge enhancement. **0 to 40H to 7FH**
955	LIMITER (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Adjust the upconverter image enhancer. Adjust the maximum detail level added to emphasize the original signal. **0 to 20H to 3FH**
956	CRISP THRESHOLD (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Adjust the upconverter image enhancer. Set the threshold amplitude at which low amplitude signals are not emphasized. **0 to 8 to FH**
957	LEVEL DEPEND THRESHOLD (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Adjust the upconverter image enhancer. Set the luminance range for edge enhancement. **0 to 8 to FH**
958	H DETAIL FREQUENCY (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Adjust the upconverter image enhancer. Set the center frequency and frequency characteristic for edge enhancement. **3.2MHz:** 3.2 MHz ±1.1 MHz **4.5MHz:** 4.5 MHz ±1.4 MHz **5.0MHz:** 5.0 MHz ±0.7 MHz **4.0MHz:** 4.0 MHz ±2.0 MHz
959	H/V RATIO (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Adjust the upconverter image enhancer. Set the horizontal/vertical ratio for edge enhancement. **0 to 3 to 7**
960	GAMMA LEVEL (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Adjust the upconverter image enhancer. Adjust the slope of the correction curve. **0 to 80H to 100H**

Item number	Item name	Settings
961	BACKGROUND COLOR (UC) (HDW-D1800 only. Invalid in 24PsF or 23.98PsF mode)	Set the color of the part where no material exists (background) for up-converting. **BACKGROUND COLOR:** Set the color. **BLACK :** Black **GRAY:** Gray **BLUE:** Blue **TABLE:** Set with the following Y/P$_B$/P$_R$ tables. **Y TABLE:** Adjust the background Y level. **0 to FFH** **B-Y TABLE:** Adjust the background B-Y level. **0 to 80 to FFH** **R-Y TABLE:** Adjust the background R-Y level. **0 to 80 to FFH**

a) This menu item is enabled only on HDW-1800 (SYL) units having a serial number 10059 or higher, on HDW-1800 (CNB) units having a serial number 51001 or higher, HDW-D1800 (SYL) units having a serial number 10037 or higher, and HDW-D1800 (CNB) units having a serial number 51001 or higher.

b) When tapes recorded in 1035i format are played, the signals are down converted to 1080i signals. If the HKDW-104 option board is installed, this setting is valid in the 23.98PD1 and 23.98PD2 modes as well.

c) The HDW-2000 Series include VTR models containing one of the following HIF-1 boards.
- HIF-1 COMPL (A-8327-055-A to D)
- HIF-1A COMPL (A-8327-115-A to D)
- HIF-1S COMPL (A-1358-245-A and higher)
- HIF-1AS COMPL (A-1358-248-A and higher)

Maintenance and Inspection

Chapter **10**

10-1 Removing a Cassette when Tape Slack Occurs

If tape slack occurs in the unit, it is necessary to remove the upper lid and sound baffle. This job should always be entrusted to a technician who has undergone service training.

For details, refer to the Installation Manual.

10-2 Head Cleaning

To clean the video heads and audio heads, always use the special-purpose BCT-HD12CL cleaning cassette.
If you insert the cleaning cassette, it is automatically ejected after a head cleaning operation for 10 seconds.
Follow the instructions with the cleaning cassette carefully, as inappropriate use of the cleaning cassette can damage the heads.

Note

You cannot use the BCT-5CLN cleaning cassette.

10-3 Error Messages

This unit is equipped with a self-diagnosis function. If a problem is detected, it displays an error message in the time data display and on the video monitor.
If an error message appears, contact your Sony service representative.

Indications in the time data display

If a problem is detected, the ALARM indicator in the lower control panel lights, and an error message and error code appear in the time data display area.

ALARM indicator

Time data display area
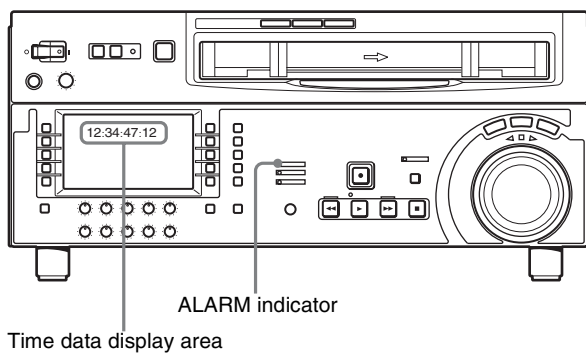
Indications on the external monitor

The error message and code also appear superimposed on a monitor connected to the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector, HDSDI OUTPUT 3 (SUPER) connector or SDI OUTPUT 3 (SUPER) connector. Depending on the error code, a secondary error message may appear indicating the location of the problem.

ERROR-01

REEL TROUBLE-1
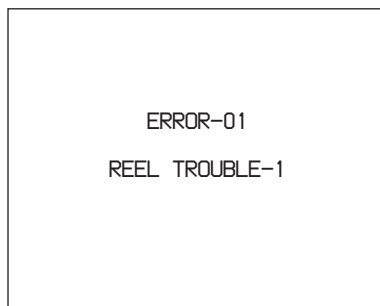
Error message displays

- To display error messages and codes superimposed on the video monitor, it is necessary to set F5 (CHARA) in function menu page P04: MISC-1 to "ON".
- Some error messages have no associated error codes. In this case, they appear in the entire area of the time data display.
- Error messages with error codes are saved in NV-RAM (non-volatile memory) as an error log.
- In some cases the error message superimposed on the external monitor is slightly different from the message displayed in the time data display.

Error Message List

Code	Message	Description
–	(ALARM indicator flashing)	Abnormal interface between the lower control panel (on KY-615 board) and SYS CPU (on SS-340 and SS-101 boards) has been detected on the lower control panel.
01	REEL TROUBLE	Tape slacking has been detected in the threading or unthreading operation.
02	REEL TROUBLE	Tape slacking or tape breaking has been detected in search, fast forward,or rewind mode.
03	REEL TROUBLE	Tape slacking, tape breaking,or supply or take-up reel locking has been detected in recording or playback mode.
04	REEL TROUBLE	Abnormal tape transport speed has been detected in fast forward or rewind mode.
05	REEL TROUBLE	Malfunction of the supply or take-up reel has been detected during cassette insertion.
06	TAPE TENSION	Excessive tape tension has been detected in recording or playback mode.
07	CAPSTAN TROUBLE	Malfunction of capstan motor has been detected.
08	DRUM TROUBLE	Malfunction of drum motor has been detected.
09	TH/UNTH MOTOR	Malfunction of threading or unthreading operation has been detected.
0A	THREADING	The tape top processing has not been completed in the threading mode.
10	HUMID	Moisture condensation has been detected.
11	TAPE T/E SENSOR	The tape top and tape end have been detected simultaneously.
12	TAPE TOP SENSOR	Malfunction of tape top sensor has been detected.
13	TAPE END SENSOR	Malfunction of tape end sensor has been detected.
14	FAN MOTOR	Malfunction of cooling fan motor has been detected.
20	CASS COMP MOTOR	Malfunction of cassette compartment up or down operation has been detected.
21	REEL SFT MOTOR	Malfunction of movement of the reel table corresponding to the cassette size has been detected.
22	REEL POS SENSOR	The L-cassette and S-cassette positions of the reel table have been detected simultaneously.
23	THRED RING SENS	The thread end and unthread end states of the threading ring have been detected simultaneously.
92	INTERNAL I/F1	Abnormal interface between SYS CPU (on SS-101 board) and other CPU/MPU has been detected.
93	CPU INITIALIZE ERROR	Abnormal interface between SV CPU (on SS-101 board) and DRUM CPU (on DR-508 board) has been detected.
95	OTHERS NV-RAM ERROR	Abnormal operation has been detected on NV-RAM on FP-153 board.
96	SY NV-RAM ERROR	Abnormal operation has been detected on NV-RAM (on SS-101 board) for the system control.
97	SV NV-RAM	Abnormal operation has been detected on NV-RAM (on DR-508 board) for the servo system.
98	RF NV-RAM ERROR	Abnormal operation has been detected on NV-RAM (on EQ-104 board) for the RF system.
99	INTERNAL I/F 2	Abnormal interface between SYS CPU (on SS-101 board) and SERVO CPU (on SS-101 board) or among each board (EQ-104, HPR-21, VPR-98, APR-80, SY-340 or KY-615 board) has been detected.

10-4 Moisture Condensation

When the unit is suddenly moved from a cold to a warm location, or used in a very humid place, moisture from the air can condense on the head-drum. This is called moisture condensation. If the tape is run in this state, it can adhere to the drum and damage the tape. To prevent this, the unit is provided with a moisture detecting function.
If moisture condenses on the head-drum while the unit is in use, the ALARM indicator lights and "ERR-10" is displayed in the time data display.
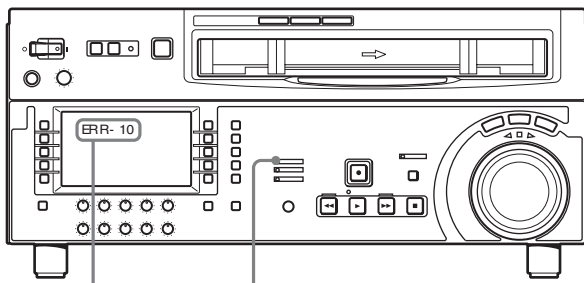
ALARM indicator

"ERR-10" appears in the time data display.

If this happens, the drum and capstan motors stop and the cassette is automatically ejected. Then, the drum starts to rotate again to dry its surface. In this state, the unit is not operable. When the moisture has evaporated, the error message disappears and the ALARM indicator goes off.

If "ERR-10" appears and the ALARM indicator lights immediately after powering the unit on

Leave the unit powered on and wait until the error message disappears and the ALARM indicator goes off.
While the indicator is lit, you cannot insert a cassette.
When the indicator goes off and the error message disappears, you can use the unit.

If you move the unit from a cold to a warm location

Leave the unit powered off for about 10 minutes, since it takes some time to detect moisture condensation in this state.

10-5 Regular Checks

10-5-1 Digital Hours Meter

The digital hours meter in the time data display can display seven items of information about the operational history of the unit in each corresponding mode. Use it as a guide in scheduling periodic maintenance.

Display modes of the hours meter

H01: OPERATION mode
Displays the total number of hours the unit has been powered on in units of 1 hour.

H02: DRUM RUNNING mode
Displays the total number of hours the drum has run with tape threaded in units of 1 hour.

H03: TAPE RUNNING mode
Displays the total number of hours the unit has been in fast forward, rewind, playback, search, recording or editing (except for stop and still) mode in units of 1 hour.

H04: THREADING mode
Displays the total number of times tape has been threaded in the unit.

H12: DRUM RUNNING mode (resettable)
Same as H02 except that the count is resettable.
This can be used as a guide in determining when to replace the drum.

H13: TAPE RUNNING mode (resettable)
Same as H03 except that the count is resettable.
This can be used as a guide in determining when to replace components such as fixed heads and pinch rollers.

H14: THREADING mode (resettable)
Same as H04 except that the count is resettable.
This can be used as a guide in determining when to replace components such as the threading motor.

To display the digital hours meter

MULTI CONTROL knob

F9 (MENU)
F10 (EXIT)

Select F9 (MENU), then turn the MULTI CONTROL knob to display the required item in the time data display.
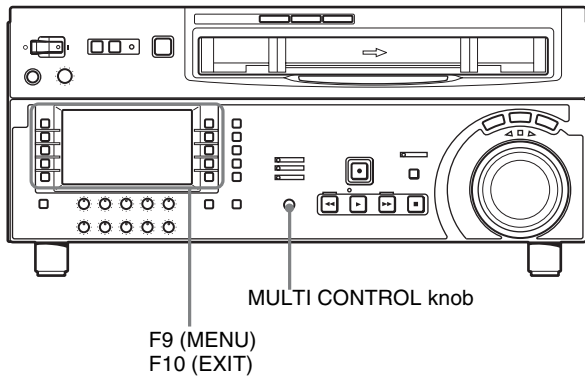
To exit the digital hours meter
Select F10 (EXIT).

10-5-2 Maintenance Timings

Use the following table as a timing guide for checking and replacing components of the unit.
These intervals are not guaranteed lifetimes; the timing for replacing components depends on the conditions of use. In particular, depending on the degree of contamination and abrasion, pinch rollers and cleaners may require replacement earlier than suggested by this table.

Note that an arrow in the table means that the component to be replaced is part of the assembly the arrow points to, which must be replaced as a whole.

For information on severe conditions (frequent threading/ unthreading) or how to replace components, refer to the Maintenance Manual Volume 1.

Component	Digital hours meter indication (menu item number in parenthesis)	Guideline for replacement and checking intervals					
		R: Replace C: Check, and replace if necessary					
		1000 (h)	2000	3000	4000	5000	6000
Upper drum	Drum running time (H02)			C	C	C	C(↓)
Drum assembly							C
Brush slip ring assembly				R			R(↑)
Video head cleaner (roller)				R			R
Pinch roller assembly	Tape running time (H03)			R			R
Reel table assembly					R (Replace every 4,000 hours.)		
Pinch application assembly	Tape running time (H03)						R
Fan motor (card)	Operation time (H01)	Replace every 40,000 hours					
Fan motor (MD)		Replace every 40,000 hours					
Fan motor (power supply)		Replace every 40,000 hours					

Note

For replacement and checking of components, contact a Sony service or marketing representative.

10-6 About the LCD

Note on faulty pixels on the LCD panel

The LCD panel fitted to this unit is manufactured with high precision technology, giving a functioning pixel ratio of at least 99.99%. Thus a very small proportion of pixels maybe "stuck", either always off (black), always on (red, green, or blue), or flashing. In addition, over a long period of use, because of the physical characteristics of the liquid crystal display, such "stuck" pixels may appear spontaneously. These problems are not a malfunction. Note that any such problems have no effect on recorded data.

Appendix

Specifications

General

Recording format   HDCAM
Power requirements
   100 to 240 V AC, 50/60 Hz
Power consumption
   1.5 A (150 W), when used without
   optional devices
Peak inrush current
   (1) Power ON, current probe method:
   10 A (100 V), 33 A (240 V)
   (2) Hot switching inrush current,
   measured in accordance with
   European standard EN55103-1: 8
   A (230 V)
Operating temperature
   5ºC to 40ºC (41ºF to 104ºF)
Storage temperature
   –20ºC to +60ºC (–4ºF to +140ºF)
Humidity 20% to 90%
Mass   22 kg (48 lb 8 oz)
Dimensions (w/h/d, excluding protruding parts)
   427 × 174 × 544 mm
   ($16^7/_8 \times 7^7/_8 \times 21^1/_2$ inches)

Control panel

LCD   4.3-inch screen, 16:9 aspect ratio, wide
   TFT LCD
   Total pixels: 480 (H) × 272 (V)
   Colors: Approx. 16.77 million colors
   Backlight: LED backlight

Tape transport system

Tape speed HDCAM:
   96.7 mm/s (59.94i, 29.97PsF)
   80.6 mm/s (50i, 25PsF),
   77.4 mm/s (24PsF, 23.98PsF)
   Digital Betacam:

   96.7 mm/s (HDW-D1800 only)
   MPEG IMX:
   64.5 mm/s (59.94i),
   53.8 mm/s (50i) (HDW-D1800
   only)
HDCAM record/playback time
   124 minutes with BCT-124HDL
   (59.94i, 29.97PsF)
   149 minutes with BCT-124HDL (50i,
   25PsF)
   155 minutes with BCT-124HDL
   (24PsF, 23.98PsF)
Digital Betacam playback time (HDW-D1800 only)
   124 minutes with BCT-124L
MPEG IMX playback time (HDW-D1800 only)
   184 minutes with BCT-184MXL
   (59.94i)
   220 minutes with BCT-184MXL
   (50i)
Fast forward/rewind time
   Approx. 3 minutes with BCT-124HDL
Search speed
 Shuttle mode HDCAM playback:
   Still to approx. ±50 times normal
   speed (59.94i, 29.97PsF),
   Still to approx. ±58 times normal
   speed (50i, 25PsF),
   Still to approx. ±60 times normal
   speed (24PsF, 23.98PsF)
   Digital Betacam playback (HDW-
   D1800 only):
   Still to approx. ±50 times normal
   speed
   MPEG IMX playback (HDW-D1800
   only):
   Still to approx. ±78 times normal
   speed
 Variable speed mode
   HDCAM playback: –1 to +2 times
   normal speed
   Digital Betacam playback: –1 to +3
   times normal speed (HDW-D1800
   only)

MPEG IMX playback: –1 to +3 times normal speed (HDW-D1800 only)
Jog mode   Still to ±1 times normal speed
Servo lock time   0.6 (59.94i, 29.97PsF)/0.7 (50i, 25PsF, 24PsF, 23.98PsF) seconds or less (from standby on)
Load/unload time   6 seconds or less
Recommended tapes

    HDCAM cassettes:
      BCT-6HD/12HD/22HD/32HD/ 40HD
      BCT-34HDL/64HDL/94HDL/ 124HDL
    Digital Betacam cassettes (HDW-D1800 only)
    MPEG IMX cassettes (HDW-D1800 only)

Digital video system

Digital video signal system

Sampling frequency

    Y: 74.25 MHz
    R–Y/B–Y: 37.125 MHz
Quantization   8 bits/sample
Compression   Coefficient recording system
Channel coding   S-I-NRZI PR-IV
Error correction   Reed-Solomon code

Analog composite output

Bandwidth   0 to 5.75 MHz +0.5 dB/–3.0 dB
S/N ratio   53 dB or more
Differential gain   2% or less
Differential phase   2°or less
Y/C delay   20ns or less
K factor (2T pulse)

    1% or less
Output SCH phase

    Complies with RS-170A/CCIR R.624- 3 (adjustable from menus)

Digital audio system

Digital audio (CH1 to CH4) signal format

Sampling frequency

    48 kHz (synchronized with video)
Quantization   20 bits/sample
Wow and flutter   Below measurable level
Headroom   20 dB (or 18 dB, selectable)
Emphasis   T1= 50 μs, T2=15 μs (on/off selectable in recording mode)

Analog input/output (CH1 and CH2)

A/D, D/A quantization

    20 bits/sample
Frequency response

    20 Hz to 20 kHz, +0.5 dB/ –1.0 dB (0 dB at 1 kHz)
Dynamic range   95 dB or more (at 1 kHz, emphasis on)
Distortion   0.05% or less (at 1 kHz, emphasis on, reference level (+4 dBm))
Crosstalk   –80 dB or less (at 1 kHz, between any two channels)

Analog audio (CUE)

Frequency response

    100 Hz to 12 kHz ±3 dB
S/N ratio   45 dB or more (at 3% distortion level)
Distortion   2% or less (THD 1 kHz, reference level)
Wow and flutter   0.2% rms or less

Digital Betacam playback

Video

Bandwidth	Y	0 to 5.75 MHz +0.5 dB/–0.5 dB
	R–Y/B–Y	0 to 2.75 MHz +0.5 dB/–0.5 dB
S/N ratio		62 dB or more
K factor		1% or less

Digital Audio (CH1 to CH4)

Frequency response	20 Hz to 20 kHz +0.5 dB/–1.0 dB
Dynamic range	95 dB (at 1 kHz, emphasis on)
Distortion	0.05% rms or less (at 1 kHz, emphasis on)
Wow and flutter	Below measurable level

Analog Audio (cue track)

Frequency response	100 Hz to 12 kHz +3 dB/–3 dB

S/N ratio	45 dB or more (at 3% distortion level)
Distortion	2% or less (THD 1 kHz, reference level)
Wow and flutter	0.2% rms or less

MPEG IMX playback

Video

Bandwidth	Y	0 to 5.75 MHz +0.5 dB/–2.0 dB
	R–Y/B–Y	0 to 2.75 MHz +0.5 dB/–2.0 dB
S/N ratio		56 dB or more
K factor		1% or less

Digital Audio (CH1 to CH4)

Frequency response	20 Hz to 20 kHz +0.5 dB/–1.0 dB (0 dB at 1 kHz)
Dynamic range	90 dB or more (at 1 kHz, emphasis on, 16 bits/48 kHz)
Distortion	0.05% or less (at 1 kHz, emphasis on, reference level (+4 dBm))

Processor adjustment range

Video level   ±3 dB/ –∞ to +3 dB selectable
Chroma level   ±3 dB/ –∞ to +3 dB selectable
Setup level (59.94i, 29.97PsF)
     ±30 IRE
Black level (50i, 25PsF)
     ±210 mV
Chroma phase   ±30º
System phase   SYNC: ±15 μs
     SC: ±200 ns

Input connectors

HDSDI INPUT   BNC (1 for input)
     Serial digital (1.485 Gbits/s)
     SMPTE 292M
REF.VIDEO INPUT 1
     BNC (2 in loop through connection)
   HD   Tri-level SYNC
     0.6 Vp-p, 75 Ω, sync negative
   SD   Black burst or composite sync
     0.3 Vp-p, 75 Ω, sync negative
     Selecting HD or SD in a menu
REF.VIDEO INPUT 2 (OPTION)
     BNC (2 in loop through connection)
   HD   Tri-level SYNC
     0.6 Vp-p, 75 Ω, sync negative
   SD   Black burst or composite sync
     0.3 Vp-p, 75 Ω, sync negative
     Selecting HD or SD in a menu
AUDIO INPUT CH1/2
     XLR 3-pin, female (2)
     LOW OFF: –60 dBu, high impedance,
       balanced

HIGH OFF: +4 dBu, high impedance,
       balanced
HIGH ON: +4 dBm, 600 Ω
       termination, balanced
AUDIO INPUT (AES/EBU) CH1/2, CH3/4
     BNC (2)
     Complies with AES-3id-1995
TIME CODE IN   XLR 3-pin, female (1)
     0.5 to 18 Vp-p, 10 kΩ, balanced
HDV IN   6-pin, complies with IEEE 1394
       (option)

Output connectors

HDSDI OUTPUT   BNC (3 including 1 for character
       superimposition)
     Serial digital (1.485 Gbits/s)
     SMPTE 292M
COMPOSITE VIDEO OUTPUT
     BNC (3 including 1 for character
       superimposition)
     1.0 Vp-p, 75 Ω, Sync negative
SDI OUTPUT   BNC (3 including 1 for character
       superimpositon)
     Serial digital (270 Mbits/s)
     SMPTE 259M
AUDIO OUTPUT CH1/2
     XLR 3-pin, male (2)
     +4 dBm at 600 Ω load, low
       impedance, balanced
AUDIO OUTPUT (AES/EBU) CH1/2, CH3/4, CH5/6,
       CH7/8
     BNC (4)
     Complies with AES-3id-1995
     (CH1/2 and CH3/4 only for HDW-
       1800)

MONITOR OUTPUT (L/R)
　　　　　　　　XLR 3-pin, male (2)
　　　　　　　　+4 dBm at 600 Ω load, low
　　　　　　　　　　impedance, balanced
TIME CODE OUT
　　　　　　　　XLR 3-pin, male (1)
　　　　　　　　2.2 Vp-p, low impedance, balanced
PHONES　　　　JM-60 stereo phone jack
　　　　　　　　–∞ to –12 dBu at 8 Ω load,
　　　　　　　　　　unbalanced

Remote connectors

CONTROL PANEL
　　　　　　　　20-pin, female (switch panel only)
REMOTE 1-IN(9P)
　　　　　　　　D-sub 9-pin, female
REMOTE 1-OUT(9P)
　　　　　　　　D-sub 9-pin, female
RS232C　　　　D-sub 9-pin, male
VIDEO CONTROL(9P)
　　　　　　　　D-sub 9-pin, female (for optional
　　　　　　　　　　HKDV-900)
REMOTE 2 PARALLEL I/O(50P)
　　　　　　　　50-pin, female

"Memory Stick" slot

"Memory Stick"　(8 to 128 MB)

Accessories supplied

PSW 4 × 16 screws for rack mounting (4)
CD-ROM Manual (1)
Installation Manual (1)
Operation Guide (1)

Optional accessories

HKDW-104 Pull-down/720P Board
HKDW-105 i.LINK (HDV) Input Board
RCC-5G 9-pin Remote Control Cable
HKDV-900 Video Remote Controller
RMM-131 Rack Mount Adaptor
BCT-HD12CL Cleaning Cassette Tape
AC power cord
• For customers in the U.S.A. and Canada
　Part No. 1-551-812-31
　Plug holder 3-613-640-01
• For customers in the United Kingdom
　Part No. 1-777-823-12
　Plug holder 3-613-640-01
• For customers in European countries other than the
　United Kingdom
　Part No. 1-551-631-15
　Plug holder 3-613-640-01

Design and specifications are subject to change without
notice.

**To prevent electromagnetic interference from
portable communications devices**
The use of portable telephones and other
communications devices near this unit can result in
misoperations and interference with audio and video
signals.
It is recommended that portable communications
devices near this unit be powered off.

Notes
• Always make a test recording, and verify that it
  was recorded successfully.
  SONY WILL NOT BE LIABLE FOR DAMAGES
  OF ANY KIND INCLUDING, BUT NOT
  LIMITED TO, COMPENSATION OR
  REIMBURSEMENT ON ACCOUNT OF
  FAILURE OF THIS UNIT OR ITS RECORDING
  MEDIA, EXTERNAL STORAGE SYSTEMS OR
  ANY OTHER MEDIA OR STORAGE SYSTEMS
  TO RECORD CONTENT OF ANY TYPE.
• Always verify that the unit is operating properly
  before use. SONY WILL NOT BE LIABLE FOR
  DAMAGES OF ANY KIND INCLUDING, BUT
  NOT LIMITED TO, COMPENSATION OR
  REIMBURSEMENT ON ACCOUNT OF THE
  LOSS OF PRESENT OR PROSPECTIVE
  PROFITS DUE TO FAILURE OF THIS UNIT,
  EITHER DURING THE WARRANTY PERIOD
  OR AFTER EXPIRATION OF THE
  WARRANTY, OR FOR ANY OTHER REASON
  WHATSOEVER.

Relation between HKDV-900/503 setting items and setup menu items of this unit

HKDV-900/503 setting items	Setup menu items of this unit
HD Master	740: MASTER LEVEL (HD) [a]
HD Y	741: Y LEVEL (HD) [a]
HD Pb	742: P_B LEVEL (HD) [a]
HD Pr	743: P_R LEVEL (HD) [a]
HD Setup	745: SETUP LEVEL (HD) [a]
HD Sync Phase	746: SYNC PHASE (HD) [a]
HD Fine	747: SYNC PHASE FINE (HD) [a]
D1 Master	No corresponding menu item
D1 Y	No corresponding menu item
D1 B-Y	No corresponding menu item
D1 R-Y	No corresponding menu item
D2 VIDEO	715: VIDEO GAIN CONTROL [a]
D2 CHROMA	716: CHROMA GAIN CONTROL [a]
D2 HUE	717: CHROMA PHASE CONTROL (HD/DC/SD/UC) [a]
SETUP	713: VIDEO SETUP REFERENCE LEVEL: OUTPUT LEVEL [a, c]
	718: SETUP(BLACK) LEVEL [a, c]
SD Sync Phase	719: SYSTEM PHASE SYNC
SD Fine	720: SYSTEM PHASE SC
CROSS COLOR	934: CROSS COLOR (DC)
H CROP POSITION	932: H CROP POSITION (DC)/951: H CROP POSITION (UC) [b]
V LETTER POSITION	952: LETTER BOX POSITION (UC)
DETAIL GAIN	935: DETAIL GAIN (DC)/954: DETAIL GAIN (UC) [b]
LIMITER	936: LIMITER (DC)/955: LIMITER (UC) [b]
CRISP	937: CRISP THRESHOLD (DC)/956: CRISP THRESHOLD (UC) [b]
DEPEND	938: LEVEL DEPEND THRESHOLD (DC)/957: LEVEL DEPEND THRESHOLD (UC) [b]
FREQUENCY	939: H DETAIL FREQUENCY (DC)/958: H DETAIL FREQUENCY (UC) [b]
H/V RATIO	940: H/V RATIO (DC)/959: H/V RATIO (UC) [b]
GAMMA	941: GAMMA LEVEL (DC)/960: GAMMA LEVEL (UC) [b]
CROP	930: DOWN CONVERTER MODE/950: UP CONVERTER MODE [b]
LETTER BOX	930: DOWN CONVERTER MODE/950: UP CONVERTER MODE [b]
SQUEEZE	930: DOWN CONVERTER MODE/950: UP CONVERTER MODE [b]

a) Valid for output only when F5 (V.PROC) in function menu page P03: VID PROC is set to "MENU".
b) Select which item is set, "DC" or "UC", with menu item 212 "VIDEO REMOTE CONTROL SELECT". When both are selected (menu item 212 is set to "u&d"), both of the corresponding menu settings are made, but this unit's return values and unity values are the DC values.
c) Select which menu item is set, 713 or 718 with the sub-item of menu item 212 "VIDEO REMOTE CONTROL SELECT".

Menu items specify output as follows.
HD: HDSDI output during HDCAM playback
DC: Downconverted SD (D1 SDI/COMPOSITE) output during HDCAM playback
SD: SD (D1 SDI/COMPOSITE) output during SD format playback
UC: Upconverted HDSDI output during SD format playback

HD/SD video output phase settings

For the HD/SD video output phase setting, you can use the maintenance menu.

For details, refer to the Maintenance Manual.

Item number	Item name	Settings	
M3	M3A: OUTPUT PHASE SELECT	M3A0: HD PHASE SEL	Select the HD video output signal phase with respect to the reference signal: 0H or –90H (HD) advanced. **0H:** Output in sync with the reference signal. **–90H:** Output with the phase advanced by –90H (HD) with respect to the reference signal.
		M3A1: SD PHASE SEL	Select the SD video output signal phase with respect to the reference signal: 0H or –2H (SD) advanced. **0H:** Output in sync with the reference signal. **–2H:** Output with the phase advanced by –2H (SD) with respect to the reference signal.
		M3A2: SD UPCNV SEL	Select whether the SD video output signal phase in SD tape playback should be in sync or one frame delayed. **Noml:** Output the SD video with the phase unchanged. (The HD video output is delayed by one frame with respect to the reference signal.) **HD:** Output the SD video with the phase delayed by one frame. (The HD video output and SD video output are in sync with the reference signal.)

Notes

- The SDSDI (D1) output and composite output have the same phase.
- Item M3A2 is valid HDW-D1800 only.

For details of the audio/timecode output phase, see setup menu item 338.

Compatibility of playback tape formats

Playback tape format		System frequency					
		23.98PsF	24PsF	25PsF	50i	29.97PsF	59.94i
HDCAM	23.98PsF	Yes	△	△		▲	
	24PsF	△	Yes				
	25PsF	△		Yes		▲	
	50i						
	29.97PsF	▲		▲		Yes	
	59.94i						
	30PsF	▲		▲		△	
	60i						
Digital Betacam [a]	50i (PAL)	No		Yes		No	
	59.94i (NTSC)			No		Yes	
MPEG IMX [a]	50i (PAL)			Yes		No	
	59.94i (NTSC)			No		Yes	

Yes: Both video and audio playback is possible.
△: Both video and audio "off-speed" playback is possible.
▲: Video only "off-speed" playback is possible. Audio is muted.
No: Neither video nor audio playback is possible.
a) HDW-D1800 only

Note

If the playback tape format and system frequency are different, the input channel number display in audio level meter block 1 ③ *(see page 15)* flashes.

Appendix

Playback tape format conversion outputs

Playback tape format		System frequency					
		23.98PsF	24PsF	25PsF	50i	29.97PsF	59.94i
HDCAM	**23.98PsF**	No		No		No	
	24PsF						
	25PsF	No		Yes [a]		No	
	50i						
	29.97PsF	No		No		Yes [b]	
	59.94i						
	30PsF	No		No		No	
	60i						
Digital Betacam [e]	**50i (PAL)**	No		Yes [c]		No	
	59.94i (NTSC)			No		Yes [d]	
MPEG IMX [e]	**50i (PAL)**			Yes [c]		No	
	59.94i (NTSC)			No		Yes [d]	

a) For 1080/25PsF or 50i, output is downcoverted to 576/50i.
b) For 1080/29.97PsF or 59.94i, output is downcoverted to 480/59.94i.
c) For 576/50i, output is upconverted to 1080/50i.
d) For 480/59.94i, output is upconverted to 1080/59.94i.
e) HDW-D1800 only

About a "Memory Stick"

What is "Memory Stick"?

"Memory Stick" is a new compact, portable and versatile IC (Integrated Circuit) recording medium with a data capacity that exceeds a floppy disk. "Memory Stick" is specially designed for exchanging and sharing digital data among "Memory Stick" compatible products. Because it is removable, "Memory Stick" can also be used for external data storage.

"Memory Stick" is available in two sizes: standard size and compact "Memory Stick Duo" size. Once attached to a "Memory Stick Duo" adaptor, "Memory Stick Duo" turns to the same size as standard "Memory Stick" and thus can be used with products compliant with standard "Memory Stick".

Types of "Memory Stick"

"Memory Stick" is available in the following five types to meet various requirements in functions.

"Memory Stick-R"
Stored data are not overwritten. You can write data to "Memory Stick-R" with "Memory Stick-R" compatible products only. Copyright protected data that requires MagicGate copyright protection technology cannot be written to "Memory Stick-R".

"Memory Stick"
Stores any type of data except copyright-protected data that requires the MagicGate copyright protection technology.

"MagicGate Memory Stick"
Equipped with the MagicGate copyright protection technology.

"Memory Stick-ROM"
Stores pre-recorded, read-only data. You cannot record on "Memory Stick-ROM" or erase the pre-recorded data.

"Memory Stick PRO"
Equipped with MagicGate copyright protection technology. Offers greater recording capacity than previous "Memory Stick" products.

Available types of "Memory Stick"

You can use a "Memory Stick", "Memory Stick PRO" and a "MagicGate Memory Stick" with your product.

Notes
• You cannot use a "Memory Stick Duo" with your product.

• This unit does not support "Memory Stick PRO" products with more than 2 gigabytes of capacity.

Note on data read/write speed

Data read/write speed may vary depending on the combination of the "Memory Stick" and "Memory Stick" compliant product you use.

What is MagicGate?

MagicGate is copyright protection technology that uses encryption technology.

Before using a "Memory Stick"

Terminal

Write-protect tab

Labeling position
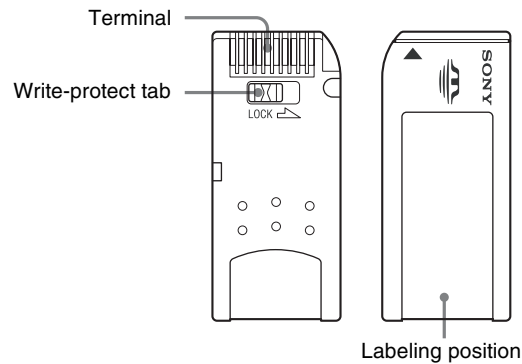
• When you set the "Memory Stick" erasure prevention switch to "LOCK", data cannot be recorded, edited, or erased.
• Data may be damaged if:
  - You remove the "Memory Stick" or turn off the unit while it is reading or writing data.
  - You use the "Memory Stick" in a location subject to the effects of static electricity or electric noise.
• We recommend that you make a backup copy of important data that you record on the "Memory Stick".

Notes
• Do not attach anything other than the supplied label to the "Memory Stick" labeling position.
• Attach the label so that it does not stick out beyond the labeling position.
• Carry and store the "Memory Stick" in its case.
• Do not touch the connector of the "Memory Stick" with anything, including your finger or metallic objects.
• Do not strike, bend, or drop the "Memory Stick".
• Do not disassemble or modify the "Memory Stick".
• Do not allow the "Memory Stick" to get wet.
• Do not use or store the "Memory Stick" in a location that is:
  - Extremely hot, such as in a car parked in the sun
  - Under direct sunlight
  - Very humid or subject to corrosive substances

Appendix

"Memory Stick" access indicator

If the access indicator is lit on or is flashing, data is being read from or written to the "Memory Stick". At this time, do not shake the computer or product or subject them to shock. Do not turn off the power of the computer and product or remove the "Memory Stick". This may damage the data.

Precautions

- To prevent data loss, make backups of data frequently. In no event will Sony be liable for any loss of data.
- Unauthorized recording may be contrary to the provisions of copyright law. When you use a "Memory Stick" that has been pre-recorded, be sure that the material has been recorded in accordance with copyright and other applicable laws.
- The "Memory Stick" application software may be modified or changed by Sony without prior notice.
- Note that there are certain restrictions on recording stage performances and other entertainment events, even if they are recorded for personal use only.

- "Memory Stick", ![Memory Stick logo] and "MagicGate Memory Stick" are trademarks of Sony Corporation.
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- "Memory Stick PRO" and MEMORY STICK PRO are trademarks of Sony Corporation.
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