

# Panasonic

**DVCPRO 50**

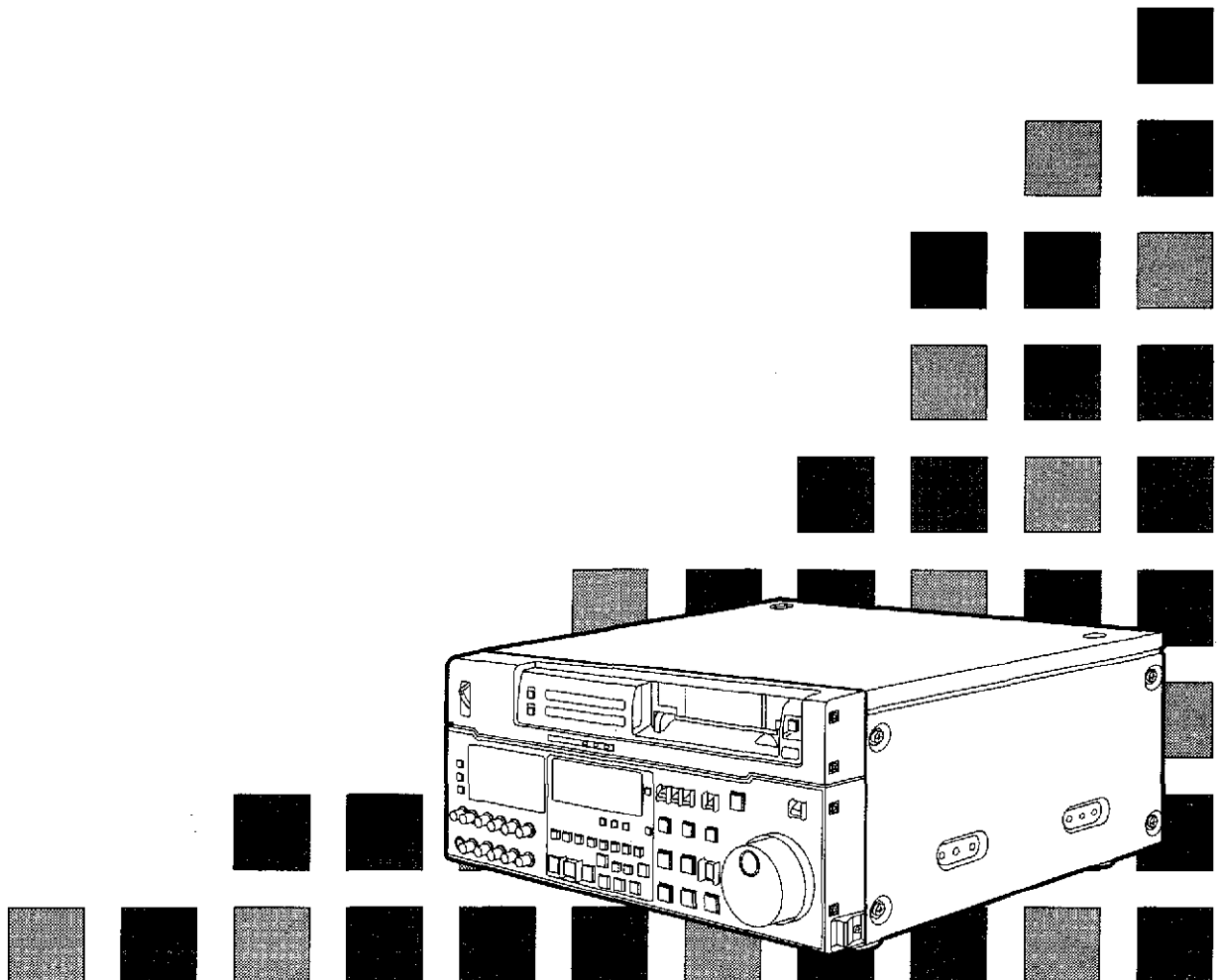
**DVCPRO P**

Digital Video Cassette Recorder

AJ-D950

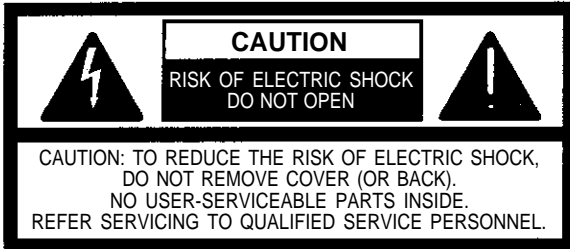
AJ-PD950

## Operating Instructions



## IMPORTANT

“Unauthorized recording of copyrighted television programs, video tapes and other materials may infringe the right of copyright owners and be contrary to copyright laws.”



The lightning flash with arrowhead symbol, within an equilateral triangle, 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.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### CAUTION:

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

### WARNING:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

### CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, REFER MOUNTING OF THE OPTIONAL BOARD TO AUTHORIZED SERVICE PERSONNEL.

### FCC Note:

This device complies with Part 15 of the FCC Rules. To assure continued compliance follow the attached installation instructions and do not make any unauthorized modifications.

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.

 is the safety information.

- Do not insert fingers or any objects into the video cassette holder.
- Avoid operating or leaving the unit near strong magnetic fields. Be especially careful of large audio speakers.
- Avoid operating or storing the unit in an excessively hot, cold, or damp environment as this may result in damage both to the recorder and to the tape.
- Do not spray any cleaner or wax directly on the unit.
- If the unit is not going to be used for a length of time, protect it from dirt and dust.
- Do not leave a cassette in the recorder when not in use.
- Do not block the ventilation slots of the unit.
- Use this unit horizontally and do not place anything on the top panel.
- Cassette tape can be used only for one-side, one direction recording. Two-way or two-track recordings cannot be made.
- Cassette tape can be used for either Color or Black & White recording.
- Do not attempt to disassemble the recorder. There are no user serviceable parts inside.
- If any liquid spills inside the recorder, have the recorder examined for possible damage.
- Refer any needed servicing to authorized service personnel.

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**Before operating this unit, check that all of its accessories are present and accounted for.**

Power cord.... 1 pc

**Option**

- AJ-MA75P Rack mounting adaptor

# General and Features

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This multi-purpose studio digital video cassette recorder uses 1/4-inch compact video cassette tapes, and it is designed to record, playback and edit both interlace signals (525i/625i, 50 Mbps recording rate) and progressive signals (525p)\* as well as record and play back existing DVCPRO signals (25 Mbps). Its 525/625 switching function makes this a studio video cassette recorder which can be used anywhere in the world. In addition, it incorporates digital compression technology so that the deterioration in picture quality and sound quality resulting from dubbing is significantly minimized.

The compact, lightweight 4U size makes carrying easier, even when mounted in a 19-inch rack. The settings for the unit's setup can be performed interactively while viewing the screen menus on the TV monitor, and editing functions include both assemble and insert editing.

The editing functions do not work when using this unit in DVCPRO (25 Mbps) mode.

## Features

### **Compact size and light weight**

This is a 4U-size digital VTR. It can be mounted in a 19-inch rack with ease using the optional rack-mounting adaptors (AJ-MA75P).

### **Up to 92 minutes of recording**

Two sizes of cassette tapes can be used with this unit: M cassette (max. 33 minutes) and L cassettes (max. 92 minutes). The width of the tapes measures 1/4 inch to achieve a compact design.

### **Superior Picture quality**

Superior picture quality is delivered in the component signal and the 4:2:0p progressive signal\* recording mode.

### **Switchable 525i/625i/525p\***

The video input signal switch (settings: 525i/625i/525p\*) can be set to accommodate the recording and playback of each type of signal.

### **SDI interface**

This product's standard features include 4:2:2/4:2:0p\* serial digital interface.

### **Playback compatibility with DVCPRO**

This product is also capable of recording in the existing DVCPRO format and playing back tapes which have been recorded using this format.

### **Digital slow motion/dial jog**

With Panasonic's unique digital slow motion technology, slow motion playback images are clear at the following speeds: -0.43/-0.3/-0.2/-0.1/-0.03/+0.03/+0.1/+0.2/+0.3/+0.5/+0.75

#### **<Note>**

- Some noise may occur when the slow motion speed is changed.

### **Dial shuttle**

Shuttle operations enable the tape to be played back with color images at a speed of up to 32 times the forward and reverse direction.

### **Time codes**

This unit comes with a built-in time code generator (TCG)/time code reader (TCR). In addition to the internal time code, an external code input or input signal VITC can be recorded on this VTR as the LTC time code.

\*Applies only to AJ-PD950.

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## Features

(continued)

### **Multifunctional interface**

- **Serial digital input/output**

The component serial interface, a standard feature, allows for interfacing with progressive signals\* and component signals in serial digital (SMPTE259M-C, 272M, 294M\*).

- **Analog video input/output**

Analog component input/output signals (Y, Pb, Pr) as well as composite input/output signals are standard feature.

- **AES/EBU audio input/output**

Digital audio input/output connectors are featured.

- **SDTI input/output**

- **9-pin (RS-422A)/(RS-232C) remote**

In addition to the standard 9-pin serial remote (RS-422A), RS-232C and 25-pin parallel remote connectors are also featured.

The RS-422A connector enables another VTR to be operated in parallel with the unit if a looping connection is used for the two units.

### **4-channel high-sound-quality digital audio**

The 4-channel PCM audio allows for not only independent editing and mixing on all four channels. One channel is provided for the analog CUE track.

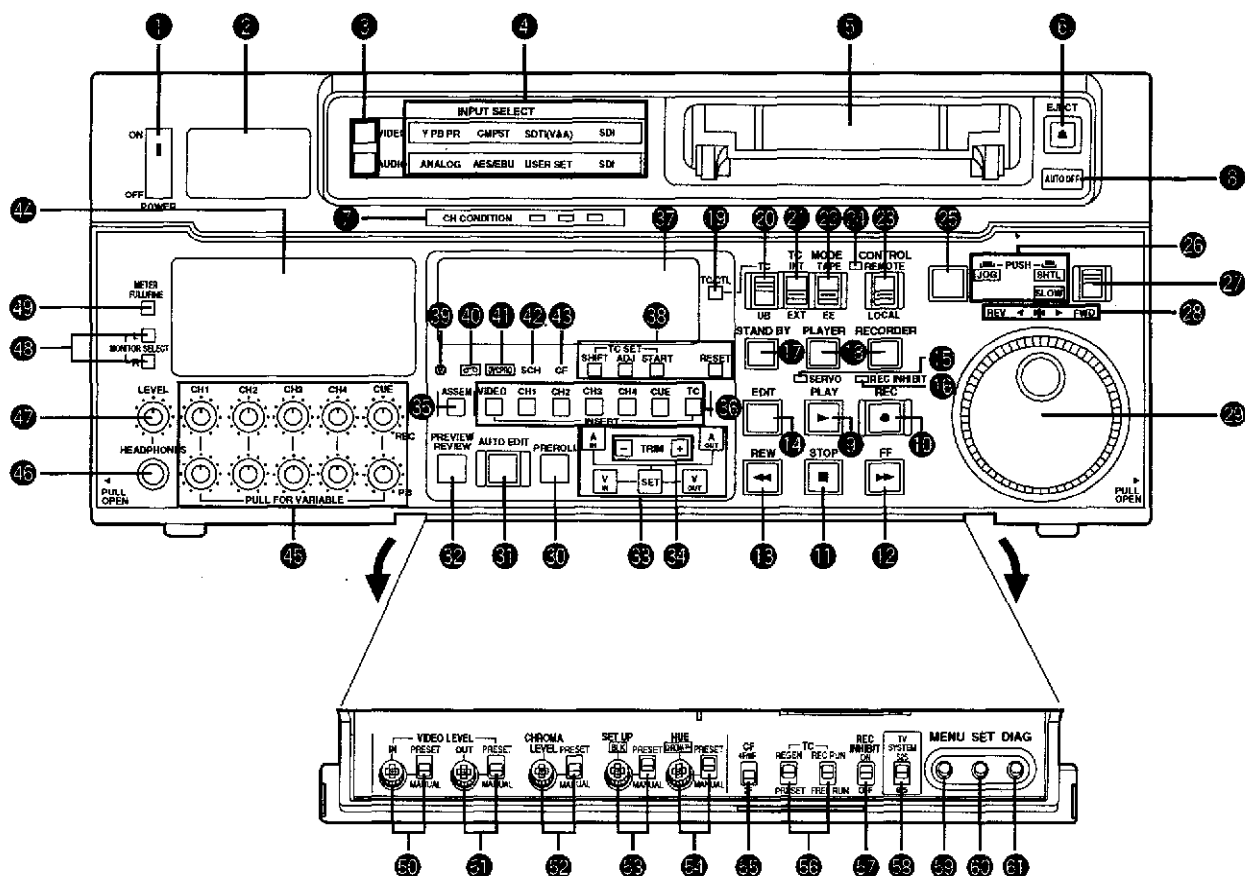
### **Menu-driven setup**

The setup settings, which are conducted prior to operating the unit are performed while viewing the setup menus either on the unit's display or a TV monitor.

\*Applies only to  
AJ-PD950.

# Controls and their functions

## Front panel



### <Front Panel Top Section>

#### ① POWER switch

#### ② TV system/format displays

These displays indicate the type of TV system selected and tape format.

##### <525/525P\*/625>

**525:** This lights when the 525 interlaced TV system has been selected.

**525P\*:** This lights when the 525 progressive TV system is selected or is currently playing back. [The 525P setting is selected on setup menu No. 012 (SYSTEM FORMAT).]

**625:** This lights when a 625 interlaced TV system is selected.

##### <25Mbps/50Mbps>

**25Mbps:** This indicates that the tape is recorded or played back in the 25Mbps DVCPRO format.

**50Mbps:** This indicates that the tape is recorded or played back in the 50Mbps DVCPRO format.

### ③ INPUT SELECT switches

These are used to select the video and audio input signals.

#### <Video>

Each time the VIDEO button is pressed, the input video signal selection is switched in the order of Y/PB/PR, COMPOSITE, SDTI (V&A), SDI and then back to Y/PB/PR. When SDTI (V&A) is selected, both video input and audio input are switched to SDTI.

#### <Audio>

Each time the AUDIO button is pressed, the input audio signal selection is switched in the order of ANALOG, AES/EBU, USER SET, SDI and then back to ANALOG. USER SET is a feature for independently selecting the input signals to record on PCM audio signal channels 1 through 4, and is used together with the setup menu. However, when video input is set to SDTI, audio input is also forcibly set to SDTI. For instance, if USER SET is selected by INPUT SELECT and the channel selections are CH1=ANALOG on setup menu No. 715, CH2=DIGITAL on No. 716, CH2=AES on No. 719, CH3=DIGITAL on No. 717, CH3=SIF on No. 720, and CH4=ANALOG on No. 718, then analog input signals are recorded on PCM audio signal CH1 on the tape, AES/EBU digital signals on CH2, SDI input digital signals on CH3, and analog input signals on CH4.

### ④ INPUT SELECT display

The characters corresponding to the selected input signal light up.

With the exception of analog audio signals, the display flashes to alert the user when the selected input signal is not supplied.

#### <Video>

**Y PB PR:** Analog component video signal

**CMPST:** Analog composite video signal

**SDTI (V&A):** Compressed data serial digital video/audio signal (optional)

**SDI:** Serial digital video signal (SMPTE259M-C, 272M, 294M\*)

(The entire display lights when signal generation using the internal signal generator has been selected for setup menu No. 600 (INT SG).)

#### <Audio>

**ANALOG:** Analog audio signal

**AES/EBU:** Digital audio signal

**USER SET:** Selection of the audio signal to record

**SDI:** Serial digital audio signal

(The entire display lights when signal generation using the internal signal generator has been selected for setup menu No. 700 (INT SG).)

### ⑤ Cassette insertion slot

### ⑥ EJECT button

When this is pressed, the tape is unloaded and several seconds later the cassette is automatically ejected. When the counter display indicates "CTL", the display is reset.

### ⑦ Channel condition lamps

One of these lamps lights in accordance with the error rate status. (Green Amber Red)

**Green:** This lights when the error rates for the video and audio playback signals are both acceptable.

**Amber:** This lights when the error rate for the video or audio playback signals has deteriorated.

**Red:** The playback picture will remain normal even when this lamp lights.

This lights when the video or audio signals are subject to rectification or interpolation.

### ⑧ AUTO OFF lamp

This lights when trouble has arisen in the decks operation.

\*Applies only to  
AJ-PD950.

### <Front Panel Center Section>

#### 9 **PLAY button**

Playback commences when this button is pressed.

Recording commences when the button is pressed together with the REC button; manual editing commences when it is pressed together with the EDIT button during playback. However, manual editing will not be initiated if the servo is not locked.

Pressing only the PLAY button during manual editing will cut out the editing and establish the playback mode.

#### 10 **REC button**

Recording commences when this button is pressed together with the PLAY button.

When it is pressed during playback, search<sup>\*1)</sup>, fast forward or rewind, EE mode images and audio signals can be monitored for as long as it is kept depressed.

When it is pressed in the stop mode, EE mode images and sound can be monitored.

When the STOP button is pressed, the original picture and sound are restored.

#### 11 **STOP button**

When this is pressed, the tape stops traveling, and if the TAPE/EE selector switch is at TAPE, still pictures can be monitored.

The drum continues to rotate even in the stop mode, and the tape remains in close contact with the drum.

If the stop mode continues for more than a certain period of time, the unit automatically switches to the standby OFF mode in order to protect the tape.

The stop mode is established immediately after a cassette has been inserted into the unit.

#### 12 **FF button<sup>\*2)</sup>**

The tape is fast forwarded when this is pressed.

#### 13 **REW button<sup>\*2)</sup>**

The tape is rewound when this is pressed.

#### 14 **EDIT button**

For manual editing, press both this button and the PLAY button together during playback.

When the button is pressed in the stop mode, the input mode signals selected by the ASSEMBLE or INSERT button can be monitored in the EE mode.

The original picture and sound are restored when the STOP button is pressed.

When the button is pressed during playback, search<sup>\*1)</sup>, fast forward or rewind, the input signals of the mode selected by the ASSEMBLE or INSERT button can be monitored in the EE mode for as long as the button is held down.

#### 15 **SERVO lamp**

This lights when the drum servo and capstan servo have locked.

\*1) No guarantees are given for the audio playback sound in the search mode.

\*2) The FF/REW speed can be selected on the setup menu No. 102 (FF. REW MAX), and it is set to the same speed.



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## <Front Panel Center Section>

### 16 REC INHIBIT lamp

This lights when the REC INHIBIT switch in the front panel bottom section is at ON or when the accidental erasure prevention mode has been set for the cassette.  
In this state, neither recording nor editing is possible.

### 17 STAND BY button

When this is pressed, the same tension as in the regular stop mode is applied to the tape, and while the head drum continues to rotate, the button's lamp lights to indicate that the standby ON mode is established.

In the standby OFF mode, the half-loading mode is established.

When this button is pressed in the stop mode, the standby OFF mode is established, the half-loading mode is established. The lamp in the button now goes off. When the unit remains in the stop mode for longer than a predetermined period, the standby OFF mode is automatically established in order to protect the tape.

When this button or the STOP button is pressed in the standby OFF mode, the standby ON mode is established.

When a button other than the STOP button is pressed, the mode corresponding to the button pressed is established.

On-screen settings are available for the transfer time to the standby OFF mode.

### 18 PLAYER/RECORDER buttons

These buttons are operated when editing operations are conducted using the unit as the recorder and a VTR equipped with an RS-422A serial interface remote control connector (9 pins). Neither button functions when the unit is used on its own.

**PLAYER button:** When this button is pressed, its lamp lights, and the player connected to the unit can be operated by remote control. The unit's editing and tape transport buttons now control the player's functions.

**RECORDER button:** When this button is pressed, its lamp lights, and the editing and tape transport buttons control the recorder's (= the unit's) functions.

Both lamps light, and the recorder functions as the master unit for Parallel Run operations if the PLAYER or RECORDER button is pressed while "ENA" has been selected for setup menu No. 200 (PARA RUN). [However, external control can no longer be exercised from the REMOTE connector (9-pin) when this setting has been made.]

### 19 TC/CTL switch

By pressing this switch, what appears on the counter display is changed between TC and CTL.

When TC is selected, either the TC or UB value is displayed depending on the position selected by the TC/UB switch.

### 20 TC/UB switch

This selector switch determines whether the value of TC or UB appears on the counter display when the TC/CTL switch has been set to TC.

### 21 INT/EXT switch

**INT:** For using the built-in time code generator.

**EXT:** For using the time external code which is input from the time code input connector or the video signal VITC. The selection is set at the setup menu No. 505 (EXT TC SEL).

### 22 TAPE/EE switch

<In the stop mode>

**TAPE:** For outputting the signals played back from the tape.

**EE:** For outputting the input signals selected by the INPUT SELECT switch.

<In the editing\*/recording mode>

**TAPE:** For outputting the simultaneous playback signals.

**EE:** For outputting the input signals selected by the INPUT SELECT switch.

\* The SETUP menu No. 310 (CONFI EDIT) setting is required.

## Controls and their functions (continued)

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### <Front Panel Center Section>

#### 23 REMOTE/LOCAL switch

This switch is set when the unit is to be controlled from an external source using the REMOTE connector, RS-232C connector or parallel connector.

**REMOTE:** Set to this position when controlling the unit by a device connected using the 9-pin REMOTE connector or RS-232CY parallel connector.

**LOCAL:** Set to this position when controlling the unit using the controls on its own operation panel.

#### 24 REMOTE lamp

This lights when the REMOTE/LOCAL switch has been set to the REMOTE position.

#### 25 Search button

This button is pressed to establish the search mode.

When the search dial is set to the shuttle mode and turned to a particular position, and this button is pressed, playback commences at the speed set by the search dial.

#### 26 JOG/SHTL/SLOW lamps

These indicate the present status of the search dial and SHTL/SLOW switch.

**JOG:** This lights when the unit is in the JOG mode.

**SHTL:** This lights when the unit is in the SHTL mode.

**SLOW:** This lights when the unit is in the VAR (variable) mode.

#### 27 SHTL/SLOW switch

This selector switch is set when the search dial is used for SHTL or SLOW applications.

#### 28 REV/STILL/FWD lamps

One of these lamps lights depending on the operation of the search dial.

**REV:** This lights when the dial is turned counterclockwise and the tape travels in the REV direction provided that the lamp in the search button has lighted.

**STILL:** This lights in the JOG mode while the dial is kept stationary, and the tape stops traveling provided that the lamp in the search button has lighted.

It lights in the SHTL mode provided that the dial is at the STILL position.

**FWD:** This lights when the dial is turned clockwise, and the tape travels in the FWD direction provided that the lamp in the search button has lighted.

#### 29 Search dial

This is used to search for the edit points.

Each time it is pressed, the mode is alternately set to shuttle or jog, and one of the JOG, SHTL and SLOW lamps lights. When the power has been turned on, the dial will not function until it has first returned to the STILL position.

**Shuttle mode:** When the dial is turned and stopped at a particular position while the SHTL/SLOW switch is at SHTL, the tape can be played back at the speed corresponding to the dial's rotary angle position. A still picture appears at the dial's center position.

When the dial is turned all the way counterclockwise with the SHTL/SLOW switch at SLOW, the tape speed is set to -4.1x normal speed, when it is set to the center position, a still picture is produced, and when it is turned all the way clockwise, the tape speed is set to +4.1x normal speed. The speed for SLOW can be set using setup menu No. 300 (VAR RANGE).

**Jog mode:** The dial clickstops are cleared, and the tape is played back at the speed (-0.43x to +1x normal speed) corresponding to the speed at which the dial is turned.

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## <Front Panel Center Section>

### 30 PREROLL button

This is used for feeding and cueing the tape for manual editing.

When it is pressed, the tape travels to the preroll point where it stops.

The preroll time can be set on the setup menu No. 000 (P-ROLL TIME).

When this button is pressed together with the IN or OUT button, the tape can be cued to the IN or OUT point entered.

When the AUTO ENTRY on the setup menu No. 313 is set to "ENA", IN point has been entered at the point where the PREROLL button is pressed even if the IN point has not been entered.

### 31 AUTO EDIT button

Automatic editing is executed when this is pressed after an edit point has been entered.

When the AUTO EDIT button is pressed though the IN point has not been entered, automatic editing is executed using the point at which the button was pressed as the IN point.

### 32 PREVIEW/REVIEW buttons

**PREVIEW:** When this is pressed after an edit point has been entered, the tape travels, editing is not performed, and the preview can be activated on the screen connected to the recorder.

If it is pressed when the IN point has not been entered, the point at which the button was pressed is entered as the IN point, and preview is executed accordingly.

**REVIEW:** If this is pressed after a block has been edited, the now edited block can be played back and monitored on the screen connected to the recorder.

### 33 IN (A IN)/SET/OUT (A OUT) buttons

When IN (A IN) or OUT (A OUT) button is pressed together with the SET button, the IN (A IN) or OUT (A OUT) point is entered.

A IN and A OUT are used during audio split editing to enter an audio IN or OUT point that differs from the video IN or OUT point.

While an IN (A IN) or OUT (A OUT) point is selected, the IN (A IN) or OUT (A OUT) button corresponding to the point entered lights. When this button is pressed after a point has been entered, the IN (A IN) /OUT (A OUT) point value appears on the counter display. When the IN (A IN) or OUT (A OUT) button is pressed together with the RESET button, the IN (A IN) or OUT (A OUT) point is cleared.

### 34 TRIM buttons

These buttons are used to trim IN or OUT point finely.

When the "+" or "-" button is pressed while the IN or OUT button is held down, the entered edit point can be trimmed in 1-frame increments. When the "+" button is pressed, the tape is advanced by one frame; when the "-" button is pressed, it is rewound by one frame.

### 35 ASSEMBLE button

This is pressed for assemble editing.

The button is self-illuminating, and it is set ON (lamp lights) when it is pressed once and OFF (lamp goes off) when it is pressed again.

### 36 INSERT buttons

Press one of these five buttons to select the input signals to be edited during insert editing.

The buttons are self-illuminating, and they are set ON (lamp lights) when they are pressed once and OFF (lamp goes off) when they are pressed again.

### 37 Counter display

This displays the TC and CTL count values, on-screen information and other messages.

### <Front Panel Center Section>

#### 38 Time code buttons

These are used to set the TC or UB value.

**SHIFT:** When setting the TC or UB value, first press this button to stop the data running. Change the digit now flashing on the display.

Each time the button is pressed, the flashing moves to the right by one digit, and when it reaches the right-most digit, it returns to the left-most digit.

When it is kept depressed, the flashing moves consecutively.

**ADJ:** This is used to change the numeral of the digit now flashing on the display.

When the button is pressed once, the number is incremented by 1, and when it is kept depressed, the number is incremented consecutively.

**START:** This enters the data which has been changed by the SHIFT and ADJ buttons.

Also, Pressing this button when the TC or UB value are not set enables the TCG or UBG setting values to be confirmed.

**RESET:** When this button is pressed in the CTL mode, the display is reset to "00:00:00:00". In the CTL mode, the entered edit points are cleared.

In the TC/UB mode, the generator is reset when the button is pressed together with the SHIFT button.

#### 39 Warning lamp

This lights to warn the operator of a particular item.

#### 40 Cassette insertion display lamp

This lights when a cassette has been inserted into the unit.

#### 41 DVCPRO format (25Mbps) cassette playback display lamp

This lights when a cassette recorded in the DVCPRO format (25 Mbps) is being played back.

#### 42 SCH lamp

This lights when the SCH of the external sync signal is within a specific range.

#### 43 CF lamp

This lights when the color framing is locked.

#### 44 Level meters

These indicate the respective levels of the PCM audio signals (CH1/CH2/CH3/CH4), CUE track signal or the video signal\*. The audio signal indicates the input signal levels during recording and E-E selection, and the output signal levels during playback.

For video signal, the meters indicate the input signal levels only.

\*CUE track signal or video signal is to be selected on setup menu No. 005 (METER SELECT).

#### 45 Audio input/output level controls

These controls are used to adjust the recording and playback levels of the PCM audio signals (CH1/CH2/CH3/CH4) and the CUE track signal. The upper controls are for adjusting the recording levels. The lower controls are for adjusting the playback levels. Each control is a "pull for variable" control, meaning that the level can be adjusted only when the control has been pulled up. The signal levels are set to the unity value (preset value) when the controls have been pushed down.

#### 46 Headphones jack

The sound being recorded, played back or edited can be monitored on stereo headphones when they are connected to this jack.

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## <Front Panel Center Section>

### ④⑦ Volume control

This is used to adjust the headphones volume and the monitor output volume.

Whether the headphones output and monitor output volumes are to be linked or kept separate can be set on the setup menu No. 713 (MONI OUT). (Note that the headphones output volume is normally linked.)

When the volumes are kept separate, the monitor output is set to the unity value (preset value).

### ④⑧ MONITOR SELECT switches

These are used to select the audio signals output to the monitor L/R channels.

Each time the "L" button is pressed, the signals output to the monitor L channel are selected in turn in the following order: CH1, CH2, CH3, CH4, CUE and back to CH1.

[However, this switching is disabled when CH1+2 or CH3+4 has been selected for setup menu No. 729 (MONITOR MIX L).]

Each time the "R" button is pressed, the signals output to the monitor R channel are selected in turn in the following order: CH1, CH2, CH3, CH4, CUE and back to CH1.

[However, this switching is disabled when CH1+2 or CH3+4 has been selected for setup menu No. 730 (MONITOR MIX R).]

The L or R lamp on the level meter display lights to indicate which signal is now being selected. (When the unit is set to "AUTO" in No. 721 (MONI CH SEL) on the setup menu, then the display will change according to the monitor output.)

### ④⑨ METER (FULL/FINE) selector switch

This is used to change the scale display (graduations) of the audio level meters.

**FULL mode:** Standard scale (from  $-\infty$  to 0 dB)

**FINE mode:** The scale changes every 0.5 dB

## <Front Panel Bottom Section>

### 50 VIDEO IN LEVEL control and switch

These are used to adjust the video input level.

**PRESET:** When the switch is set to "PRESET", the video input level is set to the unity value (0 dB).

**MANUAL:** When the switch is set to "MANUAL", the video input level can be adjusted using this control.

### 51 VIDEO OUT LEVEL control and switch

When setup menu No. 00 (ENCODER SEL) is set to "LOCAL", the video output level can be adjusted.

When the switch is set to "PRESET", the video output level is set to the unity value (0 dB).

When the switch is set to "MANUAL", the video output level can be adjusted using this control.

### 52 CHROMA LEVEL control and switch

When setup menu No. 00 (ENCODER SEL) is set to "LOCAL", the chroma level can be adjusted.

When the switch is set to "PRESET", the chroma level is set to the unity value (0 dB).

When the switch is set to "MANUAL", the chroma level can be adjusted using this control.

### 53 SETUP control and switch

When setup menu No. 00 (ENCODER SEL) is set to "LOCAL", the setup level can be adjusted.

When the switch is set to "PRESET", the setup level is set to the unity value (0 IRE).

When the switch is set to "MANUAL", the setup level can be adjusted using this control.

### 54 HUE control and switch

When setup menu No. 00 (ENCODER SEL) is set to "LOCAL", the hue can be adjusted.

When the switch is set to "PRESET", the hue is the unity value (0°).

When the switch is set to "MANUAL", the hue can be adjusted using this control.

### 55 CF switch

This selects whether the playback framing is to be locked in 4-field or 8-field increments or 2-field increments.

**4F/8F:** 525 mode: The framing is locked in 4-field increments.

625 mode: The framing is locked in 4- or 8-field increments. The framing can be selected in either 4- or 8-field increments using setup menu No. 108 (CAP. LOCK).

**2F:** The framing is locked in 2-field increments.

### 56 TC generator switch

**REGEN:** When the REGEN/PRESET switch is at REGEN, the internal time code generator is synchronized with the time code which the time code reader read from the tape. Whether to set TC or UB to REGEN can be selected at the setup menu No. 503 (TCG REGEN).

**PRESET:** When the REGEN/PRESET switch is at PRESET, presetting is enabled by the controls on the operation panel or by remote control.

**REC RUN:** The time code runs only during recording when the RUN MODE switch has been set to REC. The time code runs constantly when the REGEN/PRESET switch is set to REGEN.

**FREE RUN:** The time code runs regardless of the operation mode as long as the power is being supplied when the RUN MODE switch has been set to FREE.

\* Applies only to  
AJ-PD950

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## <Front Panel Bottom Section>

### 57 REC INHIBIT switch

This is used to inhibit or allow recordings on the video cassette tape.

**ON:** Recording on the tape is inhibited. At this setting, the REC INHIBIT lamp in the front panel lights.

**OFF:** Recording on the tape is allowed provided that the accidental erasure prevention tab on the video cassette tape enables recording to be conducted.

### 58 TV SYSTEM selector switch

This selects the type of television system. The setting of this switch takes effect when the power is turned off and then turned back on again.

**525:** 525 interlaced/59.94 Hz television selection.

The 525 progressive system\* is selected using setup menu No. 012 (SYSTEM FORMAT).

**625:** 625 interlaced/50 Hz television system selection.

During recording, choose a signal input that corresponds to the 525i/625i/525p\* selection. During playback, choose a video cassette tape that corresponds to the 525i/625i/525p\* selection.

### 59 MENU button

When this is pressed, the setup menu appears on the TV monitor using VIDEO OUT 3 connector, and the setup menu No. appears on the display.

When it is pressed again, the menu setting mode is exited and the original operating mode is restored.

### 60 SET button

When this is pressed, the data which has been set on the setup menu is entered. After data entry, the setup menu setting mode is exited and the original operating mode is restored.

### 61 DIAG button

When this is pressed, VTR information is displayed. When it is pressed again, the original display is restored.

There are two types of VTR information: "HOURS METER" information and "WARNING" information. Switching between these types is enabled by pressing the search button.

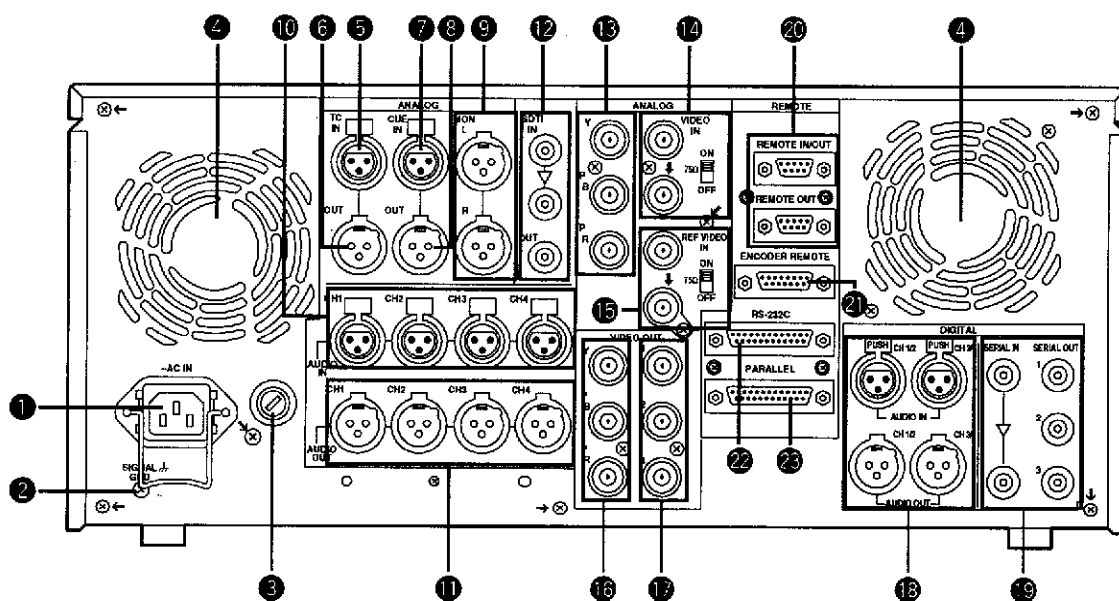
Indicated on the "HOURS METER" screen are the power-on time, drum rotation time, tape travel time, loading count and power ON/OFF time, etc.

Indicated on the "WARNING" screen are the warnings.

\* Applies only to AJ-PD950.

# Controls and their functions

## Connector area





---

## <Connector area>

### ① AC IN connector

This is for connecting the unit to the power outlet using the power cord provided.

### ② SIGNAL GND terminal


This terminal is connected to the signal ground terminal of the connected unit in order to reduce noise. It is not connected to ground for safety purposes.

### ③ Fuse holder

This contains a fuse.

### ④ Fan motor

This is for cooling the unit.

The  lamp lights when trouble has caused the fan motor to stop. If the unit is still operated in the warning status, the temperature inside the deck will rise, and when it exceeds the safety temperature, all the unit's operations will be shut down.

### ⑤ TIME CODE IN connector

This is the connector for recording the external time code on the tape.

### ⑥ TIME CODE OUT connector

The playback time code is output from this connector during playback.

During recording, the time code generated by the internal time code generator is output.

### ⑦ CUE IN connector

The analog signal to be recorded on the CUE track is supplied to this connector. The audio signals from a microphone can also be recorded by selecting the -60dB input mode on the setup menu No. 705 (CUE IN LV).

### ⑧ CUE OUT connector

The analog signal recorded on the CUE track is output from this connector.

### ⑨ MONITOR OUT connector

During playback, the playback signals from the CUE track or PCM audio signal CH1/CH2/CH3/CH4 are output from this connector.

### ⑩ ANALOG AUDIO IN connectors

These are the analog audio input connectors.

### ⑪ ANALOG AUDIO OUT connectors

The analog audio signals are output from these connectors.

### ⑫ SDTI IN/OUT connector (option)

### ⑬ ANALOG COMPONENT VIDEO IN connector

The analog component video signal is supplied to this connector.

### ⑭ ANALOG COMPOSITE VIDEO IN connectors and 75 $\Omega$ termination switch

The analog composite video signal is supplied to these two connectors which are connected in a loop-through configuration. When the termination is required, set the switch to ON.

### ⑮ REF VIDEO IN connectors and 75 $\Omega$ termination switch

These are the input connectors for the reference video signals. Supply signals with color burst. When the termination is required, set the switch to ON.

### <Connector area>

**16 ANALOG COMPONENT VIDEO OUT connector**

The analog component video signal is output from this connector.

**17 ANALOG COMPOSITE VIDEO OUT connectors**

The analog composite video signals are output from these connectors.

The video signal with signals superimposed on it can be output from the VIDEO OUT3 connector.

The superimpose function can be set ON or OFF on the setup menu No. 007 (SUPER).

**18 DIGITAL AUDIO IN/OUT connector**

This I/O connector is for digital audio signals which comply with the AES/EBU standard.

**19 SERIAL DIGITAL COMPONENT AUDIO/VIDEO IN/OUT connector**

This I/O connector is for digital component audio and video signals which comply with the SMPTE 259M-C/272M/294M\* standard.

**20 Remote control connectors**

The unit can be controlled from an external source by connecting the unit with another unit or an external controller.

There are two remote control connectors, one for IN/OUT uses and the other for OUT uses.

**IN/OUT:** For connection with an external controller.

For connection with deck-to-deck operation.

**OUT** For connection with parallel running operations.

For use in a loop-through configuration.

**21 ENCODER REMOTE connector**

The external encoder/controller is hooked up to this connector when the video output signal and other settings are to be adjusted from an external source.

**22 RS-232C connector**

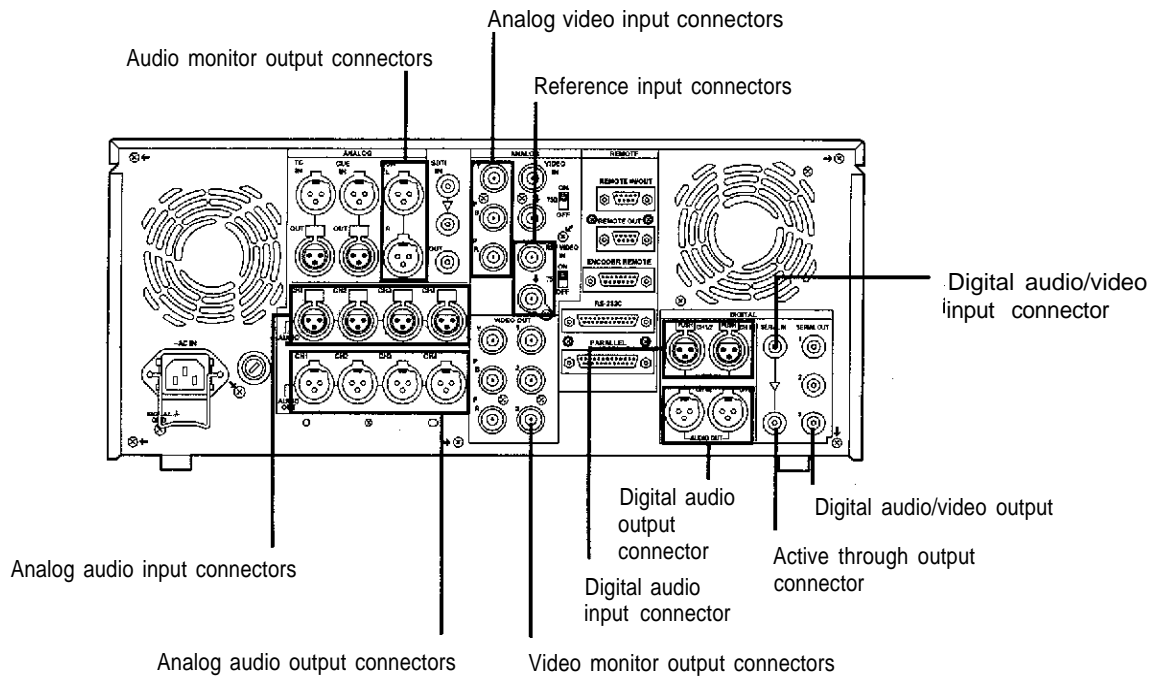
**23 PARALLEL REMOTE connector**

This is used when operating the unit from an external source.

\* Applies only to  
AJ-PD950.

# Connections when one unit is used

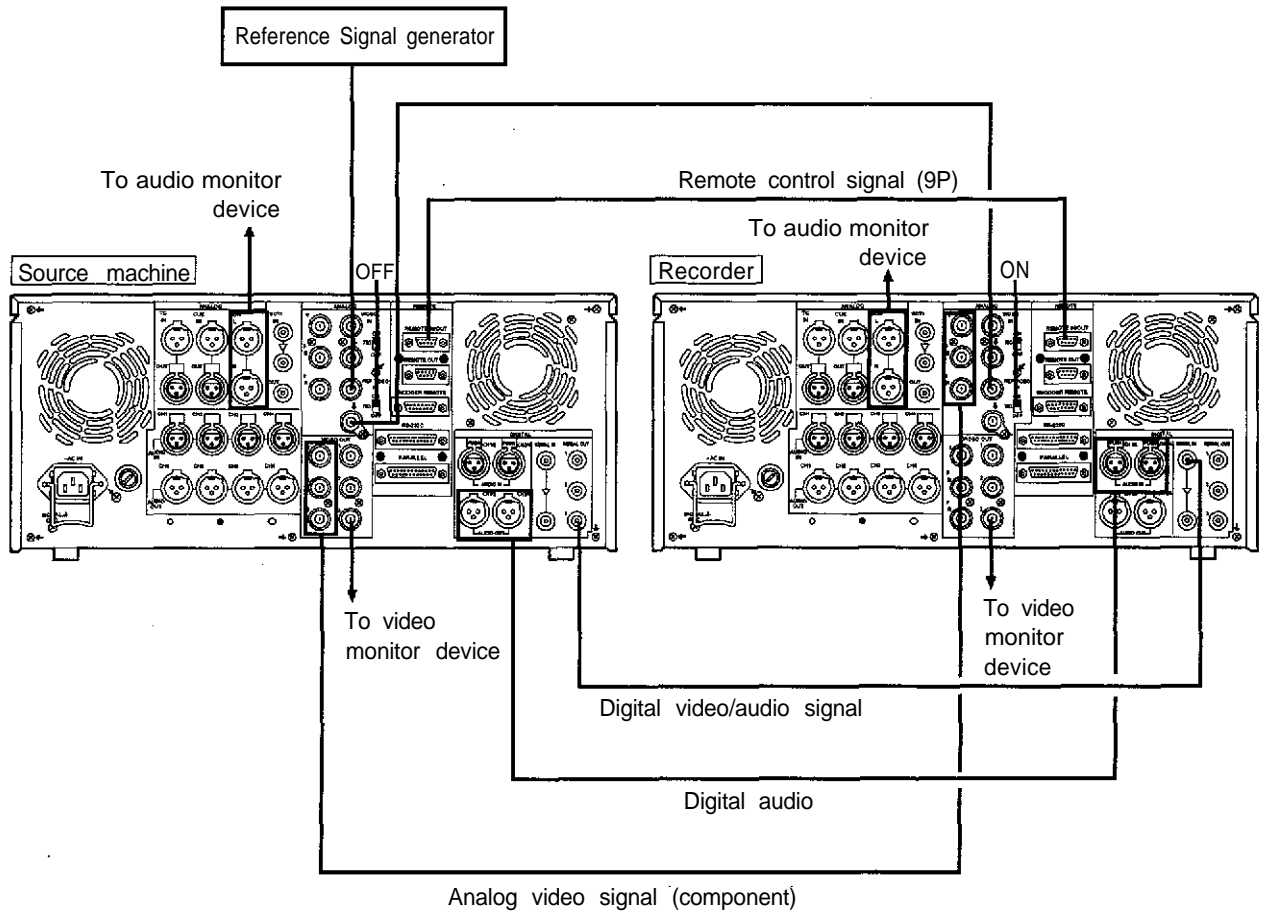
Set the CONTROL switch on the front panel to LOCAL.



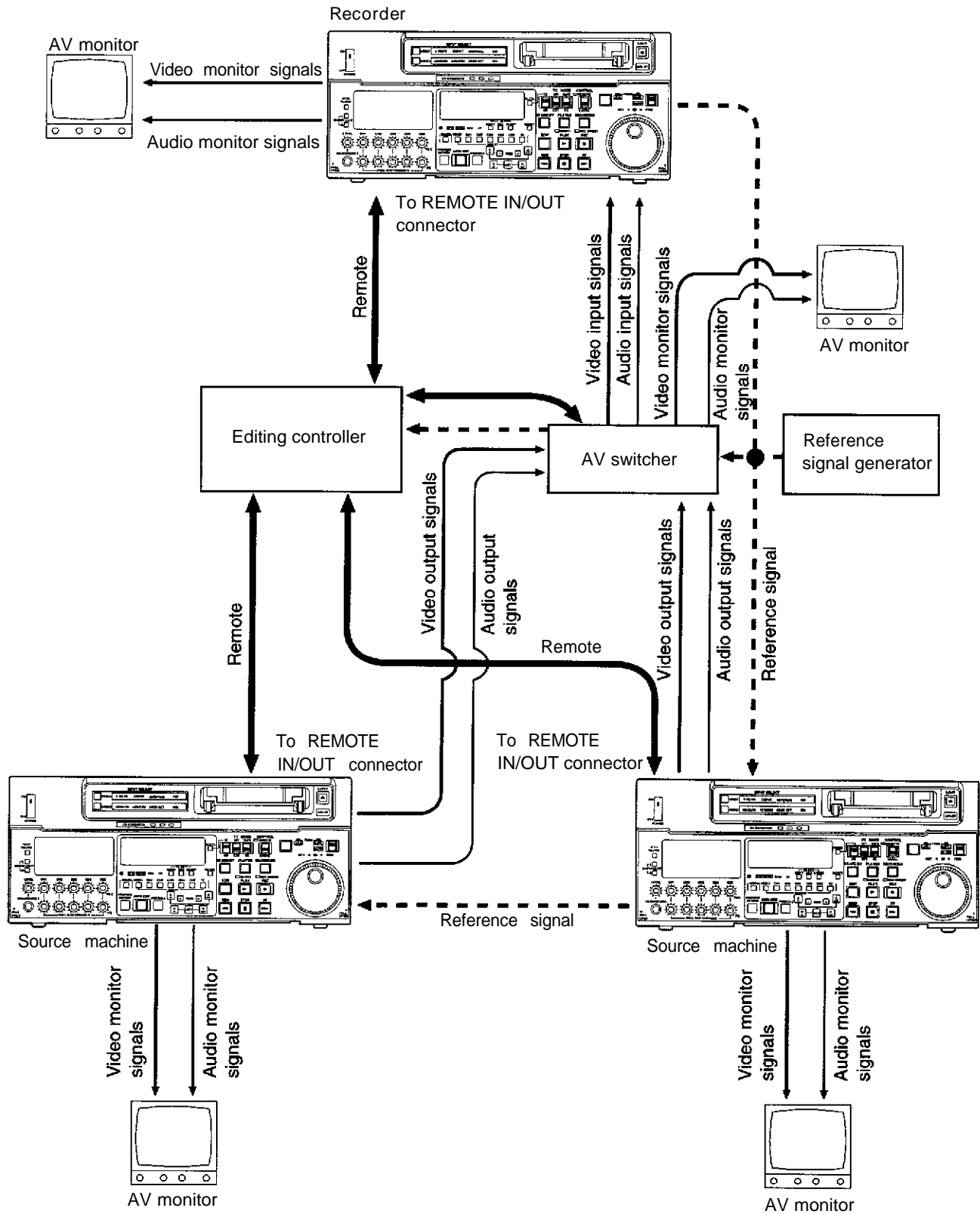
# Connections when 2 units are used (deck to deck)

**Source machine:** • Set the CONTROL switch on the front panel to REMOTE.

**Recorder:** • Set the CONTROL switch on the front panel to LOCAL.



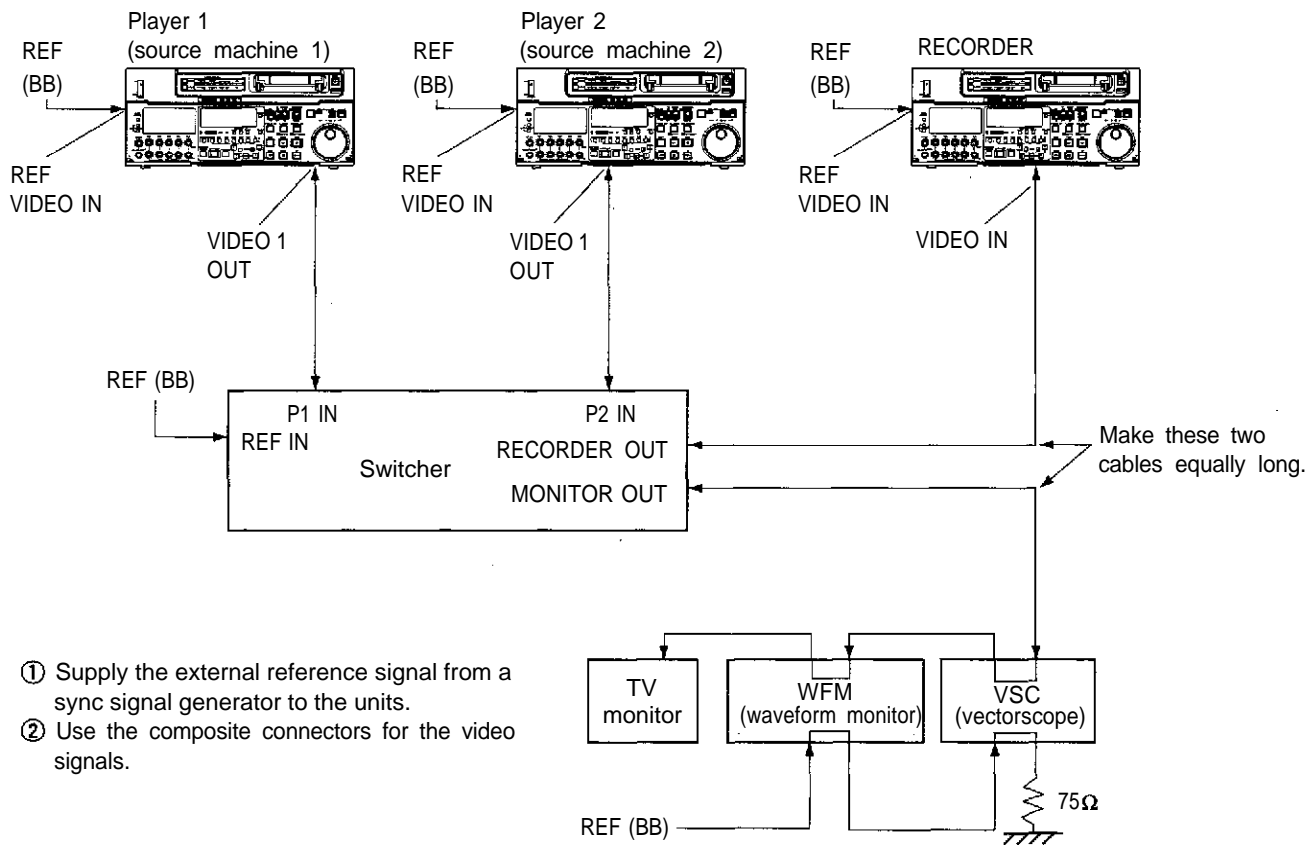
# Connections with editing controller



**<Note>**

When an editing controller made by CMX is used, support must be provided at the editing controller side

# Connections for adjusting video output (encoder output) signals



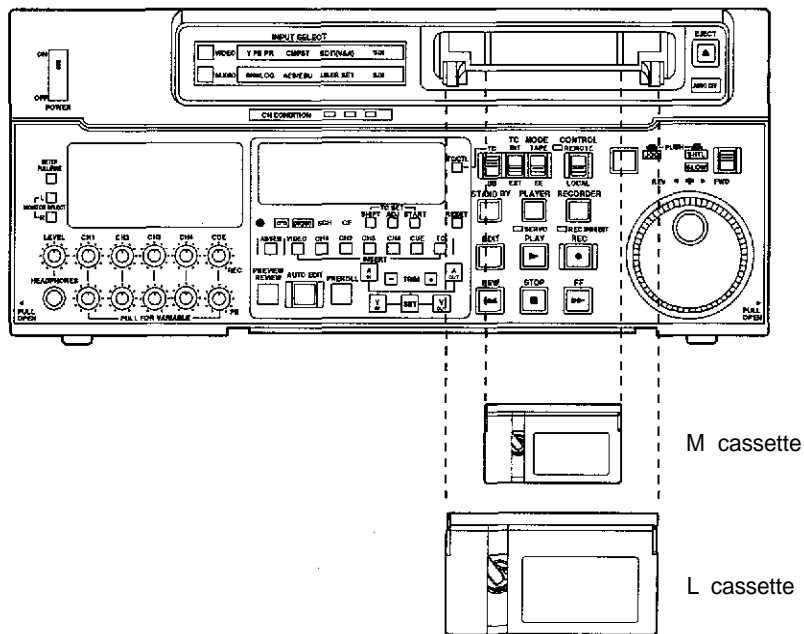
- ① Supply the external reference signal from a sync signal generator to the units.
- ② Use the composite connectors for the video signals.

# Tapes

Three types of tapes can be used with the unit.

Type	Description
<b>M cassette</b>	Recording/playback tape with a maximum capacity of 33 minutes. (AJ-P12MP, AJ-P23MP, AJ-P33MP, AJ-P63MP)
<b>L cassette</b>	Recording/playback tape with a maximum capacity of 92 minutes. (AJ-P64LP, AJ-P94LP, AJ-P123LP, AJ-5P92LP)

Align the cassette with the center of the insertion slot and push it in gently. The cassette tape is loaded automatically.



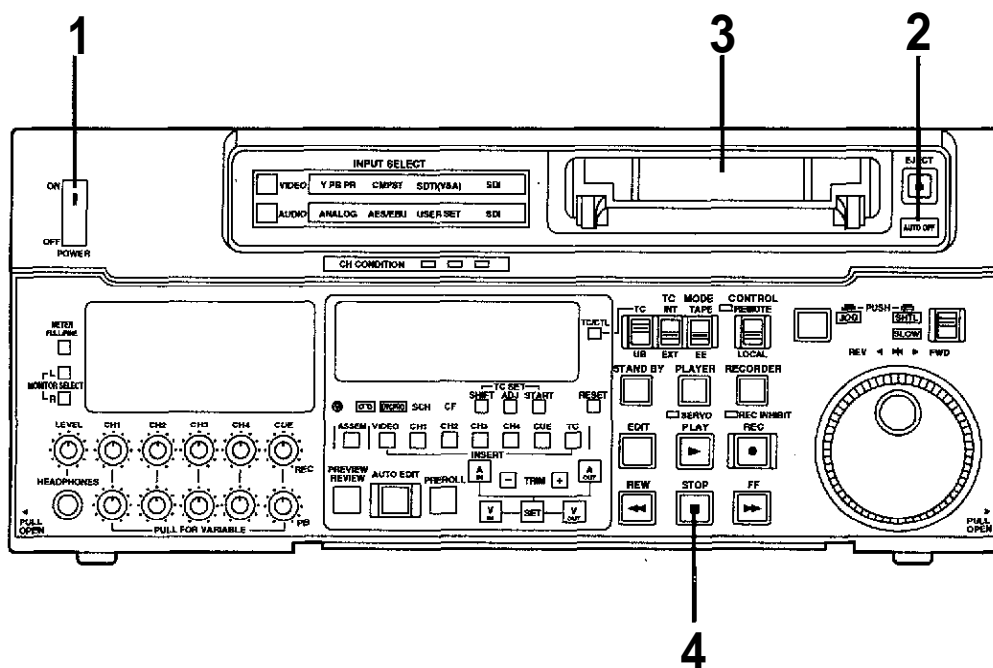
## <Notes>

- Consumer DV tapes cannot be used and should not be inserted.
- AJ-5P92LP tape is used only for DVCPRO 50 (50 Mbps) mode.  
Do not use it for DVCPRO (25 Mbps) mode and DVCPRO (25 Mbps) VTR.

## Switching on the power/inserting the cassette

Before starting to operate the unit, check whether the equipment has been connected properly.

- 1** Turn on the power.
- 2** Check that the AUTO OFF lamp is off.  
When condensation has formed or some other trouble has occurred, the AUTO OFF lamp lights, and all operations are disabled.
- 3** Insert the cassette tape.  
Insert the tape at its proper position without force.
- 4** Check that the STOP lamp is on.  
When the tape is inserted, the cylinder rotates automatically, the tape is loaded and the unit goes into the stop mode. The EJECT lamp goes off.



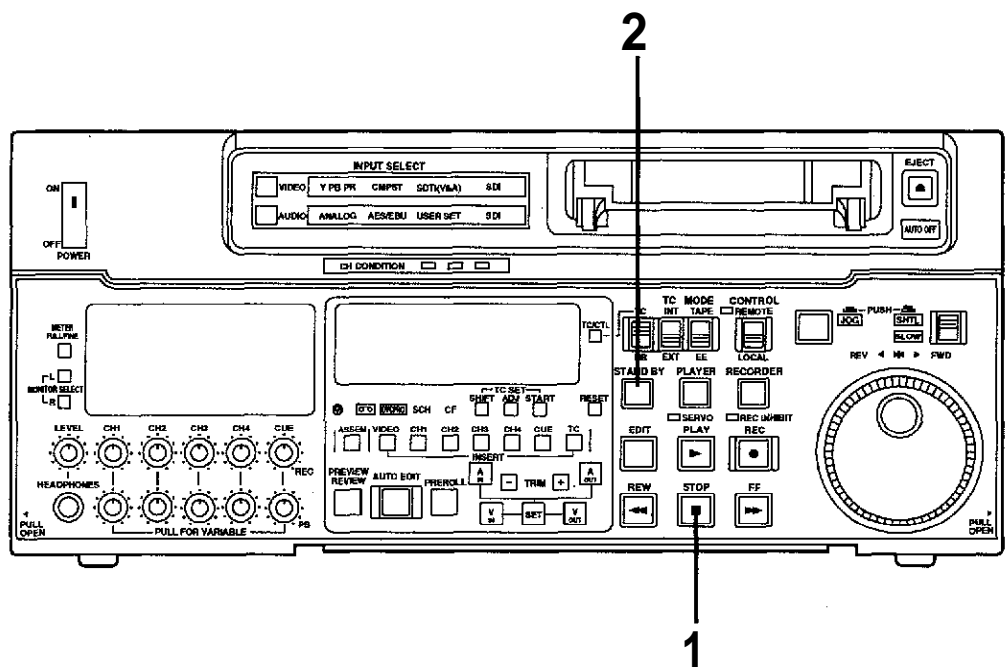


# STOP/STAND BY mode

- 1** When the STOP button is pressed, the unit goes into the stop mode. The STOP lamp lights and the tape stops traveling.
  - In order to protect the tape, the unit goes into the standby OFF mode after the time set by setup menu No. 400 (STILL TIMER) has elapsed. When the STOP, REW, FF or PLAY button is pressed, the unit will go into the appropriate mode.
- 2** When the STAND BY button is pressed, the unit goes into the standby ON/OFF mode. When the button's lamp is lighted, the unit is in the standby ON mode. When the button is pressed during the stop mode, the unit goes into the standby OFF mode and half-loading mode and the lamp goes off. When the button is pressed during the standby OFF mode, the unit goes to the standby ON mode.

## Still Timer Setting

Page 54 indicates the settings for menu item 400-Still Timer set. Still Timer settings 4 and below will best protect the tape.



# Recording

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- 1** Set the accidental erasure prevention tab on the cassette tape to the “recording” position and insert the tape.
- 2** Press the STOP button to place the unit in the stop mode.
- 3** Set the TAPE/EE switch to EE.  
EE images now appear on the TV monitor.
- 4** Check that the REC INHIBIT lamp is off.  
If this lamp is lighted, set the REC INHIBIT switch to OFF.
- 5** Select the video and audio input signals and adjust their levels.

## 5-1 Selecting video/audio input signals

- 1** Connect the signals to be recorded.
- 2** Select the input signals using the INPUT SELECT switches on the front panel.  
The input signals corresponding to the lighted lamps have been selected.

## 5-2 Adjusting the video level

- 1** Normally, the VIDEO IN LEVEL control/switch **50** is left at the “PRESET” setting (unity value).
- 2** To adjust the recording level, set the VIDEO IN LEVEL control/switch **50** to “MANUAL” and use it to adjust the level to a setting between +3 dB and -3 dB.

## 5-3 Adjusting the audio level

- 1** Adjust the audio input signal levels of the analog audio CH1/CH2, CH3/CH4 signals and analog cue signal. Keep the audio input/output level controls **45** pushed in (unity value).  
The audio signals will be recorded at the proper level.
- 2** To adjust the recording level, pull out the controls **45** and adjust them. With the CUE signal, adjust the control in such a way that -20dB will not be exceeded.

- 6** Press the PLAY button while holding down the REC button. The REC and PLAY lamps light, and recording commences.
- 7** To end the recording, press the STOP button.  
Recording is ended, and the unit goes into the stop mode.

### <Notes>

- Check that the SERVO lamp is lighted during recording. If it flashes or if it is off, the images played back will be disturbed.
- Only the analog composite video input signals can be adjusted. (The digital video and analog component input signals cannot be adjusted.)

# Playback

---

- 1** Insert the cassette tape, and place the unit in the stop mode.
- 2** Press the PLAY button.  
Regular playback is now commenced.
- 3** Adjust the audio playback level.  
Pull out the audio level controls and turn them clockwise or counterclockwise to adjust the levels. Normally, they are kept in the pushed-in state (unity value).
- 4** To end playback, press the STOP button.  
The VTR now goes into the stop mode.

**<Note>**

- Check that the SERVO lamp is lighted during playback. If it flashes or if it is off, the images played back will be disturbed.

# Jog/shuttle

---

## Jog mode

- 1** Push the search dial to the “in” position.  
Be sure that the JOG lamp lights.
- 2** Rotate the search dial.  
The dial's clickstops are cleared, and the tape is played back at the speed (-0.43x to +1x normal speed) corresponding to the speed at which the dial is turned. When the dial rotation is stopped, a still picture appears. The playback picture is noise-free.
- 3** To transfer from the jog mode to another mode, press the appropriate button.

## Shuttle mode

- 1** Push the search dial to release it from the “in” position. The SHTL lamp lights, and the unit goes into the shuttle mode.
  - Immediately after the power has been turned on, rotate the search dial and set it to the center position.
- 2** Set the SHTL/SLOW switch to SHTL or SLOW.
- 3** Rotate the search dial.  
When the SHTL/SLOW switch has been set to SHTL, the playback picture speed is varied from 0 to  $\pm 32x$  normal speed depending on the position of the dial. The playback picture speed can be switched to  $\pm 8x$  and  $\pm 16x$  normal speed with setting menu No. 101 (SHTL MAX).  
The dial's center position is a clickstop where a still picture appears as the playback image. When the SHTL/SLOW switch has been set to SLOW, the playback picture speed is varied from -4.1 to +4.1x normal speed depending on the position of the dial. The playback picture speed can be switched from -0.43 to 1x normal speed with setting menu No. 300 (VAR RANGE). However, noise appears at speeds other than -0.43 to +1x normal speed.  
The dial's center position is a clickstop where a still picture appears as the playback image. The playback picture is noise-free.
- 4** To transfer from the shuttle mode to another mode, press the STOP button or other button.

### <Note>

- When the unit leaves the factory, its operation is set up so that it will be transferred to the shuttle or jog mode when the search dial is rotated. If it is inconvenient for operation to be transferred to the variable-speed mode directly, it can also be transferred through the search button.  
Set setup menu No. 100 (SEARCH ENA) to KEY.

# Manual editing

---

- 1** Select the editing mode.  
**ASSEMBLE:** For assemble editing.  
**INSERT:** For insert editing.
- 2** Select the editing channel.  
In the case of insert editing, press the channel button corresponding to the signals to be edited, and check that its lamp is on.
- 3** Press the PLAY button.
- 4** Search for the position where the editing is to be commenced (IN point) while viewing the TV monitor, and press the PLAY and EDIT buttons together at the IN point.
- 5** Press the STOP or PLAY button at the position where editing is to be completed (OUT point) while viewing the TV monitor. The unit goes into the stop mode, and editing is completed.

## <Notes>

- The edit IN and OUT points are not entered with manual editing.
- The editing functions do not work in DVCPRO (25 Mbps) mode.

# Preroll

---

- 1 Press the PREROLL button.  
The VTR now performs the preroll operation.
  - When the edit IN point has been entered, the tape is rewound from the edit IN point for the duration set by setup menu "000," and the unit then goes into the stop mode.
  - When the edit IN point has not been entered, the tape is rewound for the duration set by setup menu "000" from the position where the button was pressed, and the unit then goes into the stop mode.

## <Notes>

- The time code or CTL signal must be continuously recorded between the edit IN point and preroll point.
- When the IN point has not been entered, whether to enter the IN point and perform preroll or to perform preroll without entering the IN point can be selected at setup menu No. 313 (AUTO ENTRY).

## Automatic editing (Deck to Deck)

---

Editing refers to the job of using a prerecorded tape to produce a complete recording by joining together separate cuts and deleting unnecessary parts.

The basic steps taken for editing are as follows.

- 1** Set the CONTROL switch to REMOTE on the player and to LOCAL on the recorder.
- 2** Select the editing mode.
- 3** Enter the edit points of the recorder and player.
- 4** Check and modify the edit points.
- 5** Check (Preview) before proceeding with the editing.
- 6** Proceed with the editing.
- 7** Check (Review) the recording that has resulted from the editing.

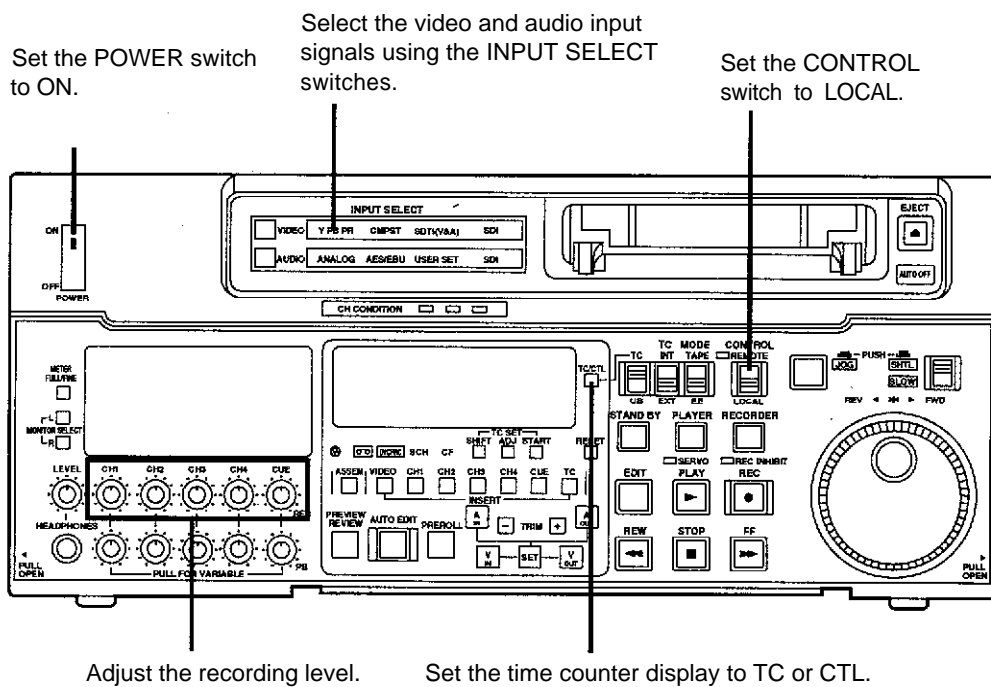
**<Note>**

- The editing can not be performed when the digital videocassette recorder is used in DVCPRO (25 Mbps) mode.

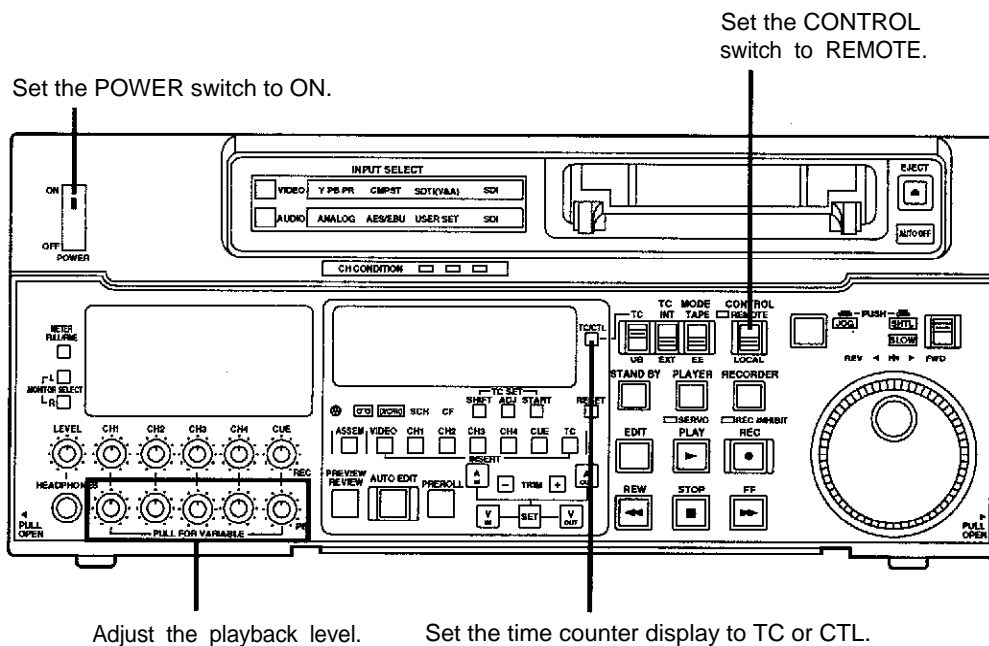
# Automatic editing

## Switch settings and adjustments

When the unit is used as the recorder:



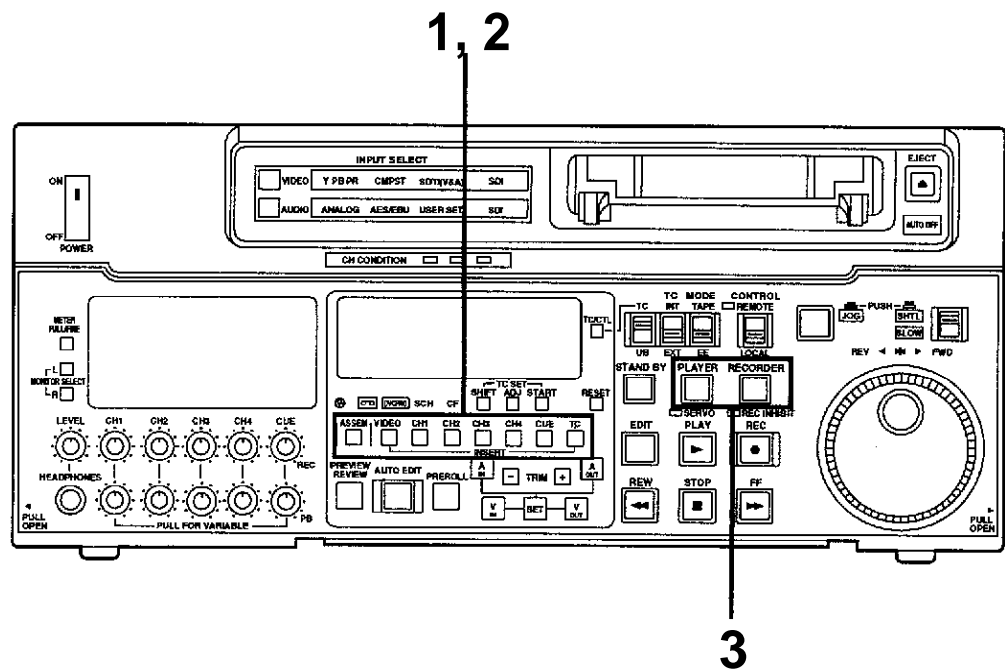
When the unit is used as the player:





## Select the editing mode

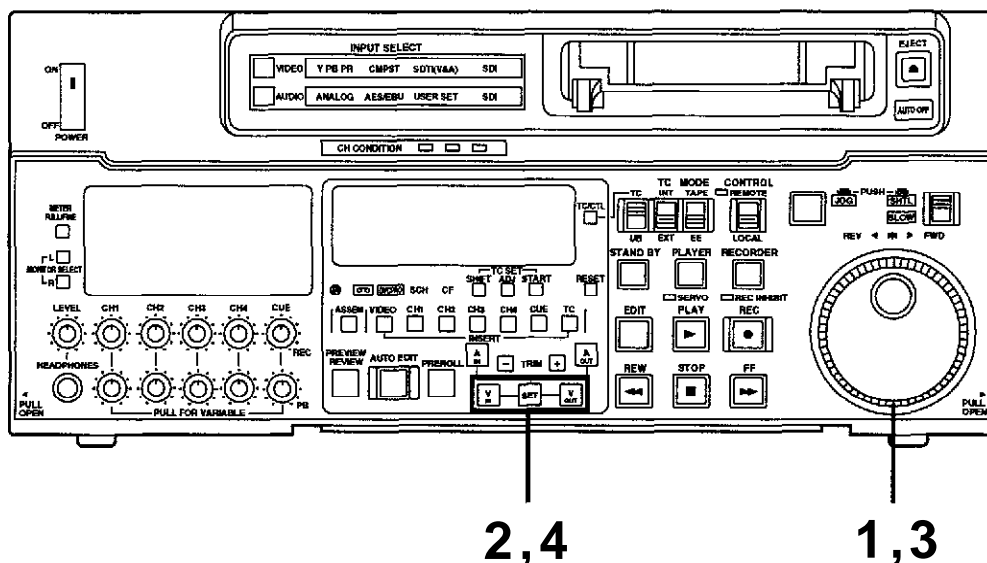
- 1** Select the editing mode.  
For assemble editing, press the ASSEMBLE button.  
For insert editing, press the INSERT button.  
**ASSEMBLE:** The assemble editing mode (in which cuts are joined together) is established.  
**INSERT:** The insert editing mode (in which cuts are inserted) is established.
- 2** Select the editing channel.  
With assemble editing, the ASSEMBLE lamp light.  
With insert editing, press the button of the channel whose signals are to be edited and light its lamp.
- 3** Select the VTR to be operated (this setting is performed when editing with 2 VTRs).  
Press the PLAYER or RECORDER button to select the VTR.  
**PLAYER:** Press this button to operate the player VTR and enter the edit points.  
**RECORDER:** Press this button to operate the recorder VTR (this unit) and enter the edit points.



# Automatic editing

## Entering the edit points

- 1** Search for the edit IN point by performing the jog or shuttle operation. Establish the still picture mode at the desired position. Refer to page 28 for details on the jog/shuttle operations.
- 2** Press the IN and SET buttons together. The edit IN point is now entered. The edit IN point value now appears on the display.
- 3** Search for the edit OUT point by performing the jog or shuttle operation. Establish the still picture mode at the desired position. Refer to page 28 for details on the jog/shuttle operations.
- 4** Press the OUT and SET buttons together. The edit OUT point is now entered. The edit OUT point value now appears on the display.



### Match frame processing function

When using two VTRs for editing, a total of four edit points—namely, the player's IN and OUT points and the recorder's IN and OUT points—need to be entered. However, since the last edit point is calculated automatically, only three of these edit points must be entered.

### Negative duration function

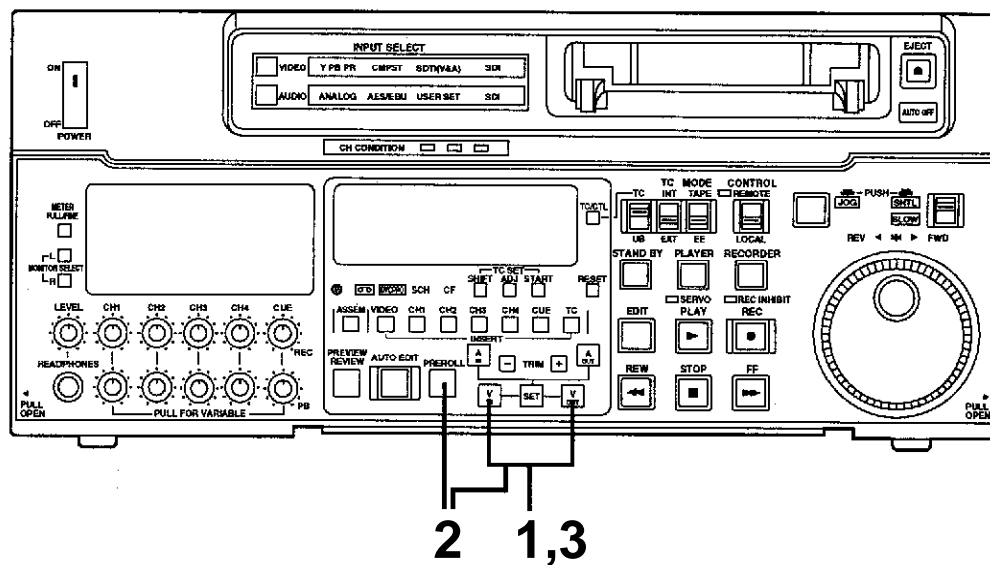
This function is used by combining setup menu No. 301 (IN/OUT DEL) and No. 302 (NEGA FLASH) described on page 52.

## Checking the edit points

- 1** Press the IN (or OUT) button to check the edit point.  
The value of the entered edit point appears on the display.
- 2** Press the PREROLL button while holding down the IN (or OUT) button to check the image at the edit point.  
The tape is cued at the edit IN (or OUT) point, and the still picture mode at that point is displayed.
  - The EE mode is established if the TAPE/EE switch has been set to the "EE" position when "STOP" has been selected for the setup menu No. 315 (AFTER CUE-UP).
- 3** Press the IN and OUT buttons together to check the edit duration.  
The duration time appears on the display.

### Calculating the duration

- When both edit points have been set, the duration between the two edit points.
- When only one edit point has been set, the duration between the set data and the current tape address.
- When neither edit point has been set, the duration of the previously edited interval.



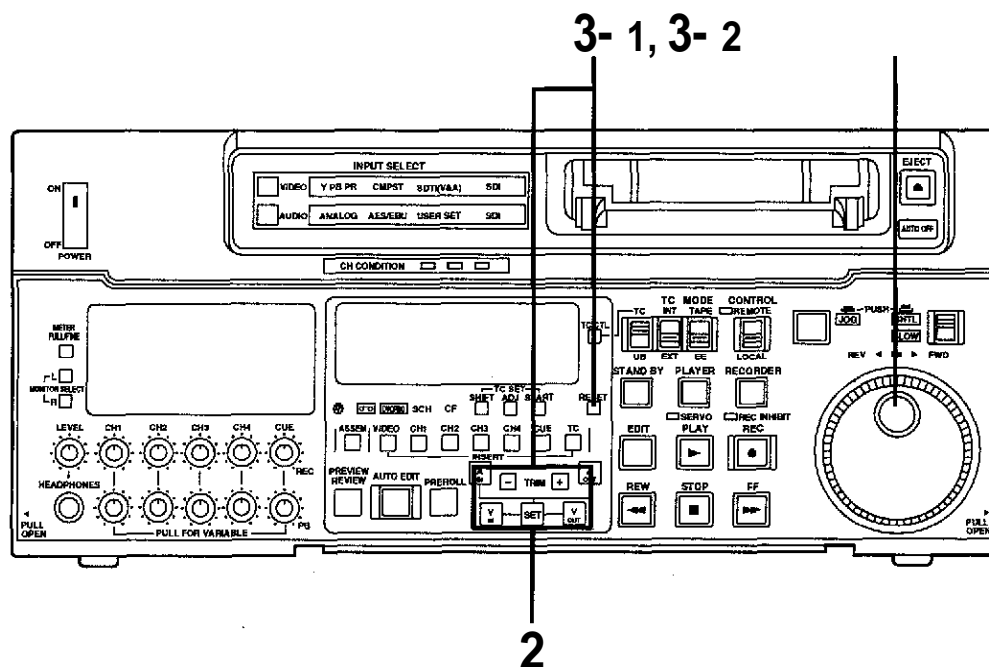
# Automatic editing

## Modifying the edit points

- 1** Re-entering the edit points  
Search for the new edit point by performing the jog or shuttle operation, and press the IN (or OUT) and SET buttons together to re-enter the edit point.
- 2** Modifying the edit point in frame units (trim function)  
Press the TRIM button while holding down the IN (or OUT) button.  
The edit point is put ahead by 1 frame each time the + button is pressed.  
The edit point is put back by 1 frame each time the - button is pressed.
- 3** Resetting the edit points
  - 3-1** Resetting both the edit IN and OUT points
    - Press the RESET button.
  - 3-2** Resetting either the edit IN or OUT point
    - Press the RESET button while holding down the IN (or OUT) button.

### <Notes>

- Edit points can be reset only in the CTL mode.
- An edit OUT point can be reset even while editing is in progress.
- The IN and OUT points are automatically reset during the eject mode.

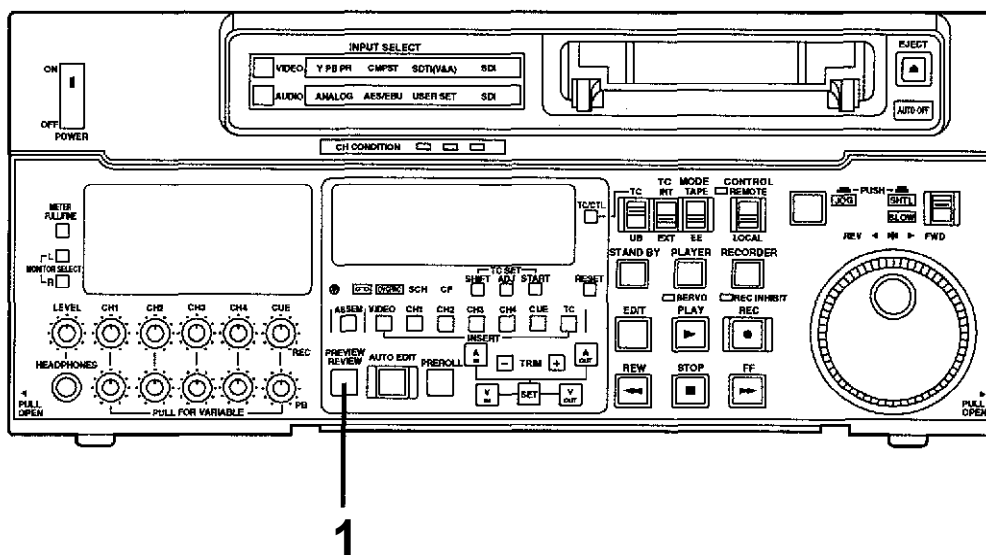


## Preview

- 1 After the edit points have been entered, press the PREVIEW button. Normal preview is now performed.

### <Notes>

- If the edit IN point has not been entered, the position where the PREVIEW button was pressed will be entered at the edit IN point.
- To stop the preview at any time, press the STOP button.
- If the PREVIEW button is pressed again while preview is in progress after the IN point, preview will start again from the beginning.
- When the edit OUT point is reached, the unit automatically goes into the stop mode.



# Automatic editing

## Executing automatic editing

- 1 Press the AUTO EDIT button.  
Automatic editing is now performed.
  - To stop the editing at any time, press the STOP button.
  - When the edit OUT point is reached, the unit goes into the stop mode after postrolling.

### Postroll

With assemble editing, editing continues for approx. 2 seconds even after the edit OUT point has been passed, the tape is rewound to the OUT point, and the unit goes into the stop mode.

With insert editing, the unit goes into the play mode after the edit OUT point has been passed, the tape is rewound to the OUT point, and the unit goes into the stop mode.

### Retry function

If the AUTO EDIT button is pressed again after the STOP button has been pressed to stop the editing, editing will start again from the beginning.

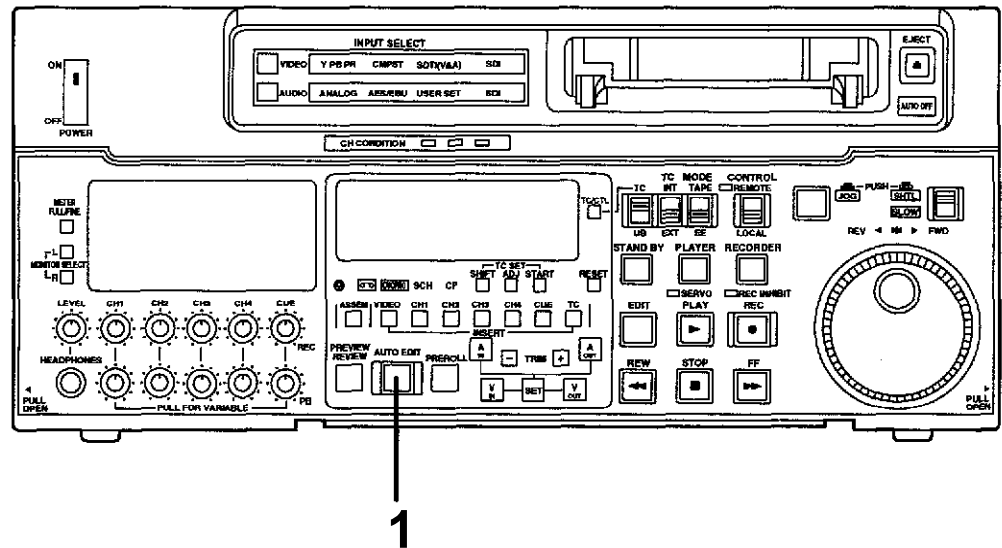
### Auto tag editing

If the AUTO EDIT button is pressed when the next edit point has not yet been entered upon completion of editing, the previous edit OUT point will be entered as the IN point, and editing is performed accordingly.

To release the auto tag mode, press one of the tape transport buttons (PLAY, etc.).

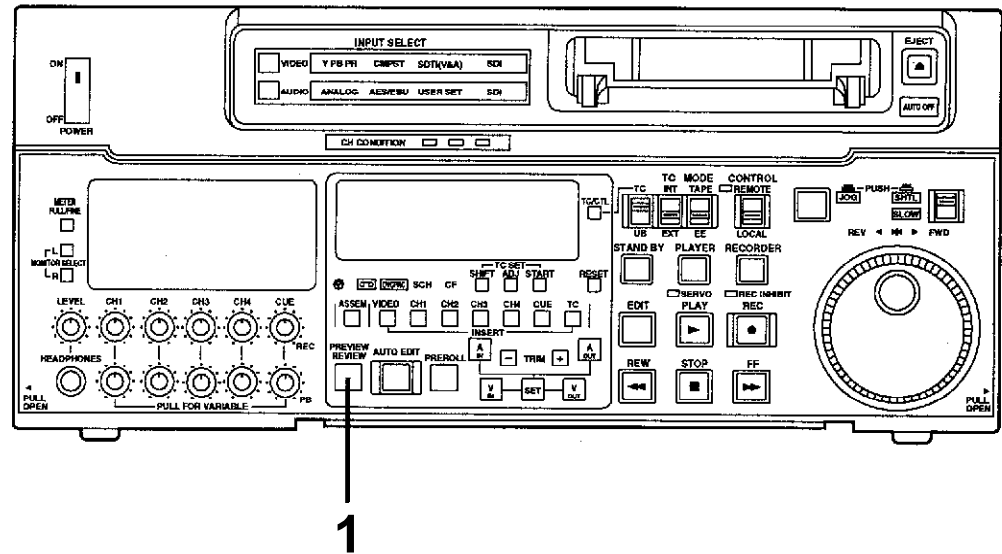
### <Note>

- The entered points are automatically cleared after editing is executed. However, the previous editing points can be recalled by pressing the TRIM+ (or TRIM-) and SET buttons together.



## Review

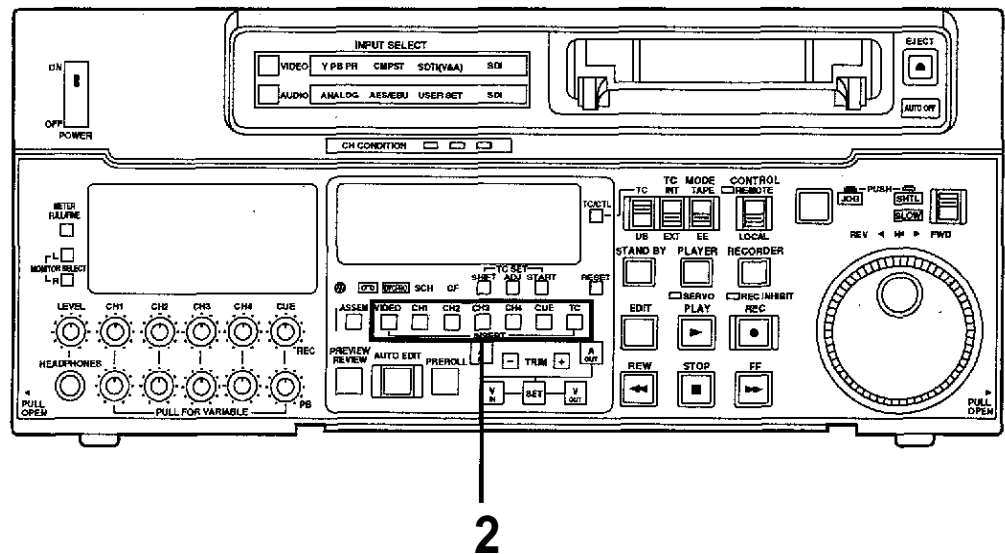
- 1 Upon completion of the editing, press the REVIEW button.  
The review is started in the recorder.
  - To stop the review at any time, press the STOP button.
  - When the edit OUT point is reached, the unit goes into the stop mode after postrolling.



# Split editing

Split editing refers to editing where the editing channels are switched while insert editing is in progress.

- 1** Perform insert editing.
- 2** Switch the editing channel.  
When, for instance, sound from AUDIO CH2 is to be additionally inserted during video channel insert editing:
  - 2-1** Press the AUDIO CH2 button during video channel editing.  
The lamp in the button lights and the AUDIO CH2 sound is insert edited.
  - 2-2** Press the AUDIO CH2 button again and turn off the lamp in the button.  
This completes the AUDIO CH2 insert editing.





# Audio split editing

The video edit points and audio edit points can be entered separately, and they can be offset from each other and edited.

The audio edit points cannot be entered when the assemble editing mode has been selected. After the edit points have been entered, follow the same operating procedure as that for insert editing.

## ■ Entering the edit points

- Video IN point: Press the SET button while holding down the IN button.
- Video OUT point: Press the SET button while holding down the OUT button.
- Audio IN point: Press the SET button while holding down the A-IN button.
- Audio OUT point: Press the SET button while holding down the A-OUT button.

## ■ Deleting the edit points

- Video IN point: Press the RESET button while holding down the IN button.
- Video OUT point: Press the RESET button while holding down the OUT button.
- Audio IN point: Press the RESET button while holding down the A-IN button.
- Audio OUT point: Press the RESET button while holding down the A-OUT button.

## ■ Modifying the edit points

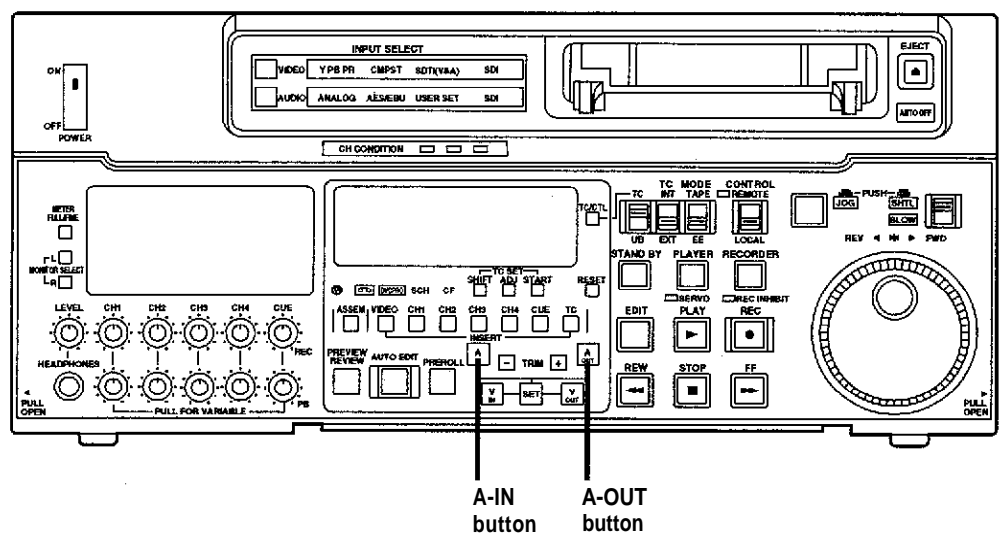
- Video IN point: Press the TRIM+ or TRIM- button while holding down the IN button.
- Video OUT point: Press the TRIM+ or TRIM- button while holding down the OUT button.
- Audio IN point: Press the TRIM+ or TRIM- button while holding down the A-IN button.
- Audio OUT point: Press the TRIM+ or TRIM- button while holding down the A-OUT button.

## ■ Indicating audio split editing

When the audio edit points are entered, “ \* ” appears superimposed on the front panel and TV monitor to denote audio split editing.

TCR 00:00:00:00  
AUTO EDIT

This denotes audio split editing.



# Audio split editing

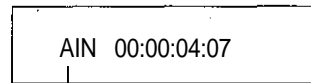
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## ■ Displaying the audio split edit points

The edit points are displayed on the front panel as shown below. (The figure shows an audio IN point.)

### Operations

Video IN point: Press the IN button.  
Video OUT point: Press the OUT button.  
Audio IN point: Press the A-IN button.  
Audio OUT point: Press the A-OUT button.



AIN 00:00:04:07

IN, OUT, AIN (audio IN point), AOUT (audio OUT point)

### Note:

If the editing mode is switched to assemble editing after audio edit points have entered, these points will be deleted.

## ■ Cueing up the tape to the edit points

Cue-up to video IN point: Press the PREROLL button while holding down the IN button.  
Cue-up to video OUT point: Press the PREROLL button while holding down the OUT button.  
Cue-up to audio IN point: Press the PREROLL button while holding down the A-IN button.  
Cue-up to audio OUT point: Press the PREROLL button while holding down the A-OUT button.

## ■ Duration display

The duration can be displayed on the front panel only.

Duration from video IN point to OUT point: Press the IN and OUT buttons simultaneously.

Duration from audio IN point to OUT point: Press the A-IN and A-OUT buttons simultaneously.

## ■ Match frame processing mechanism

When two VTRs are used for audio split editing operations, there will be a total of eight edit points: two pairs of video IN and OUT points, one for the player and the other for the recorder, and two pairs of audio IN and OUT points, one for the player and the other for the recorder. Since the remaining three points are automatically calculated when five of these eight edit points are entered, up to five edit points can be entered.

## ■ When a VTR without a split editing function is to be used as the player

When a VTR which does not have the ability to set the video and audio edit points separately is used as the player, split editing can still be performed by setting the audio IN and OUT points using the recorder and setting the data of three points as the video edit points.

### Note:

If, during audio split editing, only the video OUT point (or audio OUT point) is entered and automatic editing is executed without the audio OUT point (or video OUT point) having been entered, editing will continue until the audio OUT point (or video OUT point) is entered or the STOP button is pressed to suspend operation.

# Video output (encoder output) signal adjustments

After this system has been connected, the video output signal (ENCODER OUT) must be adjusted if AB roll editing (editing using two source machines) using an editor, for instance, is to be error-free and accurate. (This adjustment must be repeated when one of the connecting cables has been replaced and whenever the connections are changed.)

The adjustment procedure using this unit is outlined below.

- 1** Check the connections. (see page 22.)
- 2** Set setup menu No. 00 (ENCODER SEL) to "LOCAL".  
**REMOTE:** For adjusting the video output signals using an external encoder remote controller.  
**LOCAL:** For adjusting the video output signals using this unit.
- 3** Adjust the source machine independently.
  - 3-1** When using the preset values  
Set the PRESET/MANUAL switches of the VIDEO OUT LEVEL, CHROMA LEVEL, SETUP and HUE controls to PRESET.
  - 3-2** When adjusting the video output signals without using the preset values
    - 1** Play back a cassette tape on which standard color bar signals have been recorded.
    - 2** Adjust the controls in such a way that the waveforms on the waveform monitor (WFM) and vectorscope (VSC) resemble those shown in the figures below.

**A** Video level

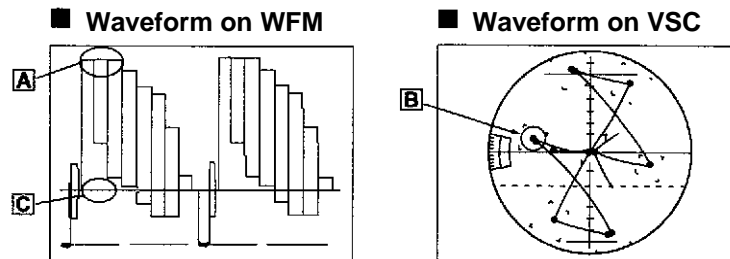
Adjust this level to 100IRE.

**B** Chroma level and hue

Adjust the two controls in such a way that the light spot of the vector waveforms comes inside the rectangular grid mark.

**C** Setup level

Adjust the control to eliminate deviation.



- 4** Perform the same adjustments on the source machine connected to the unit.

The unit's major settings are performed by making selections on menus. The setting menus appear on the TV monitor when the TV monitor and VIDEO OUT 3 connector in the unit's connector area are hooked up.

## Changing the settings

- 1** Press the MENU button.  
The setup menu appears on the TV monitor and setup menu No. appears on the counter display. (If the setup has already been performed, the screen showing the changes made last will appear.)
- 2** Rotate the search dial and select the item to be set.  
The cursor (\*) on the menu screen moves and the item No. on the display flashes.
  - When the dial is rotated clockwise, the item No. is incremented from 001 → 002 → 003 → 004 and so on; when it is rotated counterclockwise, the item No. is decremented.
  - The search dial should be used in jog mode if at all possible.
  - Hold down the PLAY button and press the FF (next major item) or REW (previous major item) buttons to select the menu by major item.
- 3** While holding down the search button, rotate the search dial at the position where the change is to be made.  
The setting No. now flashes.  
When the dial is rotated clockwise, the setting value is incremented; when it is rotated counterclockwise, it is decremented.
- 4** Release the search button when the setting is completed.  
The setting value on the menu screen and display flashes.
  - During the SHTL mode, the item moves if the search dial is not at the STILL position.
- 5** Repeat steps 2 through 4 to change another item.
- 6** Press the SET button.  
The changes are now stored in the memory.
  - To return the items to the settings established before the changes were made, press the MENU button.

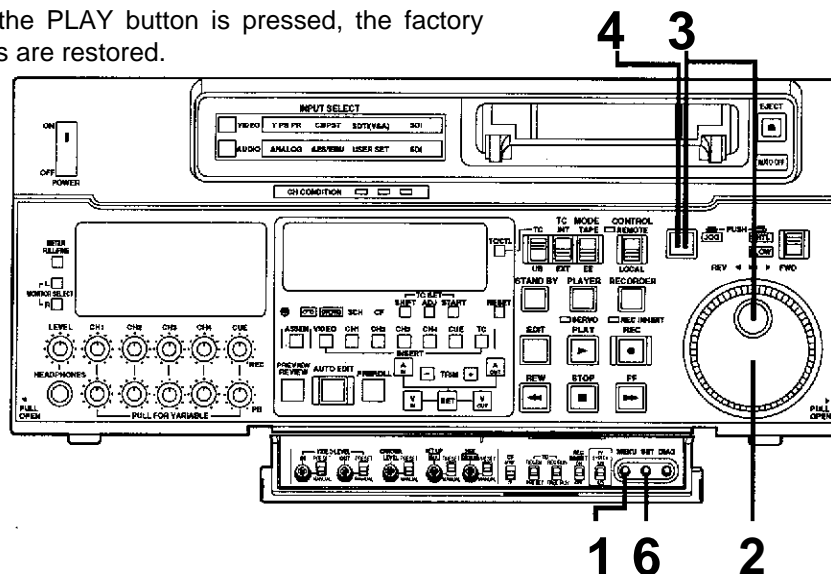
To return the setup settings to the factory (default) settings, press the RESET button while the menu is displayed. **The following message will now appear:**

SETUP-MENU INIT SET  
YES<PLAY>/NO<STOP>

When the PLAY button is pressed, the factory settings are restored.

### <Note>

- When the RESET button is pressed to return to the factory settings, the factory settings are restored only for the user file currently being used and other user files are not affected.
- The changed SYSTEM menu contents are recorded even if the MENU button is pressed.

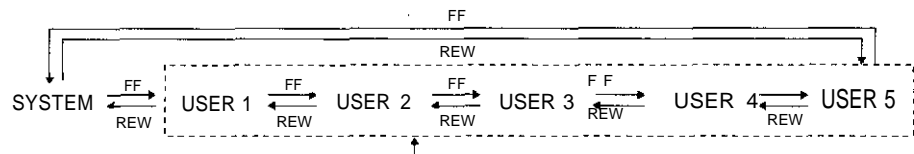


# Setup (setting) menus

This unit can store up to 5 user files (user 1 to user 5) containing different menu settings, and these files can be selected and used.

## Changing the file

- 1** Press the MENU button.
- 2** Hold down the STAND BY button and press the FF button to switch to the next user file. Hold down the STAND BY button and press the REW button to switch to the previous user file.



### USER FILE

Each user file contains the following items.

- BASIC
- OPERATION
- INTERFACE
- EDIT
- TAPE PROTECT
- TIME CODE
- VIDEO
- AUDIO

- 3** Repeat the operation in step 2 to select the user file to be used and press the SET button. The user file is changed and stored in the memory.

### <Note>

- SYSTEM menu items are not included in user files 1 to 5. Therefore, after selecting the user file, switch to the SYSTEM file and set the SYSTEM menu items.

# Setup (setting) menus

## SYSTEM menu

### <SYSTEM>

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
00	ENCODER SEL	<u>0000</u> 0001	REMOTE <u>LOCAL</u>	This selects whether the video output signal is to be adjusted on the VTR or with the external encoder remote control. 0: Video output signals are adjusted with the external encoder remote control. 1: Video output signals are adjusted on the VTR.
01	SYS SC	0000 ⋮ <u>0127</u> ⋮ 0255	-127 ⋮ <u>0</u> ⋮ 128	System phase adjustment: Total variable range: ±180° or more -: Advanced +: Delayed <b>&lt;Note&gt;</b> If setting operation is performed, the setting value does not return to factory (default) setting.
02	SYSH	0000 ⋮ <u>0108</u> ⋮ 0216	-108 ⋮ <u>0</u> ⋮ 108	System phase adjustment: 74 ns steps -: Advanced +: Delayed <b>&lt;Note&gt;</b> If setting operation is performed, the setting value does not return to factory (default) setting.
03	VIDEO PHASE	0000 ⋮ <u>0032</u> ⋮ 0064	-32 ⋮ <u>0</u> ⋮ 32	Video phase adjustment: 148 ns steps -: Advanced +: Delayed
04	SCH COARSE	<u>0000</u> 0001 0002 0003	<u>0</u> 90 180 270	SCH phase adjustment: 90° units -: Advanced +: Delayed (The S and C phases change but the H phase does not change.)
05	SCH FINE	0000 ⋮ <u>0032</u> ⋮ 0064	-32 ⋮ <u>0</u> ⋮ 32	SCH phase adjustment: Total variable range: ±45° or more -: Advanced +: Delayed (The S and C phases change but the H phase does not change.)
06	AV PHASE	0000 ⋮ <u>0100</u> ⋮ 0200	-100 ⋮ <u>0</u> ⋮ 100	This adjusts the audio output phase with respect to the video output: 20.8 μ s steps -: The audio output phase is advanced with respect to the video output. +: The audio output phase is delayed with respect to the video output.
07	SYS H RANGE	<u>0000</u> 0001	<u>FULL</u> <u>FINE</u>	This selects the adjustable range for SYSTEM H during when the ENCODER REMOTE is connected. 0: ±8 μ sec (±30 seteps) 1: -1.9 to +2.7 μ sec (-7 to +10 steps) <b>&lt;Note&gt;</b> If setting operation is performed, the setting value does not return to factory (default) setting.

The underline on the setting item denotes the initial setting.

## USER menu

### <BASIC>

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
000	P-ROLL TIME	0000 ⋮ <u>0005</u> ⋮ 0015	0S ⋮ <u>5S</u> ⋮ 15S	This sets the preroll time which can be set from 0 to 15 seconds in 1 -second increments. <b>&lt;Note&gt;</b> When the unit is set to automatic editing [PREVIEW, AUTO EDIT], the unit will not operate if the preroll time is set to 0 seconds.
001	LOCAL ENA	0000 <u>0001</u> 0002	DIS <u>ST&amp;EJ</u> ENA	This selects the buttons which can be operated on the front panel when the REMOTE/LOCAL switch has been set to REMOTE. 0: No buttons can be operated. 1: Only the STOP and EJECT buttons can be operated. 2: All buttons except for the RECORDER and PLAYER buttons can be operated.
002	TAPE TIMER	<u>0000</u> 0001	<u>±12h</u> 24h	This selects the 12 or 24 hour display for the CTL counter. 0: 12 hour display 1: 24 hour display
003	REMAIN SEL	<u>0000</u> 0001	<u>OFF</u> ON	This selects whether the remaining tape time is shown on the front panel. 0: Not shown. 1: Shown. <b>&lt;Note&gt;</b> Even when shown while the unit is calculating the remaining tape time after ejecting or inserting the cassette.
004	SETUP NUMBER	<u>0000</u> 0001	<u>OFF</u> ON	This selects whether the SETUP-MENU No. is displayed on-screen. 0: The SETUP-MENU No. is not displayed. 1: The SETUP-MENU No. is displayed.
005	METER SEL	<u>0000</u> 0001	<u>CUE</u> VIDEO	This selects whether the level meters are to display the CUE track signal level or the video signal level. 0: The CUE track signal levels are displayed. 1: The video signal levels are displayed.
006	SYNCHRONIZE	<u>0000</u> 0001	<u>OFF</u> ON	This selects whether or not to synchronize between two VTRs. 0: No synchronization. The editing points deviate several frames, but editing can be started quickly. 1: Synchronization. Allows for error-free editing.
007	SUPER	0000 <u>0001</u>	OFF <u>ON</u>	This selects whether the time code and other super display which are output to the VIDEO OUT 3/SERIAL OUT 3 connector is to shown. 0: Not shown. 1: Shown.
008	DISPLAY SEL	0000 <u>0001</u> 0002	TIME <u>T&amp;STA</u> T&S&M	This selects what information is to be provided by the time code and other super displays output to the VIDEO OUT 3/SERIAL OUT 3 connector. 0: Time only. 1: Time and status. 2: Time, status and mode. <b>&lt;Note&gt;</b> • An error message is displayed when an warning or error occurs.

The underline on the setting item denotes the initial setting.

# Setup menus

## USER menu

### <BASIC> (continued)

Item		Setting		Description		
No.	Superimposed display	No.	Superimposed display			
009	CHARA H-POS	0000	0	This sets the position of the characters on the horizontal plane for the time code and other super displays output to the VIDEO OUT 3/SERIAL OUT 3 connector. <b>&lt;Notes&gt;</b> 1. When setting this item, the DISPLAY SEL status is output to VIDEO 3 even if SUPER OFF has been set. However, when the menu is exited, operation complies with the SUPER OFF/ON setting. Also, CHARA TYPE is output to VIDEO 3 according to the status set in the menu. 2. When the DISPLAY SEL setting causes characters to extend beyond the edges of the screen, the setting value is changed so that the characters are automatically displayed in a position on the screen.		
		⋮	⋮			
		0005	5			
		⋮	⋮			
		0012	12			
010	CHARA V-POS	525 mode		This sets the position of the characters on the vertical plane for the time code and other super displays output to the VIDEO OUT 3/SERIAL OUT 3 connector. <b>&lt;Notes&gt;</b> 1. When setting this item, the DISPLAY SEL status is output to VIDEO OUT 3/SERIAL OUT 3 even if SUPER OFF has been set. However, when the menu is exited, operation complies with the SUPER OFF/ON setting. 2. When the DISPLAY SEL setting causes characters to extend beyond the edges of the screen, the setting value is changed so that the characters are automatically displayed in a position on the screen.		
		0000	0			
		⋮	⋮			
		0018	18			
		⋮	⋮			
		0022	22			
		625 mode				
		0000	0			
⋮	⋮					
		0023	23			
		⋮	⋮			
		0028	28			
011	CHARA TYPE	0000	WHITE	This selects the display type for the super display output to the VIDEO OUT 3/SERIAL OUT 3 connector as well as for displays such as the setting menu, etc. 0: White characters against a black background. 1: White characters with a black border.		
		0001	W/OUT			
012	SYS FORMAT	0000	422	This sets the VTR's recording and playback format. 0: This selects 422 (50M). 1: Selects 411 (25M). <b>&lt;Note&gt;</b> Editing is not possible in the 411 mode.		
		0001	411			
013	PB FORMAT	0000	MANUAL	This selects the tape playback format. 0: Compliance with the setup menu No. 012 (SYS FORMAT) setting. 1: Compliance with the format in which the tape was recorded. <b>&lt;Notes&gt;</b> When an editing mode has been selected, the "MANUAL" setting is forcibly established for internal operations. There is no automatic setting in the 525/625 mode.		
		0001	AUTO			

The underline on the setting item denotes the initial setting.



## USER menu

### <OPERATION>

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
100	SEARCH ENA	<u>0000</u> 0001	<u>DIAL</u> KEY	This selects the direct search dial operation. 0: For direct search dial operations. 1: Operation is not transferred to the search mode unless the search button is pressed.
101	SHTL MAX	0000 0001 <u>0002</u>	x8 x16 <u>x32</u>	This sets the maximum speed for shuttle operations. 0: 8x normal speed 1: 16x normal speed 2: 32x normal speed
102	FF. REW MAX	0000 <u>0001</u> 0002	x16 <u>x32</u> x50	This sets the maximum speed for FF and REW operations. 0: 16 (32)x normal speed 1: 32 (60)x normal speed 2: 50 (100)x normal speed <b>&lt;Note&gt;</b> Values for the 411 (25M) mode are shown in parentheses ( ).
103	AUDIO MUTE	<u>0000</u> 0001	<u>OFF</u> ON	This sets the status until the audio signal is output when operation switches from the stop or search modes to the play mode. 0: The time until the audio is output is shortened. 1: The audio is output after the status stabilizes. <b>&lt;Note&gt;</b> When set to 0 (OFF), the sound in the initially output part is incomplete. Therefore, this setting is not recommended for broadcasts.
104	REF ALARM	0000 <u>0001</u>	OFF <u>ON</u>	This selects whether to warn the operator when the REF.VIDEO signal has not been connected. 0: Warning is not given. 1: Warning is given by the flashing STOP lamp.
105	AUTO EE SEL	<u>0000</u> 0001 0002	<u>S/F/R</u> STOP BLACK	This selects the VTR mode in which the EE status is established when the TAPE/EE switch is set to EE. 0: EE status is established in the STOP, FF or REW mode. However, EE status is always established in EJECT mode regardless of the TAPE/EE switch setting. 1: EE status is established only in the stop mode. However, EE status is always established in EJECT mode regardless of the TAPE/EE switch setting. 2: EE status is established only in the stop mode. However, depending on TAPE/EE switch setting EJECT mode is as follows: TAPE/EE switch EE: EE status TAPE/EE switch TAPE: BLACK status for video MUTE status for audio
106	EE MODE SEL	<u>0000</u> 0001	<u>NORMAL</u> THRU	This selects the EE mode output signals. 0: Signals are output with a delay equivalent to the length of internal signal processing. 1: Signals are output directly, without internal processing, and so are output with no delay. <b>&lt;Note&gt;</b> When editing mode is selected, SDTI is selected as the video input signal, or INT SG is selected at either VIDEO or AUDIO, the internal operations are forcibly set to NORMAL.
107	PLAY DELAY	<u>0000</u> ⋮ 0015	<u>0</u> ⋮ 15	This set the play delay time in frame increments.

The underline on the setting item denotes the initial setting.

# Setup menus

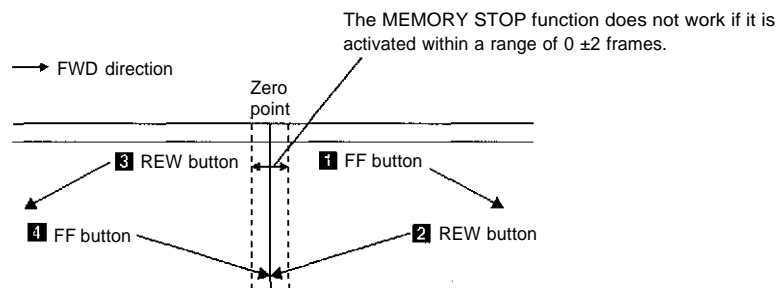
## USER menu

### <OPERATION> (continued)

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
108	CAP LOCK	<u>0000</u> 0001	4F 8F	This selects the CAPSTAN LOCK mode for the 4F and 8F settings of the CF switch. 0: 4F mode 1: 8F mode <b>&lt;Note&gt;</b> This setup menu is not displayed in the 525 mode.
109	AUTO REW	<u>0000</u> 0001	OFF ON	This selects whether to rewind the tape automatically to the tape start when the tape end is detected. 0: The tape stops at the tape end. 1: The tape is rewound to the tape start.
110	MEMORY STOP	<u>0000</u> 0001	OFF ON	This selects whether the VTR is to stop automatically when the counter value reaches "0" during a fast forwarding or rewinding operation in the CTL mode. 0: The VTR does not stop. 1: The VTR stops automatically. <b>&lt;Notes&gt;</b> 1. The stop mode concerned is either the stop or the still-picture (SHTL STILL) mode depending on the setup menu No. 315 (AFTER CUE-UP) setting. 2. When both the AUTO REW function and MEMORY function have been selected at the same time, the AUTO REW function takes precedence.

The underline on the setting item denotes the initial setting.

## Memory stop function



- 1 When the FF button is pressed, the VTR performs the regular fast forward operation since the zero point is not located in the direction of operation.
- 2 When the REW button is pressed, the PREROLL lamp lights (the SHTL lamp lights as well), the VTR proceeds with the preroll operation, and it automatically stops when it reaches the position where the counter reads "0."
- 3 When the REW button is pressed, the VTR performs the regular rewinding operation since the zero point is not located in the direction of operation.
- 4 When the FF button is pressed, the PREROLL lamp lights (the SHTL lamp lights as well), the VTR proceeds with the preroll operation, and it automatically stops when it reaches the position where the counter reads "0."

## USER menu

### <INTERFACE>

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
200	PARA RUN	<u>0000</u> 0001	<u>DIS</u> ENA	This selects whether two or more VTRs are to be operated in synchronization. 0: No operation in synchronization 1: Operation in synchronization <b>&lt;Note&gt;</b> When operating two or more VTRs in synchronization, set item 200 of all the VTRs to 0001.
201	9P SEL	<u>0000</u> 0001	<u>OFF</u> ON	This selects whether the 9P connector functions when the REMOTE/LOCAL switch has been set to REMOTE. 0: Do not function 1: Function
202	ID SEL	<u>0000</u> 0001	<u>OTHER</u> DVCPRO	This selects the ID information which is returned to the controller. 0: 20 25H 1: DVCPRO's, own ID is returned (F0 33H).
203	25P SEL	<u>0000</u> 0001	<u>OFF</u> ON	This selects whether the PARALLEL (25P) connector functions when the REMOTE/LOCAL switch has been set to REMOTE. 0: Does not function 1: Functions
204	RS232C SEL	<u>0000</u> 0001	<u>OFF</u> ON	These settings are for selecting whether the RS-232C connector is to function when the REMOTE/LOCAL switch is set to REMOTE. 0: Connector does not function. 1: Connector functions.
205	BAUD RATE	<u>0000</u> 0001 0002 0003 0004 0005	<u>300</u> 600 1200 2400 4800 9600	These settings are for selecting the RS-232C communication speed (baud rate).
206	DATA LENGTH	<u>0000</u> 0001	<u>7</u> 8	These settings are for selecting the RS-232C data length. (Unit: bit)
207	STOP BIT	<u>0000</u> 0001	<u>1</u> 2	These settings are for selecting the RS-232C stop bit length. (Unit: bit)
208	PARITY	<u>0000</u> 0001 0002	<u>NON</u> ODD EVEN	These settings are for selecting the none, odd or even for the RS-232C parity bit. 0: Parity bit is not used. 1: An odd number of bits is used for the parity system. 2: An even number of bits is used for the parity system.
209	RETURN ACK	<u>0000</u> 0001	<u>OFF</u> ON	These settings are for selecting whether the ACK code is to be returned when a command is received from RS-232C. 0: ACK code is not returned. 1: ACK code is returned.

The underline on the setting item denotes the initial setting.

# Setup menus

## USER menu

<EDIT>

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
300	VAR RANGE	<u>0000</u> 0001	<u>-43~ 1</u> -4~+4	This sets the VAR speed range. 0: The tape is played in slow motion at a speed ranging from -0.43x to +1x normal speed. 1: The tape is played in the ±4.1x normal speed range.
301	IN/OUT DEL	<u>0000</u> 0001	<u>MANU</u> AUTO	This selects the operation to be performed when an edit point has been set incorrectly (when the OUT point is before the IN point). 0: Editing is not executed unless the illegal edit point is cleared or set again properly. 1: The edit points already input are automatically cleared.
302	NEGA FLASH	<u>0000</u> 0001	<u>OFF</u> ON	This selects whether to show a negative display when the IN point is greater than the OUT point. 0: No negative display. 1: Negative display.
303	STD/ NON-STD	<u>0000</u> 0001 0002	<u>AUTO</u> STD N-STD	This selects STD or NON-STD in accordance with the composite input signal. 0: Standard/non-standard signals are automatically identified and processed. 1: Standard signals are processed. (Forced STD) 2: Non-standard signals are processed. (Forced NON-STD)
304	SERVO REF	<u>0000</u> 0001	<u>AUTO</u> EXT	This selects the video signal processing. 0: Servo is synchronized with the input signal during recording and editing, or with the REF signal during playback. 1: Servo is synchronized at all times with the REF signal.
305	EDIT RPLCE1	<u>0000</u> 0001 0002 0003	<u>N-DEF</u> CH1 CH2 CH1+2	This sets the channel assignments for the controller's analog audio preset when editing the digital audio of the VTR using a controller which does not have a digital audio edit preset control function. This selects the channel concerned when the VTR CH1 edit preset is set in compliance with the ON or OFF presetting for the analog audio signals designated by the controller. 0: Not set. 1: Compliance with analog CH1 edit preset. 2: Compliance with analog CH2 edit preset. 3: Compliance with either analog CH1 or CH2 edit preset.
306	EDIT RPLCE2	<u>0000</u> 0001 0002 0003	<u>N-DEF</u> CH1 CH2 CH1+2	This selects the channel concerned when the VTR CH2 edit preset is set in compliance with the ON or OFF presetting for the analog audio signals designated by the controller. 0: Not set. 1: Compliance with analog CH1 edit preset. 2: Compliance with analog CH2 edit preset. 3: Compliance with either analog CH1 or CH2 edit preset.
307	EDIT RPLCE3	<u>0000</u> 0001 0002 0003	<u>N-DEF</u> CH1 CH2 CH1+CH2	The same type of setting as No. 305. This selects the channel concerned when the VTR CH3 edit preset is set in compliance with the On or OFF presetting for the analog audio signals designated by the controller. 0: Not set. 1: Compliance with analog CH1 edit preset. 2: Compliance with analog CH2 edit preset. 3: Compliance with either analog CH1 or CH2 edit preset.

The underline on the setting item denotes the initial setting.

# USER menu

## <EDIT> (continued)

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
308	EDIT RPLCE4	<u>0000</u> 0001 0002 0003	<u>N-DEF</u> CH1 CH2 CH1+CH2	The same type of setting as No. 305. This selects the channel concerned when the VTR CH4 edit preset is set in compliance with the ON or OFF presetting for the analog audio signals designated by the controller. 0: Not set. 1: Compliance with analog CH1 edit preset. 2: Compliance with analog CH2 edit preset. 3: Compliance with analog CH1 or CH2 edit preset.
309	EDIT RPLCEC	<u>0000</u> 0001 0002 0003	<u>N-DEF</u> CH1 CH2 CH1+2	This selects the channel concerned when the VTR CUE edit preset is set in compliance with the ON or OFF presetting for the analog audio signals designated by the editor or controller. 0: Not set. 1: Compliance with analog CH1 edit preset. 2: Compliance with analog CH2 edit preset. 3: Compliance with either analog CH1 or CH2 edit preset.
310	CONFI EDIT	<u>000</u> 0001	<u>OFF</u> ON	This selects whether to conduct simultaneous playback while editing is in progress. 0: No simultaneous playback 1: Simultaneous playback <b>&lt;Note&gt;</b> Simultaneous playback is valid when the TAPE/EE switch is set to TAPE.
311	AUD EDIT IN	<u>0000</u> 0001	<u>CUT</u> FADE	This selects the connection method for the digital audio edit IN point. 0: Cut processing 1: V Fade processing
312	AUD EDIT OUT	<u>0000</u> 0001	<u>CUT</u> FADE	This selects the connection method for the digital audio edit OUT point. 0: Cut processing 1: V Fade processing
313	AUTO ENTRY	<u>0000</u> 0001	<u>DIS</u> ENA	This selects whether the IN point is to be entered using the PREROLL button when it has not been entered. 0: IN point is not entered. 1: IN point is entered.
314	CF ADJ SEL	<u>0000</u> 0001	<u>PLAYER</u> RECORD	This selects the CF adjustment deck with deck-to-deck editing. 0: The player's edit IN/OUT points are adjusted. (reference as the RECORDER side) 1: The recorder's edit IN/OUT points are adjusted. (reference as the PLAYER side)
315	AFTER CUE-UP	<u>0000</u> 0001	<u>STOP</u> STILL	This selects the mode after cue-up operation is complete. 0: STOP mode 1: SHTL STILL mode
316	JOG RANGE	<u>0000</u> 0001	<u>-43~1</u> -4~+4	This sets the range of the JOG speed during 9P remote operation. 0: Plays at -0.43 to +1 speed range 1: Plays at the ±4.1 speed range

The underline on the setting item denotes the initial setting.

# Setup menus

## USER menu

### <TAPE PROTECT>

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
400	STILL TIMER	0000	0.5s	This selects the time to be taken until the unit goes into the tape protection mode when it is left standing in the stop or search still (JOG/VAR/SHTL) mode. (Unit: s = second, min = minute)
		0001	5s	
		0002	10s	
		0003	20s	
		0004	30s	
		0005	40s	
		0006	50s	
		0007	1min	
		<u>0008</u>	<u>2min</u>	
401	SRC PROTECT	<u>0000</u>	<u>STEP</u>	This selects the operation during the tape protection mode when the unit is left standing in the still status during the search mode (JOG/VAR/SHTL). 0: STEP FWD. 1: HALF LOADING. <b>&lt;Note&gt;</b> When STEP FWD is selected, the unit automatically goes into the HALF LOADING mode when the total time for which the unit is left standing in the still status reaches 30 minutes.
		0001	HALF	
402	DRUM STDBY	0000	OFF	This selects whether the head drum is to be rotated when operation is transferred to the standby OFF mode. 0: Head drum remains stationary. 1: Head drum is rotated.
		<u>0001</u>	<u>ON</u>	

The underline on the setting item denotes the initial setting.

#### <Note>

The cumulative standby time at the same tape position increases when transmitting programs or otherwise using identical materials repeatedly.

## USER menu

### <TIME CODE>

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
500	VITC BLANK	0000	BLANK	This selects whether to output the VITC data to the positions selected by VITC POS-1 in 501 and VITC POS-2 in 502. 0: Data is not output. 1: Data is output.
		<u>0001</u>	<u>THRU</u>	
501	VITC POS-1	525 mode		This sets the position where the VITC signal is to be inserted. (The same line as for VITC POS-2 in 502 cannot be selected.)
		0000	10L	
		⋮	⋮	
		<u>0006</u>	<u>16L</u>	
		⋮	⋮	
		0010	20L	
		625 mode		
		0000	7L	
		⋮	⋮	
		<u>0004</u>	<u>11L</u>	
		⋮	⋮	
		0014	21L	

The underline on the setting item denotes the initial setting.

# USER menu

## <TIME CODE> (continued)

Item		Setting		Description	
No.	Superimposed display	No.	Superimposed display		
502	VITC POS-2	525 mode		This sets the position where the VITC signal is to be inserted. (The same line as for VITC POS-1 in 501 cannot be selected.)	
		0000	10L		
⋮	⋮				
<u>0008</u>	18L				
⋮	⋮				
0010	20L				
625 mode					
0000	7L				
⋮	⋮				
<u>0006</u>	13L				
⋮	⋮				
0014	21L				
503	TCG REGEN	<u>0000</u>	<u>TC&amp;UB</u>		This selects the signal to be regenerated when the time code generator (TCG) in the REGEN mode. 0: Both the time code and user bit are regenerated. 1: Only the time code is regenerated. 2: Only the user bit is regenerated.
		0001	TC		
		0002	UB		
504	REGEN MODE	<u>0000</u>	<u>AS&amp;IN</u>	This selects whether the time code is to be regenerated during automatic editing using the unit's control panel. 0: Time code is regenerated with assemble or insert editing. 1: Time code is regenerated with assemble editing. 2: Time code is regenerated with insert editing. 3: Setting complies with REGEN/PRESET switch setting.	
		0001	ASSEM		
		0002	INSRT		
		0003	SW		
505	EXT TC SEL	<u>0000</u>	<u>LTC</u>	This selects the time code to be used when an external time code is to be used. 0: The LTC of the TIME CODE IN connector is used. 1: The video signal VITC is used.	
		0001	VITC		
506	BINARY GP	<u>0000</u>	<u>000</u>	This sets the usage status of the user bit of the time code generated by the TCG. 0: NOT SPECIFIED (character set not specified) 1: ISO CHARACTER (8 bits character set based on ISO646, 1502022) 2: UNASSIGNED 1 (undefined) 3: UNASSIGNED 2 (undefined) 4: UNASSIGNED 3 (undefined) 5: PAGE/LINE 6: UNASSIGNED 4 (undefined) 7: UNASSIGNED 5 (undefined)	
		0001	001		
		0002	010		
		0003	011		
		0004	100		
		0005	101		
		0006	110		
		0007	111		
507	PHASE CORR	<u>0000</u>	<u>OFF</u>	This selects whether to control the phase correction of the LTC generated by the TCG. 0: Phase correction control is not performed. 1: Phase correction control is performed.	
		0001	ON		
508	TCG CF FLAG	<u>0000</u>	<u>OFF</u>	This selects whether the CF flag of the TCG is to ON. 0: CF flag is OFF. 1: CF flag is ON.	
		0001	ON		
509	DF MODE	<u>0000</u>	<u>DF</u>	This selects the DF/NDF mode for CTL and TCG. 0: Drop frame mode. 1: Non-drop frame mode. <b>&lt;Notes&gt;</b> ■ No. 509 is valid when the CONTROL is LOCAL or LOCAL ENA of item 004 to "ENA". ■ This setup menu is not displayed in the 625 mode.	
		0001	NDF		
510	TC OUT REF	<u>0000</u>	<u>V OUT</u>	This is used to switch the phase of the time code, which is output from the TIME CODE OUT connector, for the external LTC input when the TC INT/EXT switch is at the EXT position. (In EE mode only) 0: Time code is synchronized with output video signal. 1: Time code is synchronized with external time code input.	
		0001	TC IN		

The underline on the setting item denotes the initial setting.

# Setup menus

## USER menu

### <VIDEO>

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
600	INT SG	<u>0000</u> 0001 0002	___ OFF ___ BB ___ CB	This selects whether to generate the internal signal. 0: Signal is not generated. 1: The black burst is generated. 2: 100% color bars are generated.
601	OUT VSYNC	<u>0000</u> 0001	___ N-VF ___ VF	This selects whether to float the vertical sync position of the video output in order to align the video output phase with the input in the EE/record/edit modes. 0: Signals are not floated. 1: Signals are floated.
602	V-MUTE SEL	<u>0000</u> 0001	___ N-MUTE ___ LOW RF	This selects whether the video output signal is set to MUTE when LOW RF is detected during playback. 0: No muting. (Freeze) 1: Muting. (Set to gray.)
603	CC (F1) BLANK	<u>0000</u> 0001	___ BLANK ___ THRU	This selects ON or OFF for the closed caption signal in the first field. 0: Forced blanking performed. 1: Blanking not performed.
604	CC (F2) BLANK	<u>0000</u> 0001	___ BLANK ___ THRU	This selects ON or OFF for the closed caption signal in the second field. 0: Forced blanking performed. 1: Blanking not performed.
605	FREEZE SEL	<u>0000</u> 0001	___ FIELD ___ FRAME	This selects the freeze mode for still pictures. 0: Field freeze. 1: Frame freeze. <b>&lt;Note&gt;</b> When frame freeze has been selected, the frame slow status is established with the slow setting.
606	OUT C KILL	<u>0000</u> 0001	___ B/W ___ COLOR	This selects chroma color killer processing for the video output signals. 0: The signals are forcibly processed as B/W signals. 1: The signals are automatically processed.
607	VOUT SETUP	<u>0000</u> 0001	___ THRU ___ ADD	This selects the composite output signal. 0: The signal is output without setup. 1: The signal is output with 7.5% setup. <b>&lt;Note&gt;</b> This setup menu is not displayed in the 625 mode.
608	SDI OUT SEL	<u>0000</u> 0001	___ COMPNT ___ COMPST	This selects the SERIAL OUT signal format. 0: The component 4:2:2 signal is output. 1: The composite signal is output. (option)
609	EDH	<u>0000</u> 0001	___ OFF ___ ON	This selects whether to superimpose EDH onto the serial output signals. 0: EDH is not superimposed. 1: EDH is superimposed.
610	PB/PR IN LV	<u>0000</u> 0001	___ M ___ B-CAM	This selects the component input signal level. 0: M level. 1: B cam level.
611	INPUT C KILL	<u>0000</u> 0001	___ B/W ___ AUTO	This selects color killer processing for the video input signals. 0: The signals are forcibly processed as B/W signals. 1: The signals are automatically processed.
612	IN FRM DET	<u>0000</u> 0001	___ FORCED ___ AUTO	This selects the conditions under which frame detection is to be performed when signals are input. 0: Frame detection is performed at all times. 1: Frame detection is prohibited only when non-standard signals are input.

The underline on the setting item denotes the initial setting.



## USER menu

### <VIDEO> (continued)

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
613	VIN SETUP	<u>0000</u> 0001	<u>THRU</u> CUT	<p>This selects whether the composite signal is to be recorded with setup or without setup.</p> <p>0: When recording signals with no setup. 1: When recording signals with 7.5% setup.</p> <p><b>&lt;Notes&gt;</b></p> <ul style="list-style-type: none"> <li>• This setup menu is not displayed in the 625 mode.</li> <li>• When recording composite signals, be sure to double-check whether the signals are to be recorded with or without setup.</li> </ul>
614	Pb/Pr OUT LV	<u>0000</u> 0001	<u>M</u> B-CAM	<p>This selects the analog component output level.</p> <p>0: MII level 1: <math>\beta</math> -CAM level</p> <p><b>&lt;Note&gt;</b></p> <p>This setup menu is not displayed in the 625 mode.</p>
617	WFM SEL	0000 0001 <u>0002</u> 0003 0004 0005 0006 0007	CTL TC <u>VIDEO</u> SYNC RF-L RF-R ENV-L ENV-R	<p>This selects the signal to output from the VIDEO OUT2 connector.</p> <p>0: The CTL signal is output. 1: The TIME CODE signal is output. 2: The VIDEO OUT signal is output. 3: The SYNC signal is output. 4: The PB L RF signal is output. 5: The PB R RF signal is output. 6: The PB L ENV signal is output. 7: The PB R ENV signal is output.</p>

The underline on the setting item denotes the initial setting.

# Setup menus

## USER menu

### <AUDIO>

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
700	INT SG	<u>0000</u> 0001	OFF ON	This selects whether or not the internal signal is to be generated. 0: The signal is not generated. 1: The signal is generated.
701	CH1 IN LV	<u>0000</u> 0001 0002	4dB 0dB -20dB	This selects the audio input (CH1) reference level switching.
702	CH2 IN LV	<u>0000</u> 0001 0002	4dB 0dB -20dB	This selects the audio input (CH2) reference level switching.
703	CH3 IN LV	<u>0000</u> 0001 0002	4dB 0dB -20 dB	This selects the audio input (CH3) reference level switching.
704	CH4 IN LV	<u>0000</u> 0001 0002	4dB 0dB -20 dB	This selects the audio input (CH4) reference level switching.
705	CUE IN LV	<u>0000</u> 0001 0002 0003	4dB 0dB -20dB -60dB	This selects the audio input (CUE) reference level switching.
706	CH1 OUT LV	<u>0000</u> 0001 0002	4dB 0dB -20dB	This selects the audio output (CH1) reference level switching.
707	CH2 OUT LV	<u>0000</u> 0001 0002	4dB 0dB -20dB	This selects the audio output (CH2) reference level switching.
708	CH3 OUT LV	<u>0000</u> 0001 0002	4dB 0dB -20 dB	This selects the audio output (CH3) reference level switching.
709	CH4 OUT LV	<u>0000</u> 0001 0002	4dB 0dB -20 dB	This selects the audio output (CH4) reference level switching.
710	CUE OUT LV	<u>0000</u> 0001 0002	4dB 0dB -20dB	This selects the audio output (CUE) reference level switching.
711	MONIL OUT LV	<u>0000</u> 0001 0002	4dB 0dB -20dB	This selects the audio monitor output (Lch) reference level switching.
712	MONIR OUT LV	<u>0000</u> 0001 0002	4dB 0dB -20dB	This selects the audio monitor output (Rch) reference level switching.
713	MONI OUT	<u>0000</u> 0001	UNITY VAR	This selects the audio monitor output volume UNITY/ VARIABLE reference switching. 0: The volume is output at the preset value. 1: The volume is linked with the headphones volume control.
714	EMPHASIS	<u>0000</u> 0001	OFF ON	This sets the emphasis ON or OFF.
715	CH1 IN SEL	<u>0000</u> 0001	ANA DIGI	This selects the CH1 input when USER SET has been selected by pressing the units AUDIO input selector switch. 0: Analog input. 1: Digital input.

The underline on the setting item denotes the initial setting.

## USER menu

### <AUDIO> (continued)

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
716	CH2 IN SEL	<u>0000</u> 0001	<u>ANA</u> DIGI	This selects the CH2 input when USER SET has been selected by pressing the units AUDIO input selector switch. 0: Analog input. 1: Digital input.
717	CH3 IN SEL	<u>0000</u> 0001	<u>ANA</u> DIGI	This selects the CH3 input when USER SET has been selected with the units AUDIO input selector switch. 0: Analog input 1: Digital input
718	CH4 IN SEL	<u>0000</u> 0001	<u>ANA</u> DIGI	This selects the CH4 input when USER SET has been selected by pressing the unit's AUDIO input selector switch. 0: Analog input 1: Digital input
719	DIGI IN SEL12	<u>0000</u> 0001	<u>AES</u> SIF	This selects the CH1 and CH2 digital input when USER SET has been selected by pressing the unit's AUDIO input selector switch. 0: AES 1: Serial
720	DIGI IN SEL34	<u>0000</u> 0001	<u>AE</u> SIF	This selects the CH3 and CH4 digital input when USER SET has been selected by pressing the units AUDIO input selector switch. 0: AES 1: Serial
721	MONI CH SEL	<u>0000</u> 0001 0002	<u>MAN</u> AUTO1 AUTO2	This selects the monitor output. 0: The output is as selected in MONITOR SELECT. 1: The output defaults to AUDIO except when speed factor is between -0.43x and 1x, inclusive, in which case output is PCM AUDIO. 2: The output defaults to CUE except in PLAY mode, in which case output is PCM AUDIO.
722	REC CH1	<u>0000</u> 0001 0002	<u>CH1</u> CH2 CH1+2	This selects the input signal to be recorded on the audio CH1 track. 0: Audio input CH1 signal. 1: Audio input CH2 signal. 2: Mixed audio input CH1 and CH2 signal.
723	REC CH2	<u>0000</u> 0001 0002	<u>CH1</u> <u>CH2</u> CH1+2	This selects the input signal to be recorded on the audio CH2 track. 0: Audio input CH1 signal. 1: Audio input CH2 signal. 2: Mixed audio input CH1 and CH2 signal.
724	REC CH3	<u>0000</u> 0001 0002	<u>CH3</u> CH4 CH3+CH4	This selects the input signal to be recorded on the audio CH3 track. 0: Audio input CH3 signal 1: Audio input CH4 signal 2: Mixed audio input CH3 and CH4 signal
725	REC CH4	<u>0000</u> <u>0001</u> 0002	<u>CH3</u> <u>CH4</u> CH3+CH4	This selects the input signal to be recorded on the audio CH4 track. 0: Audio input CH3 signal 1: Audio input CH4 signal 2: Mixed audio input CH3 and CH4 signal
726	REC CUE	<u>0000</u> 0001 0002 0003 0004 0005 0006	<u>CUE</u> CH1 CH2 CH1+2 CH3 CH4 CH3+4	This selects the input signal recorded in CUE. 0: CUE IN 1: Audio CH1 input 2: Audio CH2 input 3: Audio CH1 and CH2 MIX signal 4: Audio CH3 input 5: Audio CH4 input 6: Audio CH3 and CH4 MIX signal

The underline on the setting item denotes the initial setting.

# Setup menus

## USER menu

### <AUDIO> (continued)

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
727	PB FADE	<u>0000</u> 0001 0002	<u>AUTO</u> CUT FADE	This selects the processing method for the audio edit points (IN point, OUT point) during playback. 0: According to the status during recording. 1: Forced CUT 2: Forced FADE
728	EMBEDDED AUD	<u>0000</u> <u>0001</u>	<u>OFF</u> <u>ON</u>	This selects whether to superimpose the audio data onto the serial output. 0: Data is not superimposed. 1: Data is superimposed.
729	MONITOR MIX L	<u>0000</u> 0001 0002	<u>OFF</u> CH1+2 CH3+4	This selects the mixed signal for the headphone monitor. 0: No mixing. 1: CH1 and CH2 are mixed and output to the left channel. 2: CH3 and CH4 are mixed and output to the left channel.
730	MONITOR MIX R	<u>0000</u> 0001 0002	<u>OFF</u> CH1+2 CH3+4	This selects the mixed signal for the headphone monitor. 0: No mixing. 1: CH1 and CH2 are mixed and output to the right channel. 2: CH3 and CH4 are mixed and output to the right channel.
731	CUE OUT SEL	<u>0000</u> 0001	<u>OFF</u> <u>ON</u>	This selects whether or not the cue audio signal is to be output to the main line output in the search mode. 0: CUE AUDIO is not output. 1: CUE AUDIO is output. (This applies only when setup menu No. 721 (MONI CH SEL) is not set to "MANU".)

The underline on the setting item denotes the initial setting.

## AJ-PD950 USER menu

The following setup menu is displayed when the AJ-PD950 is used.

Item		Setting		Description
No.	Superimposed display	No.	Superimposed display	
012	SYS FORMAT	0000 0001 <u>0002</u>	422 411 <u>420P</u>	This sets the unit's recording/playback format. 0: The 422 (50M) format is selected. 1: The 411 (25M) format is selected. 2: The 420P format is selected. <b>&lt;Notes&gt;</b> • Editing is not possible in the 411 mode. • In the 625 mode, 420P cannot be selected.
608	SDI OUT SEL	0000 0001 <u>002</u>	COMPNT COMPST <u>420P</u>	This selects the SERIAL OUT signal format. 0: Component 4:2:2 signals are output. 1: Composite signals are output. (Option) 2: Component 4:2:2P signals are output.

The underlining indicates the factory setting.

# Time code/user bit

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## Time code

The time code is used when the time code signal generated by the time code generator (time code signal generator) is to be recorded on the tape, its values are to be read by the time code reader (time code signal reader), and the absolute position of the tape is to be displayed in increments of hours, minutes, seconds and frames.

The time code is written in the sub-code area (data area) of the helical track. This enables insert editing to be conducted independently using the time code alone. In addition, the VTR's playback speed can be read from the stop mode to slow-motion playback up to high-speed play (approx. 50X normal speed/approx. 100X when using DVCPRO tape).

The time code values are indicated using the display and superimpose functions.

TCR 00 : 07 : 04 : 24  
↑    ↑    ↑    ↑  
Hours | Seconds    Frames  
Minutes

## User bit

“User bit” refers to the 32-bit (8-digit) data frame among the time code signals which has been released to users. It enables operator numbers values to be recorded.

The alphanumeric characters which can be used for the user bit are the figures 0 to 9 and the letters A to F.

# Recording internal/external time codes

---

## 1. Setting the internal time code

- 1** Place the VTR in the stop mode.
- 2** Set the TC/CTL switch to TC.
- 3** Set the TC INT/EXT switch to INT. (internal time code selected)
- 4** Set the REC RUN/FREE RUN switch position.  
**REC RUN:** The time code runs at the same time as the recording proceeds.  
**FREE RUN:** The time code runs in the same way as the time regardless of the VTR operation.
- 5** Set the REGEN/PRESET switch position.  
**REGEN:** Continuity is maintained with the recorded time code before editing. (Detailed settings are also possible using the menu settings. See the menu items below.)  
Setup menu No. 503 (TCG REGEN)  
Setup menu No. 504 (REGEN MODE)  
**PRESET:** Recording starts from the value set with the TC SET button.  
**<Note>**  
During auto editing, REGEN will be selected by the setup menu No. 504 setting even if the switch has been set to the PRESET position.
- 6** Set the TC SET button.  
Use the TC SET button to set the start number of the time code or user bit.
  - 1** Press the SHIFT button.  
The leftmost digit flashes.
  - 2** Press the ADJ button to change the value.  
Each time the button is pressed, the number changes. The setting range is given below.
    - When using the time code and user bit in real time**  
00:00:00:00 - 23:59:59:29
    - User bit**  
00 00 00 00 -FF FF FF FF
  - 3** Repeat steps 1 and 2 to change the value.
  - 4** When the setting of the start number is completed, press the START button. In the FREE RUN mode, the time code now starts running.
  - 5** Proceed with the recording or editing.

## 2. Setting the external time code (TC switch →EXT)

- 1** Place the VTR in the stop mode.
- 2** Set the TC/CTL switch to TC.
- 3** Set the TC INT/EXT switch to EXT. (External time code selected)
- 4** Setup menu No. 505 (EXT TC SEL) can be set as follows.  
**LTC:** The LTC signal input to the TIME CODE IN connector (XLR) on the rear jack panel is recorded as the time code.  
**<Note>** The LTC signal must be synchronized with the video signal.  
**VITC:** The input video signal's VITC is recorded as the time code.

# Reproducing the time code/user bit

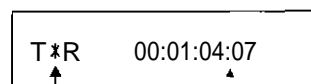
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- 1** Place the unit in the stop mode.
- 2** Set the TC/CTL button to TC.
- 3** Set the TC/UB switch to TC or UB.  
**TC:** The time code is displayed.  
**UB:** The user bit is displayed.
  - When it is no longer possible to read the time code, it is interpolated using the CTL signal.
- 4** Press the PLAY button.  
Playback now commences, and the time code appears on the display.  
When setup menu No. 007 (SUPER) is ON, the time code value is superimposed onto the video signal from the VIDEO OUT 3 connector.

## <Notes>

- The colon between the seconds and frames changes to a period when the drop frame time code is read.
- When the time code signal cannot be read, the time code is automatically interpolated by the CTL signal.

The display appears as shown below.

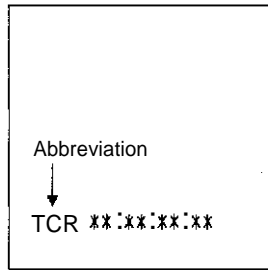


The colon between the seconds and frames changes to a period during drop frame mode.

When the time code signal cannot be read, an asterisk ( \* ) is displayed.

# Superimpose screen

The control signals, time code, etc. are displayed using abbreviations.

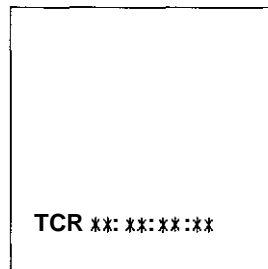


TV monitor

CTL = control signal  
TCR = TC time code reading  
UBR = TC user bit reading

## Characters displayed

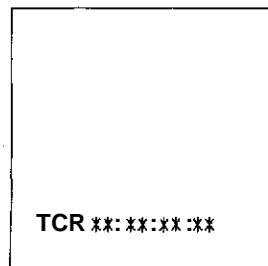
The background of characters superimposed on the display can be changed using setup menu No. 011 (CHARA TYPE).



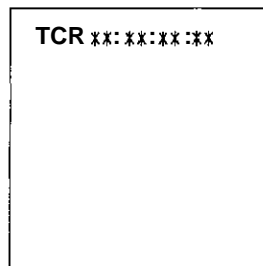
TV monitor

## Display position

The position of the characters superimposed on the display can be changed using setup menus No. 009 (CHARA H-POS) and No. 010 (CHARA V-POS).



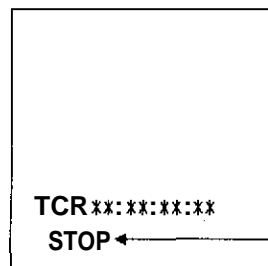
TV monitor



TV monitor

## Operation mode

The VTR's operation mode can also be displayed using setup menu No. 008 (DISPLAY SEL).

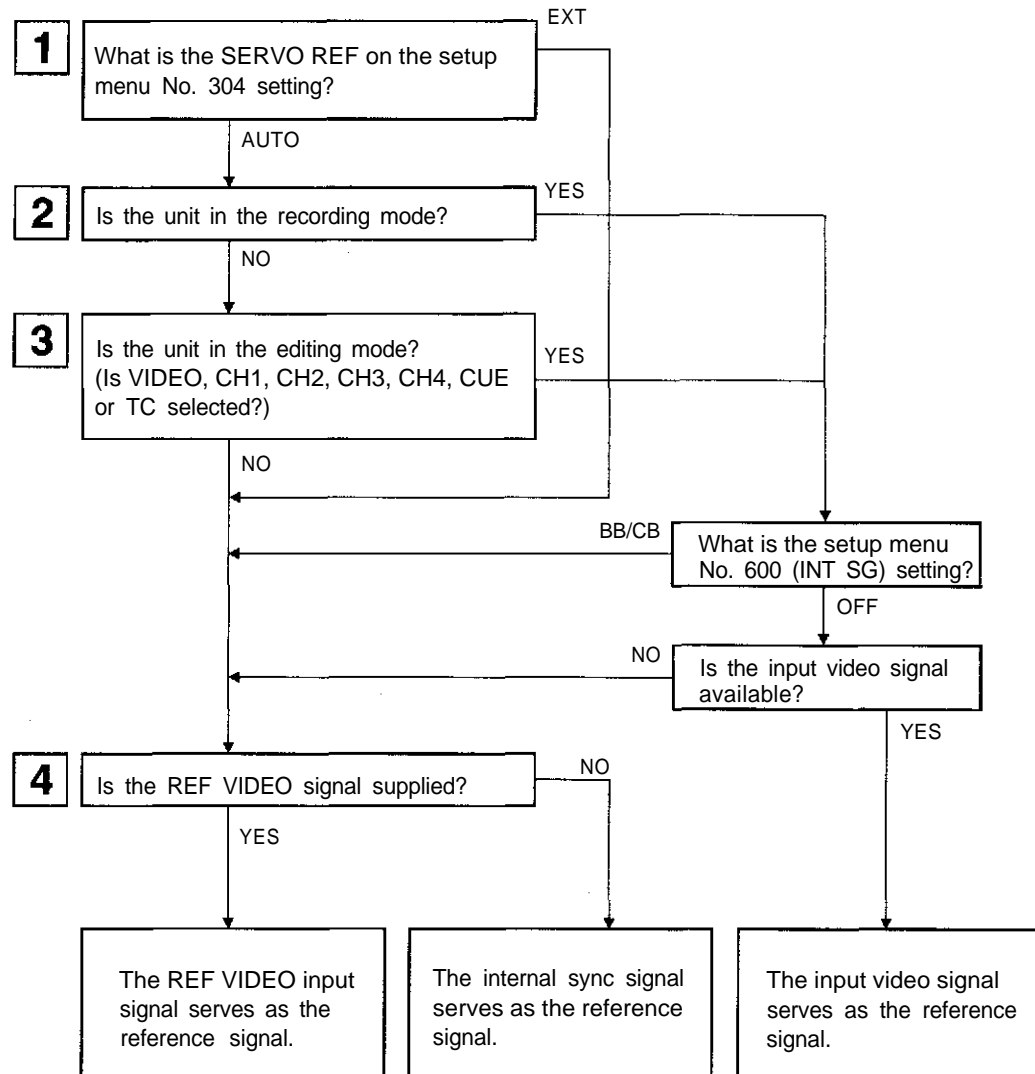


TV monitor



# Servo reference

This unit automatically selects the input video signal selected by the INPUT switch, the reference video signal supplied from the REF VIDEO input connector or the internal sync signal as the servo reference signal. When the signal is selected, the unit's mode and servo reference stand in the relationship shown in the flowchart presented below.



# Servo reference setting tables

The servo reference signal is switched as shown in the tables below depending on the servo reference setting, deck mode and what input signal is available. When the mode is transferred to editing or recording/playback, the image may be disturbed and the transfer may be delayed if the references during playback and recording do not match.

## ■ During playback or special playback

SERVO REF on the setup menu No. 304 position	Input signal status		Reference signal (servo reference)
	VIDEO IN signal	REF IN signal	
AUTO	○	○	REF IN signal
	○	×	Internal sync signal
	×	○	REF IN signal
	×	×	Internal sync signal
EXIT	○	○	REF IN signal
	○	×	Internal sync signal
	×	○	REF IN signal
	×	×	Internal sync signal

## ■ During recording or editing

SERVO REF on the setup menu No. 304 position	Input signal status		Reference signal (servo reference)
	VIDEO IN signal	REF IN signal	
AUTO	○	○	VIDEO IN signal
	○	×	VIDEO IN signal
	×	○	REF IN signal
	×	×	Internal sync signal
EXIT	○	○	REF IN signal
	○	×	Internal sync signal
	×	○	REF IN signal
	×	×	Internal sync signal

"○" denotes that the signal is supplied: "×" denotes that the signal is not supplied.

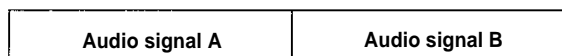
When "BB" or "CB" is set for the setup menu No. 600 and internal signal generation has been selected, the REF IN signal serves as the servo reference when the REF IN signal is provided and the internal sync signal serves as the servo reference when the REF IN signal is not provided.

## Audio V Fade Function

---

When editing tapes, the edit point splicing selection (setup menu No. 311 and 312) information is recorded on the tape. This information is then sensed during playback, and V fade or cut processing is automatically performed for these sections. [However, only when the playback fade selection (No. 727) is AUTO.]

When the edit point splicing selection (setup menu No. 311 and 312) is CUT



Noise appears at the edit splice.

When the edit point splicing selection (setup menu No. 311 and 312) is FADE



V fade is performed instantaneously to eliminate the noise.

### <Notes>

- When the playback fade selection (No. 727) is CUT, cut processing is performed for all splices.
- When the playback fade selection (No. 727) is FADE, V fade processing is performed for all splices.

# Audio recording channel and monitor output selection

## Audio recording channel

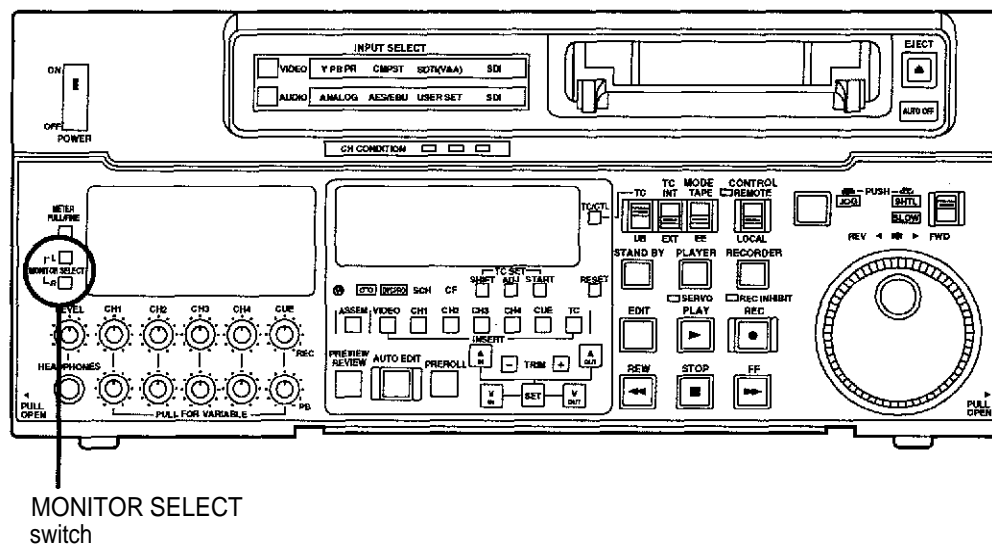
The audio recording channels are selected on the AUDIO setup menu as shown below.

Recording track	Recording signal
CH1	CH1 input/CH2 input/CH1 input + CH2 input
CH2	CH1 input/CH2 input/CH1 input + CH2 input
CH3	CH3 input/CH4 input/CH3 input + CH4 input
CH4	CH3 input/CH4 input/CH3 input+ CH4 input
CUE	CH1 input/CH2 input/CH3 input/CH4 input/CH1 input + CH2 input/CH3 input + CH4 input

## Monitor output channel

The monitor output channels are selected using the MONITOR SELECT switch as shown below.

Monitor output	Output signal
L	CH1/CH2/CH3/CH4/CH1+CH2/CH3+CH4/CUE
R	CH1/CH2/CH3/CH4/CH1+CH2/CH3+CH4/CUE



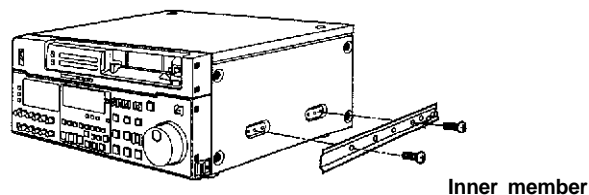
## Printed circuit board

Printed circuit board	Abbr. name	Full name	Function	Factory setting
F8 board ADDA1	SW1	Audio Input Impedance SW	This sets the CH1 audio input impedance. HIGH/600Ω	HIGH
	SW41	Audio Input Impedance SW	This sets the CH2 audio input impedance. HIGH/600Ω	HIGH
	SW 101	Audio Input Impedance SW	This sets the CH3 audio input impedance. HIGH/600Ω	HIGH
	SW 141	Audio Input Impedance SW	This sets the CH4 audio input impedance. HIGH/600Ω	HIGH
H1 board CUE	SW101	Cue Input Impedance SW	This sets the CUE input impedance.	HIGH

# Rack mounting

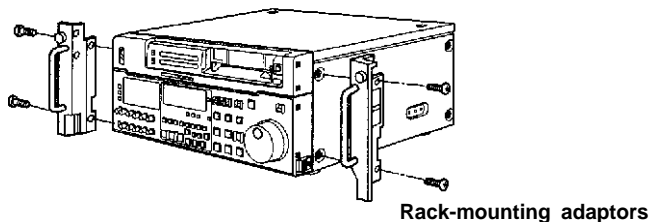
The unit can be mounted into a 19-inch standard rack if the optional rack-mounting adaptors (AJ-MA75P) are used. For the installation rails, it is recommended that the rail and bracket for 18" length (model number CC3001-99-0400) of CHASSIS TRAK be used. (The complete slide rail and bracket unit is not available from Panasonic) For further details, consult with your dealer.

- 1** Remove the screws on the left and right sides of the unit.
- 2** Use the removed screw to attach the inner members of the slide rails.

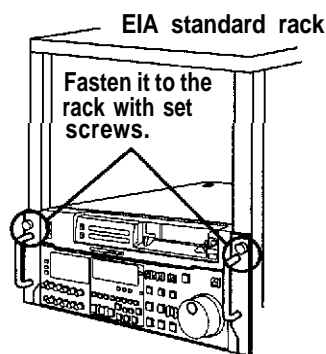


The length of the screws used is subject to restriction. If some of the mounting screws have been lost or misplaced, use screws which are less than 4" long in their place. Use four screws to secure each inner member.

- 3** Attach the outer member brackets to the rack. Check that the height is the same for the left and right brackets.
- 4** Attach the AJ-MA75P rack-mounting adaptors with included 4 screws.



- 5** Remove the 4 rubber legs from the bottom of the unit, and install the unit in the rack. After the unit has been installed, check that it moves smoothly along the rails.



## <Notes>

- Keep the temperature inside the rack to between +41°F (5°C) and +104°F (40°C).
- Bolt the rack securely to the floor so that it will not topple over when the VTR is drawn out.

## Video head cleaning

---

This unit has an auto head cleaning function which automatically reduces the dirt on the heads. However, to further increase the unit's reliability, it is recommended that its video heads be cleaned every day.

Use the cleaning fluid designated by Panasonic.

---

## Condensation

Condensation occurs due to the same principle involved when droplets of water form on a window pane of a heated room. It occurs when the unit or tape is moved between places where the temperature or humidity varies greatly or when, for instance:

- It is moved to a very humid place full of steam or a room immediately after it has been heated up.
- It is suddenly moved from a cold location to a hot or humid location.

When moving the unit to locations such as these, leave it standing for about 10 minutes rather than switching on the power immediately.

If condensation has formed on or in the unit, the AUTO OFF lamp lights and the cassette tape is automatically ejected.

Keep the power supplied and simply wait until the AUTO OFF lamp goes off.

# Error messages

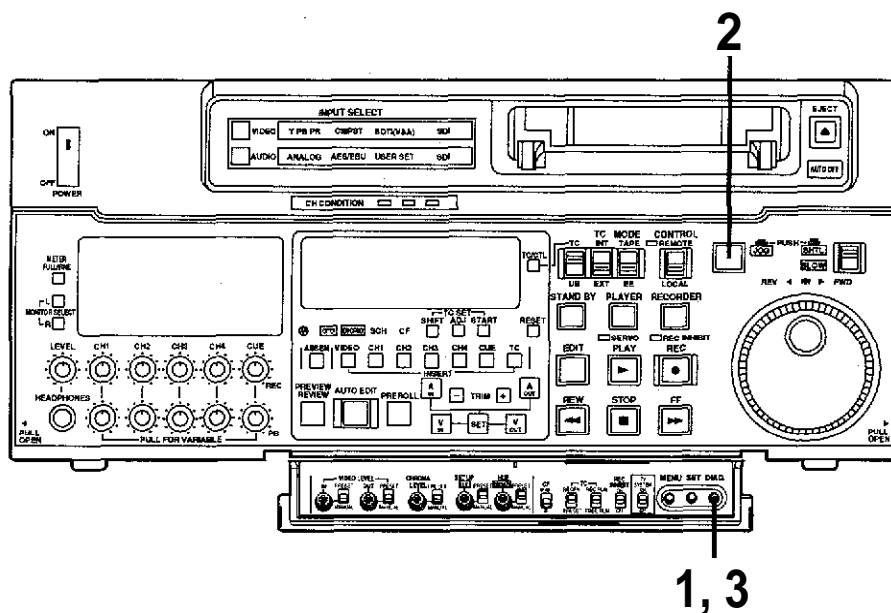
When a warning occurs in this unit, the warning lamp lights up. Opening the DIAG menu will display the warning description on the counter display and the monitor. Also, when an abnormal operation is detected in this unit, the AUTO OFF lamp lights up and a message appears on the counter display.

## DIAG menu

This display the VCR information. VCR information includes "WARNING" information and "HOURS METER" (usage time) information. A DIAG menu appears on the monitor when the monitor is connected to the VIDEO OUT 3 connector on the connector section.

## Displaying the DIAG menu

- 1** Press the DIAG button.  
The DIAG menu screen is displayed on the monitor, and the message is displayed on the counter display.
- 2** The "WARNING" information and "HOURS METER" information can be switched by pressing the search buttons.
- 3** Press the DIAG button again to return to the original display.



### "WARNING" information display

- A warning message is displayed whenever a warning occurs (the warning lamp lights up). When warnings have not been detected, "NO WARNING" is displayed.
- When multiple warning occur, the descriptions for each warning can be checked by turning the search dial.



## Displaying the "HOURS METER" information

Turn the search dial to move the cursor (\*). The description for the item where the cursor is located is shown on the counter display.

Item No.	Item	Description
H00	OPERATION	Displays the time that the power has been supplied in one-hour units.
H01	DRUM RUN	Displays the time that the drum has been rotating in one-hour units.
H02	TAPE RUN	Displays the time that the tape has been running during FF, REW, PLAY, SEARCH (JOG, VAR, SHTL), REC, and EDIT modes (except for STILL in the JOG, VAR or SHTL mode) in one-hour units.
H03	THREADING	The number of times for threading/unthreading is displayed in single units.
H11	DRUM RUN r	Displays the time that the drum has been rotating in one-hour units. (Can be reset)
H12	TAPE RUN r	Displays the time that the tape has been running during FF, REW, PLAY, SEARCH (JOG, VAR, SHTL), REC, and EDIT modes (except for STILL in the JOG, VAR or SHTL mode) in one-hour units. (Can be reset)
H13	THREADING r	The number of times for threading/unthreading is displayed in single units. (Can be reset)
H30	POWER ON	The number of times the power has been turned on is displayed in single units.

### <Notes>

- The resettable items in the "HOURS METER" information are reset by the shop when performing maintenance or other work.
- The search buttons and the search dial cannot be operated while the DIAG menu is displayed.

If "T&S&M" is selected in the setup menu No. 008 (DISPLAY SEL), a message appears in the mode display whenever a warning or error occurs. When multiple events occur, the event with the highest priority is displayed.

Priority	Display	Description
High ▲ ↓ ▼ Low	Error messages (See error message table)	When an abnormal operation is detected in this unit, the AUTO OFF lamp lights up and an error message is displayed.
	INT SG	If "BB" or "CB" in No. 600 (INT SG) in the setup menu is selected, pressing the REC button or the EDIT button (E to E mode) will display "INT SG" for the first two seconds. This is also displayed for the first two seconds when starting editing.
	NO INPUT	If there is no input signal (except for analog audio) to the connector selected using the INPUT SELECT switch, pressing the REC button or the EDIT button (E to E mode) will display "NO INPUT" for the first two seconds. This is also displayed for the first two seconds when starting editing.
	Warning messages (See error message table)	When a warning occurs in this unit, the warning lamp lights up and a warning message is displayed. When multiple warnings occur, the warning with the highest priority is displayed.

## Warning messages

Priority	Monitor display	Description	VTR operation
High ▲ ↓ ▼ Low	FAN STOP	This is displayed when the fan motor stops.	Operation continues
	SERVO NOT LOCKED	This is displayed when the servo is not locked for three or more seconds during playback, recording, or editing.	Operation continues
	LOW RF	This is displayed when envelope levels approximately 1/3 that of normal levels are detected for more than one second during playback, recording, or editing.	Operation continues
	HIGH ERROR RATE	This is displayed when the error rate increases and correction/interpolation is performed on either the video or audio playback signal.	Operation continues

## Table of AUTO OFF Error messages

Counter display	Monitor display	Description	VTR operation (Restart condition)
CAP ROTATE TOO SLOW	CAP ROTA TOO SLOW	If the capstan motor speed is abnormally low, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
CAP TENSION ERROR	CAP TENSION ERROR	If an abnormal tension at the supply side is detected in the capstan mode, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
DEW	DEW	If condensation is detected, the AUTO OFF lamp lights, the message display flashes, and the VTR is transferred to the eject mode. After the tape is ejected, the drum rotates in order to eliminate the condensation. When the condensation has been eliminated, the AUTO OFF lamp and message display go off, and the VTR can be used. <b>&lt;Notes&gt;</b> 1) If condensation is detected in the eject mode, the drum starts rotating as soon as it is detected. 2) If condensation is detected when the cassette has been inserted, the drum rotation is stopped, and after the tape is ejected, the drum starts rotating.	EJECT (Normal operation resumed after condensation is eliminated)
DRUM ROTATE TOO FAST	DRUM ROTA TOO FAST	If the cylinder motor speed is abnormally high, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
DRUM ROTATE TOO SLOW	DRUM ROTA TOO SLOW	If the cylinder motor speed is abnormally low, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
E-FF	E-FF	If the tape start and tape end are detected simultaneously either during or after loading, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
FRONT LOAD ERROR	FRONT LOAD ERROR	The AUTO OFF lamp lights and the message display flashes when the take-up reel has been rotating idly for a fixed period of time while the start/end processing operation during loading (half position) is being performed.	STOP (POWER OFF → ON)
FRONT LOAD MOTOR	FRONT LOAD MOTOR	If the cassette does not move up even when 6 seconds have elapsed since the VTR was transferred to the eject mode, the AUTO OFF lamp lights, and the message display flashes. <b>&lt;Note&gt;</b> If the cassette does not move down inside the machine even when 6 seconds have elapsed since the cassette was inserted, the VTR is transferred to the eject mode.	STOP (POWER OFF → ON)
LOADING MOTOR	LOADING MOTOR	When the unloading operation is not completed within 6 seconds, the AUTO OFF lamp lights, and the message display flashes. <b>&lt;Note&gt;</b> When the loading operation is not completed within 6 seconds, the VTR is transferred to the eject (unloading) mode.	STOP (POWER OFF → ON)

Counter display	Monitor display	Description	VTR operation (Restart condition)
REEL DIR UNMATCH	REEL DIR UNMATCH	If the reel motor at the take-up side is running in the reverse direction, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
REEL TENSION ERROR	REEL TENSION ERROR	If an abnormal tension at the supply side is detected in the reel mode, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
SERVO COMM ERROR	SERVO COMM ERROR	When the servo microcomputer does not follow the instructions of the system control microcomputer even when 10 seconds have elapsed, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
SERVO CONTROL ERROR	SERVO CONTROL ERR	When there is no response from the servo microcomputer for 1 or more seconds, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
SERVO ERROR	SERVO ERROR	When only the servo microcomputer was reset in an instantaneous power failure, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
S-FF/REW TIMEOVER	S-FF/REW TIMEOVER	If the start/end processing operation is not completed, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
S REEL ROTA TOO FAST	S REEL TOO FAST	If the supply reel motor should rotate at an abnormally fast rate, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
S REEL TORQUE ERROR	S REEL TORQUE ERR	If an abnormal torque applied to the supply reel motor is detected or if an abnormal current flowing to the current-sensing resistor is detected, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
T REEL ROTA TOO FAST	T REEL TOO FAST	If the take-up reel motor should rotate at an abnormally fast rate, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
T REEL TORQUE ERROR	T REEL TORQUE ERR	If an abnormal torque applied to the take-up reel motor is detected, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
UNLOAD ERROR	UNLOAD ERROR	If the tape has not been wound up during unloading, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
WINDUP ERROR	WINDUP ERROR	If, after the total tape amount has been detected, the amount of tape wound up on the take-up reel and the amount of tape supplied by the supply reel differ to an abnormal extent while the tape is traveling in the forward or reverse direction, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)
WINDUP REEL NOT ROTA	W-UP REEL NOT ROTA	If, after the cassette has been inserted, the tape take-up reel has not wound up the tape while the total tape amount is not detected and while the tape is traveling in the forward or reverse direction, the AUTO OFF lamp lights, and the message display flashes.	STOP (POWER OFF → ON)

# RS-232C interface

## 1. Introduction

(1) The VTR can be operated by commands when the RS-232C interface is used.

(See command table on page 79 – 81.)

(2) Conditions for acknowledging commands from RS-232C interface

The front panel REMOTE/LOCAL switch must be at REMOTE.

The setup menu item No. 204 “RS232C SEL” must be ON.

If the above conditions are not met, [ACK] + [STX]ER001 [EXT] is returned to the external unit.

Whether the [ACK] code is returned depends on the setting which has been selected for setup menu item No. 209 “RETURN ACK”.

## 2. Hardware specifications

### External interface specifications

#### 1) Connector specifications

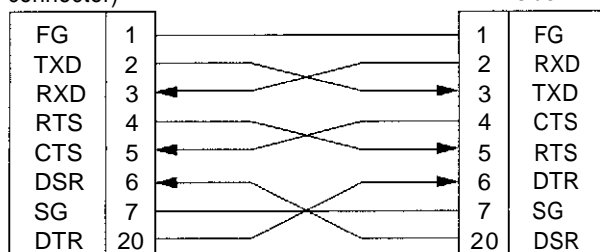
Connector: D-SUB 25-pin (crossover cable supported)

Pin No.	Signal	Circuit name	Description
1	FG	Protective ground	Frame ground
2	RXD	Received data	Data is sent to PC.
3	TXD	Transmitted data	Data is received from PC.
4	CTS	Clear to send	Shorted with pin 5.
5	RTS	Request to send	Shorted with pin 4.
6	DTR	Data terminal ready	No processing
7	SG	Signal ground	Signal ground
20	DSR	Data set ready	+ voltage output after communication enable status

#### 2) Example of connection with controller (PC)

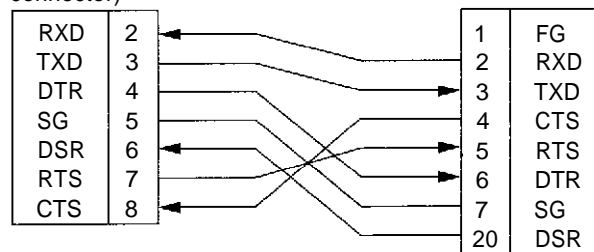
##### ■ Using crossover cable with D-SUB 25-pin connectors

PC side  
(D-SUB 25-pin  
connector)



##### ■ Using crossover cable with D-SUB 9-pin and 25-pin connectors

PC side  
(D-SUB 9-pin  
connector)



### 3. Software specifications

#### Protocol

##### 1) Communication parameters

Communication system	Asynchronous, full duplex
Communication speed	300/600/1200/2400/4800/ <u>9600</u>
Bit length	7 bit/ <u>8 bit</u>
Stop bit	<u>1 bit</u> /2 bit
Parity bit	<u>NONE</u> /ODD/EVEN
ACK code	ACK code returned/ <u>ACK code not returned</u> <b>&lt;Note&gt;</b> The ACK code is what is returned from the VTR to the controller when data has been successfully sent from the controller.

The underlining indicates the factory settings.

Any changes to the settings can be made using the setup menu items listed below.

Communication parameter	Setup menu item
Communication speed	No. 205 BAUD RATE
Bit length	No. 206 DATA LENGTH
Stop bit	No. 207 STOP BIT
Parity bit	No. 208 PARITY
ACK code	No. 209 RETURN ACK

##### 2) Send format [controller (PC) → VTR]

###### ■ Data format

[STX] [command] [:] [data] [ETX]

02h XX XX XX 3Ah XX-XX 03h ←(ASCII code: symbols, numbers upper-case letters)

20h<XX<7Fh

- [command]: Command identifier; a 3-byte identifier (ASCII code: symbols, numbers, upper-case letters) is sent as the command.
- [:]: This code serves as a delimiter between the command and data.
- [data]: Data (ASCII code: symbols, numbers, upper-case letters) can be added in the number of bytes required.

###### ■ Outline of send procedure from controller

1. The send command starts with STX (start of text = 02h). The command is then identified by COMMAND which follows and the data is added as required.  
The format ends with ETX (end of text = 03h).
2. When a different command is to be sent, a response is awaited from the VTR, and then the command is sent. (See page 78.)
3. If STX is sent again before ETX is sent, the receive data buffer inside the VTR is cleared. A command error is returned to the controller, and the data is newly processed with STX which was received again at the head.

# RS-232C interface

---

## 3) Return format [VTR → controller (PC)]

The following responses are made to the command. If necessary, more than one response is made.

### ■ When the communication has terminated normally

1. The receive completion message is returned.

[ACK]  
06h

2. The execution completion message is returned.

[STX] [command] [data] [ETX]  
02h XX XX XX XX-XX 03h

- [command]: This is the message (data) which is returned or the execution completion message identifier.
- [data]: This is the data to be returned. It can be omitted.

Example:      Send command              Return message (data)  
                 [STX] OPL [ETX]    →    [ACK] [STX] OPL [ETX]

### ■ When the communication has terminated abnormally

[NACK]  
15h

### ■ When processing is not possible due to incorrect data or trouble in the VTR

1. The receive completion message is returned.

[ACK]  
06h

2. An error code is returned.

[STX] E R N<sub>1</sub> N<sub>2</sub> N<sub>3</sub> [ETX]  
02h Error code 03h

## 4. Error code table

- ER001: Invalid command
  - Unsupported command received.
  - Error in command execution
- ER002: Parameter error
- ER102: VTR mode error (front loading motor)
- ER103: VTR mode error (loading motor)
- ER104: VTR mode error (drum, capstan system)
- ER105: VTR mode error (reel system)
- ER106: VTR mode error (tension system)
- ER108: VTR dew error
- ER1FF: VTR system error

## 5. Command table

### (1) Commands relating to operation control

#### <Notes>

- As for the return (completion) message, [ACK] is first returned when data is received, and the execution message is subsequently returned. It is only the execution message which is listed in this table.
- In the case of commands not listed in the table, ER001 (invalid command) is returned after [ACK] has been returned.

VTR operation	Send command	Return (completion) message	Supplementary notes
STOP	[STX] OSP [ETX]	[STX] OSP [ETX]	This command is for stopping the tape travel. The resulting output picture and sound statuses differ according to the settings selected for the setup menu No. 105 (AUTO EE SEL).
EJECT	[STX] OEJ [ETX]	[STX] OEJ [ETX]	This command is for ejecting the cassette tape. The resulting output picture and sound statuses differ according to the settings selected for the setup menu No. 105 (AUTO EE SEL).
PLAY	[STX] OPL [ETX]	[STX] OPL [ETX]	This command is for starting playback.
REWIND	[STX] ORW [ETX]	[STX] ORW [ETX]	This command is for rewinding the tape. The resulting output picture and sound statuses differ according to the settings selected for the setup menu No. 105 (AUTO EE SEL). The maximum tape speed differs according to the setting selected for setup menu No. 102 (FF. REW MAX).
FAST FORWARD	[STX] OFF [ETX]	[STX] OFF [ETX]	This command is for fast forwarding the tape. The resulting output picture and sound statuses differ according to the settings selected for the setup menu No. 105 (AUTO EE SEL). The maximum tape speed differs according to the setting selected for setup menu No. 102 (FF. REW MAX).
REC	[STX] ORC [ETX]	[STX] ORC [ETX]	This command is for starting the recording.
SHTL FORWARD	[STX] OSF:data [ETX]	[STX] OSF [ETX]	This is the forward direction shuttle command.
	data = n: speed data 0: STILL 1: x0.03 2: x0.1 3: x0.2 4: x0.5 5: x1 6: x1.85 7: x4.1 8: x9.5 9: x16 : This speed differs according to the setting selected for setup menu No. 101 (SHTL MAX). A: x32 : This speed differs according to the setting selected for setup menu No. 101 (SHTL MAX).		

# RS-232C interface

VTR operation	Send command	Return (completion) message	Supplementary notes
SHTL REVERSE	[STX] OSR:data [ETX]	[STX] OSR [ETX]	This is the reverse direction shuttle command.
	data = n: speed data 0: STILL 1: x0.03 2: x0.1 3: x0.2 4: x0.5 5: x1 6: x1.85 7: x4.1 8: x9.5 9: x16 : This speed differs according to the setting selected for setup menu No. 101 (SHTL MAX). A: x32 : This speed differs according to the setting selected for setup menu No. 101 (SHTL MAX).		
STANDBY OFF	[STX] OBF [ETX]	[STX] OBF [ETX]	This command is setting the VTR to standby OFF.
STANDBY ON	[STX] OBN [ETX]	[STX] OBN [ETX]	This command is setting the VTR to standby ON.



## (2) Commands relating to inquiries

### <Notes>

- As for the return (completion) message, [ACK] is first returned when data is received, and the execution message is subsequently returned. It is only the execution message which is listed in this table.
- In the case of commands not listed in the table, ER001 (invalid command) is returned after [ACK] has been returned.

VTR operation	Send command	Return (completion) message	Supplementary notes
CTL/TC DATA REQUEST	[STX] QCD [ETX]	[STX] CD data [ETX]	This command is for inquiring about the counter value.
		data= f w gh mm ss ff f = F W = S gh = CTL: g = SP (20h): for a plus display - (2Dh): for a minus display h = 0-9: hours TC: gh = 00-23: hours mm = 00-59: minutes ss = 00-59: seconds ff = 00-29: frames (525 mode) = 00-24: frames (625 mode)	CTL or TC is returned whichever corresponds to the front display mode.
STATUS REQUEST	[STX] QOP [ETX]	[STX] xxx [ETX]	This command is for inquiring about the VTR's operation mode.
		xxx = OEJ: EJECT OFF: FAST FORWARD OPL: PLAY ORC: REC ORW: REWIND OSP: STOP (including the STANDBY ON) SRS: (IN/OUT) PREROLL OBF: STANDBY OFF OSF: SHTL FORWARD OSR: SHTL REVERSE OJG: JOG FORWARD/REVERSE OSW: VAR FORWARD/REVERSE EAE: AUTO EDIT EON: EDIT ON (MANUAL EDIT) EPV: PREVIEW ERV: REVIEW	
ID (VTR No.) REQUEST	[STX] QID [ETX]	[STX] data [ETX]	This command is for inquiring about the VTR used.
		data = AJ-D950, AJ-PD950	

# RS-232C interface

---

## (3) Microsoft QuickBASIC sample program

```
CLS
STX$ = CHR$(&H2): ETX$ = CHR$ (&H3): NAK$ = CHR$(15): ACK$ = CHR$(&H6)
PRINT "*** RS-232C COMMUNICATION SAMPLE PROGRAM ***"
PRINT "Type Command 'QUIT' to quit."
PRINT

REM *** Communication Port Initial & Open ***
REM Port 1,9600Bps,No parity,8 bit data,1 stop bit
OPEN "COM1:9600,N,8,1" FOR RANDOM AS #1 LEN = 256

REM *** Input Command & Send Command ***
SendCmd:
INPUT "Input Command ="; SEND$
IF SEND$ = "QUIT" THEN GOTO ProgEnd
PRINT #1, STX$ + SEND$ + ETX$

REM *** Wait for Receive Command ***
WHILE LOC(1) = 0
    WAITKEY$ = INKEY$
    IF WAITKEY$ = "Q" THEN PRINT "**** Quit ****": GOTO ProgEnd
WEND

REM *** Receive Command ***
RecvCmd:
RCV$ = INPUT$(1, #1)
IF RCV$ = STX$ THEN RCV$ = "[Stx]"
IF RCV$ = ACK$ THEN RCV$ = "[Ack]"
IF RCV$ = NAK$ THEN RCV$ = "[Nak]"
IF RCV$ = ETX$ THEN BUFFER$ = BUFFER$ + "[Etx]": GOTO DispOut
BUFFER$ = BUFFER$ + RCV$
GOTO RecvCmd

REM *** Output Receive Command ***
DispOut:
PRINT "Receive Command ="; BUFFER$
PRINT
BUFFER$ = ""
GOTO SendCmd

REM *** End Program ***
ProgEnd:
CLOSE
END
```

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# Connector signals

## VIDEO IN

SERIAL IN (DIGITAL)	BNC x 2	Active through
Y, P <sub>B</sub> , P <sub>R</sub> (ANALOG)	BNC x 3	
VIDEO IN	BNC x 2	Loop-through, 75 Ω termination switch provided (Board, option)
REF VIDEO IN	BNC x 2	Loop-through, 75 Ω termination switch provided

## VIDEO OUT

SERIAL OUT (DIGITAL)	BNC x 3
Y, P <sub>B</sub> , P <sub>R</sub> (ANALOG)	BNC x 3
VIDEO OUT	BNC x 3

## AUDIO IN

SERIAL IN (DIGITAL)	BNC x 2	Active through
AUDIO IN (DIGITAL)	XLR x 2	CH1/CH2, CH3/CH4 AES/EBU format
AUDIO IN (ANALOG)	XLR x 2	CH1, CH2, CH3, CH4
CUE IN	XLR x 1	
TIME CODE IN	XLR x 1	

Pin No.	Signal
1	GND
2	HOT
3	COLD

## AUDIO OUT

SERIAL OUT (DIGITAL)	BNC x 3	
AUDIO OUT (DIGITAL)	XLR x 2	CH1/CH2, CH3/CH4 AES/EBU format
AUDIO OUT (ANALOG)	XLR x 2	CH1, CH2, CH3, CH4
CUE OUT	XLR x 1	
TIME CODE OUT	XLR x 1	
MONITOR OUT	XLR x 2	
HEADPHONES (front)	M6	

## RS-422A REMOTE (9P)

### REMOTE IN/OUT

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	FRAME GROUND	4	RECEIVE COMMON	7	TRANSMIT B
2	TRANSMIT A	5	—————	8	RECEIVE A
3	RECEIVE B	6	TRANSMIT COMMON	9	FRAME GROUND

### REMOTE OUT

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	FRAME GROUND	4	TRANSMIT COMMON	7	RECEIVE B
2	RECEIVE A	5	—————	8	TRANSMIT A
3	TRANSMIT B	6	RECEIVE COMMON	9	FRAME GROUND

## Connector signals

### PARALLEL REMOTE (25P)

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	PLAY COMMAND	10	—————	19	STAND BY ON STATUS
2	STOP COMMAND	11	—————	20	PREROLL STATUS
3	FF COMMAND	12	≥ 10V, MAX 300mA	21	SERVO LOCK STATUS
4	REW COMMAND	13	PLAY STATUS	22	—————
5	REC COMMAND	14	STOP STATUS	23	—————
6	EJECT COMMAND	15	FF STATUS	24	—————
7	STAND BY ON/OFF COMMAND	16	REW STATUS	25	GND
8	PREROLL COMMAND	17	REC STATUS		
9	IN SET COMMAND	18	EJECT STATUS		

<Notes>

- COMMAND pins: TTL level, active low, ≥ 100ms edge electrical signal.
- STATUS pins: open collector, sink current 6 mA

### RS-232C REMOTE (25-pin D-SUB crossover cable supported)

Pin No.	Abbreviation	Circuit	Description
1	FRAME GROUND	Protective ground	Frame ground
2	RxD	Received data	Sends data to the PC.
3	TxD	Transmitted data	Receives data from the PC.
4	CTS	Clear to send	Shorted with pin 5.
5	RTS	Request to send	Shorted with pin 4.
6	DTR	Data terminal ready	No processing
7	GND	Signal ground	Signal ground
20	DSR	Data set ready	Positive power output after communication enable status

### ENCODER REMOTE (15P)

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	—————	6	SYSTEM H 0	11	RET GND
2	SET UP	7	SYS.SC COARSE (2)	12	—————
3	C LEVEL	8	-12V	13	—————
4	GND	9	HUE	14	SYS.SC FINE
5	+12V	10	VIDEO LEVEL	15	SYS.SC COARSE (1)

# Specifications

## GENERAL

<b>Power supply:</b>	AC 120V, 50 – 60 Hz
<b>Power consumption:</b>	300 W

Operating ambient temperature: 41°F to 104°F (5°C to 40°C)  
Operating ambient humidity: 10% to 90% (no condensation)  
Weight: 41.8 lbs (19 kg)  
Dimensions (W x H x D): 16-3/4" x 6-15/16" x 16-3/8" (Not including the support legs, connectors, and JOG dial)  
Recording format: DVCPRO 50/DVCPRO P\*/DVCPRO format selectable  
Recording video signal: 525i/525p(4:2:0p)\*/625i selectable  
Recording audio signal: DVCPRO 50/DVCPRO P\*: 48 kHz 16-bit 4 channels  
DVCPRO: 48 kHz 16-bit 2 channels  
Recording tracks: Digital video audio: helical track  
The time code is recorded in the sub-code area.  
Cue track: 1 track  
Control track: 1 track  
Tape speed: 67.640 mm/sec (525)  
67.708 mm/sec (625)  
Recording time: 92 minutes (using the AJ-5P92LP)  
Tape: Metal tape  
FF/REW time: Less than 3 min (with AJ-5P92LP)  
Search speed:  $\pm 32x$  speed (color)  
Digital slow: Plus direction: 0.75x speed  
Minus direction: -0.43x speed  
Editing accuracy:  $\pm 0$  frames (using the time code)  
Tape timer accuracy:  $\pm 1$  frame (using the continuous CTL signal)  
Servo lock time: Less than 0.5 sec (color framing/standby ON)  
Audio split editing: YES

## VIDEO

Sampling frequencies: DVCPRO 50 525i/625i: Y: 13.5 MHz,  $P_B/P_R$ : 6.75 MHz  
DVCPRO P 4:2:0p\*: Y: 27 MHz,  $P_B/P_R$ : 13.5 MHz  
Quantizing: 8 bits  
Video compression method: DCT + variable length code  
Video compression rate: DVCPRO 50: 1/3.3  
DVCPRO/DVCPRO P\*: 1/5  
Error correction: Reed-Solomon product code  
Video recording bit rate: DVCPRO 50/DVCPRO P\*: 50 Mbps  
DVCPRO: 25 Mbps  
Sample x effective line: DVCPRO/DVCPRO 50 (525i): 720 x 487.5/frame  
DVCPRO/DVCPRO 50 (625i): 720 x 585/frame  
DVCPRO P 4:2:0p\*: 720 x 480/field  
V blanking data: 525i/625i: VITC  
525i: Closed Caption

## Digital IN/Analog Component OUT

Video bandwidth: 525i: Y: 30 Hz to 5.5 MHz ( $\pm 0.5$  dB), 5.75 MHz (-2.0 dB)  
 $P_B/P_R$ : 30 Hz to 2.5 MHz ( $\pm 0.5$  dB), 2.75 MHz (-2.0 dB)  
625i: Y: 25 Hz to 5.5 MHz ( $\pm 0.5$  dB), 5.75 MHz (-2.0 dB)  
 $P_B/P_R$ : 25 Hz to 2.5 MHz ( $\pm 0.5$  dB), 2.75 MHz (-2.0 dB)  
S/N ratio: Better than 60 dB  
K factor (2T): Less than 1%

## Video input connector

Analog component input: BNCx3 (Y,  $P_B$ ,  $P_R$ )  
Y: 1.0 Vp-p, 75 $\Omega$   
 $P_B/P_R$ : 0.525/0.757 Vp-p switchable, 75 $\Omega$  (75% color bar, 0% setup)  
Analog composite input: BNCx2, loop-through, 75 $\Omega$  on/off  
Reference input: Analog composite, BNCx2, 75 $\Omega$  on/off  
Serial digital component input: Complies with SMPTE259M-C, 294M\*standard, BNCx2, active through  
SDTI input (option): Complies with SMPTE305M standard, BNCx2, active through

# Specifications

## Video Output Connector

Analog component output:	BNCx3 (Y, P <sub>B</sub> , P <sub>R</sub> ), 4:2:2/8:4:4* Y: 1.0 V <sub>p-p</sub> , 75 Ω 0.525/0.757 V <sub>p-p</sub> switchable, 75Ω (75% color bar, 0% setup)
Analog composite output:	BNCx3, video 1, video 2, video 3 (superimpose on/off)
Serial digital component output:	BNCx3, complies with SMPTE259M-C, 294M*standard, SDI 1, SDI 2, SDI 3, (superimpose on/off)
SDTI output (option):	BNCx1, complies with SMPTE305M standard

## Video Signal Adjustment

Composite video input signal:	±3 dB
Video output gain:	±3 dB
Video output chroma gain:	±3 dB
Video output hue:	±30°
Video output setup:	±15 IRE
Video output sync phase:	±8 μs
Video output SC phase:	±180°

## AUDIO

### Digital Audio

Sampling frequencies:	48 kHz (synchronous with video)
Quantizing:	16 bits
Frequency response:	20 Hz to 20 kHz ± 1.0 dB (at the reference level)
Dynamic range:	Better than 90 dB (1 kHz, emphasis OFF)
Distortion:	Less than 0.05% (1 kHz, emphasis OFF, reference level)
Crosstalk:	Less than -80 dB (1 kHz, between 2 channels)
Wow & flutter:	Below measurable limit
Headroom:	525i/525p*: 20 dB 625i: 18dB
Emphasis:	T1=50 μs, T2 = 15 μs (on/off selectable)

### Cue Track

Frequency response:	300 Hz to 6 kHz ± 3 dB
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### Audio Input Connector

Analog input (CH1/CH2/CH3/CH4):	XLRx4, 600 /high impedance selectable, +4/0/-20 dBu selectable
Digital input (CH1/CH2, CH3/CH4):	XLRx2, AES/EBU format
Serial digital input:	Complies with SMPTE259M-272M (BNCx2, active through)
Cue track input:	XLRx1, 600 /high impedance selectable, +4/0/-20/-60 dBu selectable

### Audio Output Connector

Analog output (CH1/CH2/CH3/CH4):	XLRx4, low impedance, +4/0/-20 dBu selectable
Digital output (CH1/CH2, CH3/CH4):	XLRx2, AES/EBU format
Serial digital output:	Complies with SMPTE259M-C/272M (BNCx1)
Cue track output:	XLRx1, low impedance, +4/0/-20 dBu selectable
Monitor output:	XLRx2, low impedance, +4/0/-20 dBu selectable
Headphones:	Variable level, mini-jack, 8Ω

### Other Input/Output Connectors

Time code input:	XLRx1, 0.5 to 8 V <sub>p-p</sub>
Time code output:	XLRx1, 2.0 V <sub>p-p</sub>
RS-422A input:	D-sub 9-pin, RS-422A interface
RS-422A output:	D-sub 9-pin, RS-422A interface
RS-232C:	D-sub 25-pin, RS-232C interface
Parallel input/output:	D-sub 25-pin
Encoder remote:	D-sub 15-pin

Weight and dimensions when shown are approximately.  
Specifications are subject to change without notice.

\*Applies only to AJ-PD950.

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