



HSE-200
CONTROLLER / EDITOR

Installation and Operation

Version 1.5

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WARRANTY STATEMENT

This equipment is warranted to be free of defects in materials and workmanship for a period of two years from date of delivery. Any necessary repairs resulting from defects in materials or in manufacture will be made free of charge provided that the equipment has not been subjected to mechanical or electrical abuse, or modification, as determined by Lance Design, and also that the equipment is returned to Lance Design with prior authorization.

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CAUTION! HAZARDOUS VOLTAGES ARE EXPOSED WHEN THE FRONT PANEL OF THIS UNIT IS REMOVED. DO NOT APPLY POWER WITH THE UNIT DISASSEMBLED.

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HSE-200 CONTROLLER / EDITOR Front Panel



GENERAL INFORMATION

The HSE-200 controller is designed to be used as a general-purpose transport control panel for vtrs and disk recorders, or any other devices supporting standard Sony P2 (9-pin) protocol. The unit is designed to provide excellent slow-motion control for live use, as well as sophisticated editing functions for pre-production, or other applications.

The editor is a true timeline-based editor, which synchronizes all transports to an internal timeline, resulting in frame-accurate editing, with from 1 to 4 vtrs. The editor also supports unrestricted split edits at both the in and out points, 4-channel audio, and pre-read editing. More editing features are described in the EDITOR section.

Slo-mo operation can be done using either the T-Bar or the Knob to control the replay speed. The Knob allows control from -1X to 3X, or Still to 1X (switchable); the T-Bar always provides control from Still to 1X. The control is high resolution, and selected speed is continuously displayed.

There are five GPI inputs and five GPI outputs. Each of the inputs is assignable to any one of the front panel buttons. Activating the GPI is identical to pressing the physical button. Each of the outputs is assignable to any of the front panel button lamps. When the button lamp is on, the GPI output will be active.

The HSE-200 operates in 525/30 or 625/25 video standards and includes a wide-range universal power supply for international operation.

OPERATION

VTR SELECTION

The controller can operate up to 4 vtrs simultaneously, either independently or tied together. Select the machine that you want to control with the vtr selection buttons above the T-Bar. Pressing one by itself switches control to that vtr. Pressing down two or more at once gives you control of multiple vtrs.

When selecting multiple vtrs, the first vtr button pressed will be blinking. This indicates that this is the displayed machine. The status lights in the transport buttons indicate the status of this machine, and the time code (or tape time) will be from this machine. The other selected vtrs will have their buttons lit steadily. This means that they will be controlled, but not displayed.

When multiple vtrs are selected, all of the transport controls (large buttons) as well as the T-Bar and Jog/Shuttle Knob are applied to all vtrs. The smaller buttons apply to the displayed vtr only, even if multiple vtrs are enabled.

TRANSPORT CONTROLS

The transport controls are straight-forward in their operation. There are two VAR buttons, one over the Knob, which selects knob control of variable speed playback, and one over the T-Bar, which selects that device for control. You can use either one anytime you want, or even switch back and forth between them. If you are in variable play (using either control) pressing that VAR button again will put the vtr in pause; pressing it again will revert to the selected variable speed; etc. The '3X RANGE' button above the knob expands the knob variable speed range to -1X to +3X when illuminated.

Pressing the STOP button the first time puts the machine in PAUSE; the second press puts it in true STOP (tension released). Additional presses will toggle between these two modes. The STOP button light will flash in the pause mode, and will be on steadily in the stop mode. (The Pause function of the STOP button is inhibited if the panel is in the edit mode, and the vtr is a recorder. This is because the R-vtr must be in stop mode to see player video through its electronics.) If desired, this feature may be disabled in the menu, so that the STOP button is true stop mode only.

If the vtr is a cassette machine, the cassette may be EJECTED by holding down the STOP button and pressing the STANDBY button. This will eject the cassette from the currently-displayed machine only.

The large CUE button serves a double function. A single press of this button will cue all enabled vtrs to their selected cue times (or edit inpoints in the edit mode) minus their preroll values. A 'double click', or quick double press will park the machine right on the time, without the preroll. Both the CUE and the PREROLL button lights will flash to indicate when the machine is parked on the intime, without the preroll.

PREROLL

There is a small PREROLL button below the display. When in the CUES mode, pressing this button will display the current preroll time for this vtr (each vtr is independent). The preroll time can be anything from 00:00 to 59:29 (seconds and frames). These times may be entered and manipulated (trimmed, added, subtracted, etc.) just like any other register. To enter the preroll time from the keypad, key in the time (seconds and frames), press SET, and press (small) PREROLL. The small preroll button will be lit when there is a non-zero preroll value entered.

If the panel is in the EDIT MODE, (CUES button not lit), the small PREROLL button displays and allows setting of the EDIT ROLL time. This is common for all vtrs. The minimum valid time for EDIT ROLL is 02:00.

If you want to enter an even-second preroll (or edit roll) from 0 to 12 seconds, there is a FAST PREROLL SET function, which saves some keystrokes. Just hold down the small PREROLL button, and press one of the 12 cue buttons (C1-C12). A preroll value corresponding to the cue number will be entered. If you want preroll set to zero, hold down PREROLL and press CLR, or CUES (or key in zero from the keypad, if you'd like).

SELECTING TAPE TIMER OR TIMECODE

Tape time or timecode is selected on a per-machine basis by the TT/TC button above the display. When time code is selected, the button will be lit, and the display will say "TC" after the vtr letter. When tape timer (timer 1) is selected, the button will be dark, and the display will say "TT". This time selection information is sent to the vtr every second or so, so it will override the selection made at the machine when the machine is in remote. The source of the timecode (LTC, VITC, or AUTO) may be made in the menu on a machine-by-machine basis.

This choice of tape timer or time code also affects which counter in the machine will be loaded when the SET TIME function (next section) is used.

SET TIME FUNCTION

You can set the tape timer or time code generator from the keypad by entering a time, pressing SET, and pressing TM. If time code display is selected (previous section) the time code generator will be set. If tape timer is selected, it will be set. Note that the time code generator time may not be visible until you put the vtr into record mode. Also the generator mode on the machine must be set to INTERNAL and PRESET (or AUTO).

FAST TRIMS OF TIME REGISTERS

There is a much easier way to do register trims if you only need to change the value by a few frames. Just hold down the button corresponding to the register that you want to trim (edit points, constants, or cue in/out points) and press the '+' or '-' keys on the keypad. The register will be trimmed by 1 frame for each press.

TO CUE TO A SPECIFIC REGISTER (OTHER THAN AN INPOINT)

If you want to cue to an outpoint for example, hold down the 'OUT' register button and press the (big) CUE button. This will cue the vtr to the outtime minus the preroll value. If you want to park right on the outtime, do the same thing, but 'double-click' the CUE button.

This 'GO-TO' function works on all edit point registers, the constant register, and when in CUES mode, on the CUE IN and OUT points for cues 1-12. This function can not be used on the extended cues (cues 13 through 199) outpoints, since there is no button to hold down. You can of course cue to any of the cue inpoints.

• There are two distinct modes in which the panel may be operated. They are CUES mode and EDIT mode. This selection is made by pressing the 'CUES' button in the upper left section of the panel. It lights red to indicate the CUES mode, and is off when the panel is in the edit mode.

• When in CUES mode, the labels below the 12 buttons in the upper left section apply (C1-C12), and the PVW/<<<, and EDIT/>>>> buttons performs the SCAN function. When in the edit mode, the upper labels apply.

• Use the CUES mode for replay or clip playback operation; when you want to store several cue points. Use the EDIT mode for all editing operation.

CUES MODE OPERATION

SELECTING CUES

When the CUES button is lit, the panel is in the CUES mode, and you have 199 cues available **per vtr.** Cues 1 through 12 may be selected using the dedicated C1 through C12 buttons. Cues 1 through 199 may be selected by pressing the 'CUE #' button and then a three-digit number. This is exactly the same as pressing the dedicated buttons for C1 through C12, except that you have access to 199 cues.

If a cue in the range 1-12 is selected, its dedicated button will be flashing. If a cue in the range 13-199 is selected, the 'CUE #' button will be lighted. The currently-selected cue inpoint may be recalled by 'double-clicking' the 'CUE #' button. You can also scroll up and down through the cues by holding down the 'CUE #' button, and pressing the '+' or the '-' key.

ENTERING TIME VALUES INTO CUE REGISTERS

Each cue number (1-199) has an inpoint and an outpoint. You can **enter the current vtr time** (MARK) by pressing the MARK IN and MARK OUT buttons. If there is no

inpoint stored for the selected cue, the MARK IN button will be dark. If no outpoint, the MARK OUT button will be dark.

Since the cue registers have an inpoint and an outpoint, they also have a **duration**. This may be calculated and displayed by pressing the 'TM' button on the keypad.

You can **enter IN times from the keypad** by doing the following:

- a) Key in the time on the keypad (you don't need to enter leading zeros)
- b) Press the 'SET' key in the keypad
- c) Press either a dedicated cue button (cues 01-12)
- OR c) Press the 'CUE #' button, then a three-digit number (cues 001-199)
- OR c) Double-click the 'CUE #' button. This will enter the time into the current cue register (the most-recently selected).
- OR c) Press the MARK IN button (or MARK OUT to set the OUT cue)

RECALLING CUE REGISTERS

NOTE: If menu item 7 is set to 'Recall w/Cueup', a cue-up command will be sent to all enabled vtrs immediately when the cue register is recalled. This provides a 'shot box' type of operation, with very quick access to clips, especially when using a disk recorder.

You can recall the inpoint time of a cue by doing any one of four things:

- a) Press the dedicated cue button (cues 01-12)
- b) Press the 'CUE #' button, then a three-digit number (cues 001-199)
- c) Double-Click on the 'CUE #' button (to recall the currently-selected cue)
- d) Scroll to the desired cue number by holding down the 'CUE #' button, and using the '+' or '-' keys

You can recall the outpoint time of a cue by doing any of these three things:

- a) Press the 'FCN' key, then press the dedicated cue button (cues 01-12)
- b) Press the 'FCN' key, then press the 'CUE #' button, then a three-digit number (cues 001-199)
- c) Press the 'FCN' key, then double-click the 'CUE #' button. (recalls currently-selected cue outtime)

COPYING FROM ONE CUE TO ANOTHER

- a) Recall the time that you want to copy as described in the Recalling Cue Registers section.
- b) Press the 'SET' key in the keypad
- c) Press either a dedicated cue button (cues 1-12)
- OR c) Press the 'CUE #' button, then a three-digit number (cues 1-199)

In and out times must be copied separately.

CLEARING CUE REGISTERS

Cue registers may be cleared either one at a time, as the group 01-12, or as the group 001-199. If you clear a cue by itself, the in and out times are cleared separately. If you clear a group of cues, the in and out times are both cleared at the same time.

To clear an individual cue IN point:

- a) Press 'CLR'
- b) Press 'SET'
- c) Press either a dedicated cue button (cues 01-12)
- OR c) Press the 'CUE #' button, then a three digit number (cues 001-199)
- OR c) Double-click the 'CUE #' button (to clear the currently-selected cue)

To clear the corresponding OUT point, press the 'FCN' key between steps (b) and (c) above.

To clear the group of cues 01-12 (IN and OUT points):

- a) Press 'CLR'
- b) Press 'SET'
- c) Press 'CUES' button (next to C6 in the top row)

To clear the group of cues 001-199 (IN and OUT points):

- a) Press 'CLR'
- b) Press 'SET'
- c) Hold down 'CUE #' button, and press 'CUES' button, as above.

(This is deliberately awkward, to hopefully prevent clearing all 398 registers by mistake)

PARKING THE VTR AT A CUE POINT

When the CUE button is pressed, the vtr will cue to the inpoint of the cue, minus any preroll time. If the CUE button is double-clicked, the vtr will park right on the cue inpoint, ignoring any preroll time.

Note: Menu item 8 controls the speed at which the vtr will search back to the cue point. This is there primarily for use with disk recorders, so that you can watch the action as they cue back. If you have this menu item set to something other than MAX, and you need to cue up more quickly, you can just press 'CUE' again and the device will cue at maximum speed.

CUES AUTO-STEP OPERATION

There is an AUTO STEP option in the menu (see menu operation section). When this is enabled, the selected cue will advance each time the MARK IN button is pressed. You have your choice of OFF, 1-12, or 1-199 in the menu.

Note that the cue number first increments, then marks, in order that the last cue marked will be the selected one.

SCAN BUTTON OPERATION

When in the cues mode, the EDIT PREVIEW and EDIT buttons have an alternate function. They serve as SCAN FWD and SCAN REV buttons. The speed may be set in the menu. Pressing one of these momentarily puts the vtr(s) in shuttle, and when the button is released the vtr enters the JOG mode.

END OF RECORDING PROTECTION

There is an end-of-recording ("EOR") protection feature, which must be enabled in the menu (Item 01) each time the HSE is powered up. If enabled, this prevents the vtr from going past the end of the last recording only in the VAR and JOG forward modes. Normal Play will not be affected.

If the EOR is on, and active, you will get an "EOR IN XX:XX" prompt in the display. This shows you how much tape time remains until the end of the last recording. As the vtr approaches the end of the recording, you will get warning beeps at 45, 30 and 15 frames out, and the vtr will go into pause just before the end of the recording.

Two important notes regarding this feature:

The EOR feature is not reliable in playback speeds greater than 1X.

The EOR feature operates only on the currently-displayed vtr.

*This feature is from the HSE-100, and will be improved in next version software.

PROGRAMMED FREEZE

You can use the EOR feature to stop a variable-speed playback on any desired frame, by entering a time value into the 'last frame' register. Normally this frame stores the last frame of a recording, but you can enter any time you want into it by:

- a) Keying in a time on the keypad
- b) Pressing 'SET'
- c) Pressing 'STOP'

Or if you want to mark a time from the tape (more likely), use the MARK OUT register to grab the time:

- a) Park the tape where you want to freeze
- b) Press 'MARK OUT'
- c) Press 'SET'
- d) Press 'STOP'

The display will say 'Freeze Point Set'. Now the operation will be just like it is with the EOR feature normally. When you roll the machine (prior to the programmed point) in VARIABLE or JOG, the display will count you down to the freeze, and put the vtr in STILL at that time.

CLEARING THE EOR REGISTER

If the EOR function is enabled, the 'last frame' register may be cleared (preventing EOR operation until another recording is made) by holding down STOP and pressing CLR. The display will prompt "EOR Register Clear".

Remember that menu item 01, 'EOR Stop' must be enabled each time the panel is powered up for both of the above features to operate.

SUPER SLO-MO MODE

Menu item 04 selects the Super Slo-mo Mode. If this is on, the range of the variable play controls (Knob and T-Bar) will be reduced to 33% of what they normally are, for use with super slo-mo (90-frame) vtrs. The resolution is increased so that the controls have the same travel as in normal mode.

GANG MODE OPERATION

This feature is significantly different from the HSE-100 operation.

There are six possible selections for this menu item (item 7). They are:

OFF - This is the normal mode of operation, and all vtrs and cue registers are independent. Note that this mode is selected automatically each time the HSE-200 is powered up. This is to prevent any confusion that might result from a gang mode being inadvertently selected. *IF A GANG MODE IS BEING USED, IT MUST BE TURNED ON EACH TIME THE HSE-200 IS POWERED UP.

CUE# - Selecting this mode causes the active cue number for all 4 machines to be the same. In other words, if you select Cue 1 for vtr A, Cue 1 will also be selected for vtrs B, C and D. This mode is useful if you're doing simultaneous playbacks from more than one vtr (perhaps a primary and backup copy). Selecting this mode will prevent your having to manually select cue numbers on each vtr separately.

CUE#/VTR This mode is for use when you're using multiple playback devices that roll together, such as two machines for key and fill, or primary and backup. It ties the cue numbers together, just like in 'CUE#' mode above, and it also enables the saving and recalling of the vtr enable status.

When a cue is recalled, the previously-saved VTR ENABLE status is restored (the device enable buttons). This allows you to just recall a cue, and the proper vtrs will be selected, and the recalled cue number selected on all machines.

To set the enabled machines in the memory, hold down the desired device buttons and press the SET key in the keypad. The display will say: Now Enabled: ABCD , or something like that. Now, when this cue is recalled, it will re-select these machines.

R/P 1 - This is a special mode designed for using disk recorders which allow multiple access to be used optimally for replays.

When this mode is selected, the controller groups its channels into pairs; channels A and B are a pair, and channels C and D are a pair. The first channel (A or C) should be connected to the record side of the disk, the second channel (B or D) should be connected to the play side of the disk.

It works like this: select the A channel (which is in record), and mark cues at desired points. Now select the B channel (the playback side). The same cues will appear on this channel, and can be cued up and played back without disturbing the record side. When you mark cues on the A channel, they're copied to the B channel automatically, at the same cue number.

(continued)

GANG MODE OPERATION - continued

R/P 2 - This mode is exactly the same as R/P 1, except that in addition to what happens in R/P 1, the cue number selected on the record channel (A or C) is also selected on the play channel (B or D). In this mode, if you pick a cue and mark it on A, when you go to B, that cue will already be selected and you'll just have to press 'CUE' to cue it up. In R/P 1 mode, you'd have to manually select the cue first. Otherwise, the two modes are exactly the same.

R/P DLY - This is a special mode for operating a multiple-access disk recorder such as a Sony MAV or Tektronix Profile as a program delay device. If it is required to delay a live feed by a fixed, specific amount this mode may be used.

Step-by-step Operation for RP DELAY mode

- 1) Connect the Record side of the DDR to the A control port of the HSE-200. Connect the playback side of the DDR to the B control port. (C and D may be also be used as another independent pair). Also connect reference black to the controller. It will work without it, but won't be as accurate.
- 2) Place the controller in the "CUES" mode by lighting the grey 'CUES' button on the front panel (below the right end of the display). Delay operation will not work in the edit mode.
- 3) Select item 07 of the menu to be "Gang Mode = R/P Dly". Access the menu by pressing the "MENU" button, then press the 'MENU SET' button to step through the choices. You may also hold down the Menu Set button and turn the knob.

NOTE THAT THE GANG MODE MENU SELECTION IS AUTOMATICALLY SET TO 'OFF' EACH TIME THE HSE-200 IS POWERED UP.

- 4) Select the A vtr (with the button above the T-bar), and put that channel into record.
- 5) Select the B vtr, and on the DDR itself load the same clip that you're recording, if that's required, so that the player has access to the material that's being recorded.
- 6) Enter the desired delay time into one of the cues registers (say C1). It can be any of the 199 registers, so long as which ever one you choose is the currently-selected one. I recommend using C1 just so it's easy to find and remember.
- 7) After the recorder has recorded for at least as long as the delay time, plus a few seconds, press PLAY (with B vtr still selected). The controller will calculate where the player needs to be, cue it ahead of that point by two seconds, and roll it at the proper time. The second line of the display will indicate exactly what the difference is between the two timecodes (Recorder - Player = delay time).

TIME-LAPSE RECORDING

This feature is intended to provide a time-lapse record function when used with disk recorders offering single-frame record operation. The Fast Forward Omega disk recorder is such a device. This mode will not work with vtrs or disk recorders not supporting single-frame record.

To perform a time-lapse recording:

1) Put the FFV in SINGLE-FRAME RECORD MODE, from the FFV front panel. It's under the record configuration icon.

2) Turn on the TIME LAPSE item in the controller menu (Item 7)

NOTE THAT THE TIME-LAPSE MODE MENU SELECTION IS AUTOMATICALLY SET TO 'OFF' EACH TIME THE HSE-200 IS POWERED UP.

3) Put the controller into edit mode (CUES button not lit).

4) Enter the time where you want to start recording in the VID IN register.

5) Enter the interval between single-frame records into the CONSTANT register. This interval = (Real Time Elapsed / Desired Playback Time). For example, if you wanted to condense one hour of real time down to 30 seconds of playback time, the interval in the constant register should be: 60 min/0.5 min = 120 frames, or 4 seconds. Entering this value in the constant register will cause the controller to send a single-frame record command once every 4 seconds.

6) Push the EDIT button (not the Record button). It will light and the RECORD button will flash each time a frame is recorded.

If you start at an even minute or hour timecode, it's very easy to read your accumulated time from the timecode display.

TBC CONTROL WITH THE HSE-200 VTR CONTROLLER

The HSE-200 VTR Controller can control VTR TBC or output video processor levels and timing. This is possible only for vtrs or disk recorders which allow these levels to be controlled via the standard RS-422 machine control port, via the standard Sony protocol.

Machines which allow this include:	Panasonic	AJ-D350 AJ-D351 AJ-D360 AJ-D580 DVC-PRO
	*Sony	DVR-10 DVR-18 DVR-20 DVR-28 DVW-500 MSW-2000 MAV-555

*Sony analog machines like BVW-75's may be controlled with the addition of a Lance Design AIF-422S interface module to provide RS-422 control of TBC settings on those machines.

To access TBC control, just select the vtr that you want to adjust, and press the 'TBC' button above the display window. Select the parameter that you want by using the '+' and '-' keys on the keypad.

If there is no number displayed after the parameter label, then the vtr does not support this control protocol.

Levels are adjusted with the jog knob, and may be set to UNITY by pressing the "CLR" (clear) button on the keypad. This sets only the selected parameter to unity.

This level adjustment data is stored in the vtr, not in the panel, so that there is no need to re-set levels if machine assignments are changed.

HARD RECORD LOCKOUT

If the controller is being used as a playback station, and it is desired that all record operation be inhibited, section 5 of the dipswitch on the rear panel may be turned on (up position). This forces a hard record lockout for all vtrs. The red 'REC LOCK' indicator will light on the panel.

This locks only the HSE-200 panel. It is still possible to put the machine in record from its front panel, for example.

EDIT MODE OPERATION (CUES button not lit)

If the panel is in the edit mode, the 12 buttons in the upper left of the panel assume the functions described by the labels above the buttons. The top row selects the edit type, and enables the desired channels. The bottom row selects the in and out point registers and turns on the split edit function if desired. The CNST (constant) button on the bottom row is simply a scratchpad register which you may use to hold any desired time for later use.

Also, when in the edit mode, both the MARK IN and MARK OUT buttons are lighted. These are used to mark video in and video out points. If SPLIT is turned on (you must have selected INSERT VIDEO and at least one AUDIO channel before you can turn SPLIT on), and either A IN or A OUT is pressed, these buttons begin to flash. This indicates that the MARK buttons now mark the AUDIO in and out times instead of video. This mode may be cleared with the CLR button, or by pressing IN or OUT.

If the registers are empty, the MARK buttons are not lit. If registers contain a time value, MARK buttons are lit.

TO PERFORM AN EDIT

- Select the desired record machine with the VTR Select buttons. Select the edit mode and channels desired (Assemble, Insert V, A1, etc.), and enter an in point. Enter an out-point if desired. If no out-point is entered, the edit will be open-ended. The duration may be checked by pressing down the IN and OUT buttons at the same time.
- If desired select a second (or third, or fourth) vtr as a player. For a player, do not turn on any of the edit modes (assemble or insert); just set an inpoint. All edit durations are determined by the recorder, so player outpoints are ignored.
- Now engage all desired vtrs by pressing down the vtr select buttons at the same time. The first one you press will be the displayed vtr (IT DOESN'T HAVE TO BE THE RECORDER, but it may be confusing if it isn't!). Once all desired machines have been selected, press PVW to preview the edit, or AUTO EDIT to do the recording. Note that the record vtr's editor is only turned on when required, and turned off when the edit is completed, so you don't have to worry about turning off the editor for playback.
- The machines roll, synchronize, and perform the edit (or preview), postroll, and stop.
- If any machines are not able to synchronize, the edit will abort and an error message will be displayed. The cause for this will most probably be a color framing error with the record machine. This is usually evident by rapid, repeated attempts to synchronize during the preroll. Try changing the MANUAL COLOR FRAME in the menu (Item 14), or select COLOR FRAME AUTO (Menu Item 13), and let the editor swap it for you. If you don't want to worry about color framing, and are willing to sacrifice a couple of frames of accuracy, select EDIT ACCURACY = 2 FRAMES (Menu Item 12).
- Another thing to try if a vtr fails to synchronize is to lengthen the EDIT PREROLL. There is a learning process within the servos, however, so give it a couple of tries first.

OTHER EDIT MODE NOTES

- Once an AUTO EDIT (or PREVIEW) has been started, another vtr which is not involved in the edit may be selected and operated manually. This might be useful if you're editing together highlights, and want to run a slo-mo playback manually. Set up the edit on the record machine, press AUTO EDIT, then select the player with the vtr buttons, and operate it as you normally would. It will not interfere with the edit.
- Another unusual feature is that you can mark new in and out points while an auto edit is in progress, without affecting the current edit. This allows you to mark the next edit while the current edit is happening.

SECONDARY RECORDER MODE

- The HSE-200 is capable of making simultaneous edits on two record tapes. The two record tapes must have matching time codes. If you select a Secondary Recorder (Menu Item 21), it will operate as a slave or secondary recorder to the primary recorder, so long as it is enabled with the channel enable buttons. As you start the edit or preview, all edit points and mode selections will be copied from the primary recorder to the secondary recorder (you don't need to enter any information for the secondary recorder). The HSE-200 will then cue all enabled machines, and roll them for the edit, synchronizing them all independently, as always. The primary and secondary recorders will make matching edits or previews, including all splits, channel assignments, etc.

Note that the inpoints, outpoints, and edit mode selections will be left on the secondary recorder after the edit. This is useful if you needed to go back and re-do just the secondary edit for some reason. It is something to be aware of, however, since that machine is still enabled to do an edit, and the edit modes would have to be turned off if it were to be used as a player in a future edit.

MORE ON COLOR FRAMING

Dealing with color framing is a necessary evil with this type of editor, but I've tried to make it as painless as possible. For those interested, here's what happens on a more technical level:

When an edit is initiated, the HSE-200 puts all players in 2-field capstan lock, and puts the recorder in 4-field or 2-field, depending on Menu Item 15. This should generally be set to 4F. The editor then checks the R-VTR inpoint for even or odd status, and compares that to an arbitrary color frame reference (the field counter) within the HSE-200. The edit timeline (to which all vtrs are sync'ed) is started when there is coincidence. *(If editing machine-to-machine with DVW-series digital betas using the serial digital interconnect, you may want to select 2-field lock on the recorder. Otherwise you'll be forced to manually maintain even-even or odd-odd pairing with the player).*

If this color frame phase agrees with the R-vtr's internal color framer (which is looking at off-tape video), then all is well and the edit proceeds. If they don't agree, then the two servos battle it out, and the edit aborts. If AUTO COLOR FRAME is turned on in the editor, it will then flip the phase of the internal color frame reference and prompt you to try the edit again. The servos should now agree and the edit should be successful.

This abort-flip-retry sequence should happen only once, or at most once per record tape (if the tape's timecode to video relationship is consistent). It may also happen when the editor or the sync generator is powered down, since the editor's field counter starts arbitrarily at power up.

If you don't want to deal with all of this, select EDIT ACCURACY = 2 FRAMES in the menu. This allows the vtr's color framer to take precedence, and the edit should never abort (at least for this reason).

If you are using the tape timer on the record machine, the 2-frame accuracy is forced, since it isn't possible to color frame reliably based on tape timer numbers, which slip.

USING THE MENU

- To enter the menu mode, just press MENU
- To select the desired item, either turn the Knob, or use the '+' and '-' keys
- To change the setting, press the SET MENU key (above the display)

If there are only two choices the SET MENU key will toggle between them; If there is a range of values (e.g. Trans Rate) hold down the SET MENU button, and turn the knob.

- To exit the menu mode, press MENU again

MENU ITEMS

- 01 EOR STOP (ENABLED or DISABLED)
Enables the automatic end of recording protection
- 02 CUE AUTO-STEP (OFF, 1-12, 1-199)
If on, cues advance before each MARK; if off, they don't
- 03 [unused]
- 04 STOP MODE (STOP ONLY, STOP/STILL)
This controls the operation of the STOP button when in CUES mode. If STOP ONLY is selected, pressing STOP will put the machine in a true stop mode. If STOP/STILL is selected, the STOP button will toggle between STILL and STOP. I recommend that STOP/STILL be used when controlling a vtr, and STOP ONLY be used when controlling a disk recorder.
- 05 CUEUP SPEED (MAX, 2X, 4X, 8X)
This is the speed that the machine will use to get to its cue points when the CUE button is pressed. It's there for using disks as replay devices, so you can watch the action as you cue back.
- 06 SCAN SPEED (MAX, 2X, 4X, 8X, 16X, 32X)
This is the shuttle speed that will be commanded when the SCAN buttons (PREVIEW and EDIT buttons when in CUES mode) are pressed.
- 07 GANG MODE (Off, Cue#, Cue#/VTR, R/P 1, R/P 2, R/P Dly)
Enables GANG mode operation (see description earlier in manual)
- 08 RECALL MODE (Only, w/Cueup)
When set to 'w/Cueup', a CUE command will be sent every time a cue is recalled. This is useful for 'shot-box' type operation, but should be turned off for general replay use.
- 09 SUPER SLO-MO MODE (ON or OFF)
When on, variable speeds are scaled by 33% for 90 frame/sec recorders

menu items – continued

- 10 TAPE TIMER MODE (12 or 24 HOURS)
Controls tape timer display and arithmetic modes
- 11 VT A TC MODE (LTC, VITC, or AUTO)
Selects source of vtr timecode. AUTO relies on the machine's judgement as to the most reliable source. Note that if you use AUTO, the tape must have the same timecode numbers on the LTC track as in the VITC, or the machine's reported timecode will change when the machine changes modes (as tape slows and stops, for example).
- 12 VT B TC MODE
- 13 VT C TC MODE
- 14 VT D TC MODE
- 15 PANEL BUZZER (ON or OFF)
Enables the buzzer for such things as Mark In, Register Sets, Etc. The buzzer is always enabled for error or fault alarms.
- 16 EDIT ACCURACY (0 FRAMES or 2 FRAMES)
This is the time line accuracy demanded of the vtrs in an auto edit. If 0 frames is selected, then color framing must be considered. If 2 frames is selected, then the HSE-200 will attempt to sync the machines, but once synchronization has been reached, the HSE-200 will release control to the vtr's color framer, resulting in a possible +/- 1 frame error at the in and out points.
- 17 PREREAD CANCEL (ENABLED or DISABLED)
If this item is enabled, the controller will automatically turn off Preread (if it was on) after the completion of an auto edit.
- 18 COLOR FRAME (AUTO or MANUAL)
If AUTO is selected, and the record machine fails to synchronize during an auto edit in a manner which indicates that the problem may be color frame phase, the HSE-200 color frame will automatically be swapped, and a "Retry" prompt displayed. If MANUAL is selected, no change will be made to the internal color frame reference, only a sync error message will be displayed.
- 19 MANUAL COLOR FRAME (A or B)
Indication of the HSE-200's internal color frame phase. This is an arbitrary indicator, and does not have an absolute relationship with reference video.
- 20 R-VTR CAP LOCK (2F or 4F)
Determines capstan lock mode of recorder in an auto edit. I suggest using 4F for composite recorders and 2F for component recorders. Use 2F when using DVW-500's in a digital (SDI) system.

menu items - continued

- 21 SECONDARY RECORDER (NONE, VT A, VT B, VT C, VT D)
Assigns a secondary recorder for edits. If the assigned secondary recorder is enabled when an edit is initiated, all inpoints, outpoints, splits, and assemble or insert modes and channel enables will be copied from the primary recorder to the secondary recorder, and the edit will be initiated, making identical edits on both the primary and secondary recorders. This menu item is always turned off when the HSE-200 is powered up.
- 22 GPI IN/OUT ENABLE (DISABLED or ENABLED)
When set to 'Disabled' this menu item completely disables the GPI inputs and outputs. The inputs will be ignored and the outputs will be set to the 'Inactive' state, the polarity of which is determined by menu item 28, GPI output polarity.
- 23-27 GPI INPUT ASSIGNMENTS (00 - 28) FOR GPI INPUTS 0 - 4
These items are used to assign the physical GPI inputs on the rear panel of the HSE-200 to button functions. When one of these menu items is selected and the menu 'SET' button is held down, the panel button to which this GPI input is assigned will flash rapidly. An assignment of '00' disables this input (no assignment).
- 28-32 GPI OUTPUT ASSIGNMENTS (00-28) FOR GPI OUTPUTS 0 - 4
These items are used to assign the GPI outputs to panel button lamps. The assignments are done in the same manner as the GPI Inputs above.
- 33 GPI OUTPUT POLARITY (ACTIVE LOW or ACTIVE HIGH)
This item determines the polarity or logic sense of the GPI outputs. An output is 'active' when the button lamp to which it is assigned is lit. This can result in either a low logic output (0 volts) or a high logic output (+5 volts) on the rear panel connector. When the GPIs are disabled (menu item 17), they will rest at the 'inactive' level, as determined by this menu item.
- 34 FRAME RATE (25 Fr/Sec or 30 Fr/Sec)
Selects the frame standard for the controller. Note that if the wrong standard is selected, the controller may appear to operate, but all internal arithmetic will be incorrect, and unpredictable and confusing things may happen.

DEVICE TYPE DISPLAY (display only - cannot be changed)

This displays what type of machine the HSE-200 thinks it's connected to. If the vtr is not recognized (or not responding) the type display will be UNKNOWN, and the parameters will default to those for a Sony BVW-75.

FAULT AND ERROR MESSAGES

There are several fault, error, and warning messages which may appear on the display of the controller. In some cases these indicate a condition which will prevent the requested operation from taking place. In other cases they are just warnings for the operator of a non-standard condition.

NOT RESPONDING -	The displayed VTR is not communicating with the controller. Check cables, connections, etc.
IN LOCAL -	The displayed VTR is communicating, but does not have remote control enabled.
TAPE OUT -	The displayed VTR is not threaded (loaded).
VTR FAULT -	The displayed VTR is reporting an internal problem; check the VTR's fault display.
NO SERVO REF -	The VTR is reporting that it is missing its reference (black) signal. (The reference to the VTR is missing, not the reference to the controller)
TAPE TROUBLE -	The VTR is reporting that it has a transport or tape problem, such as tension, tape slack, etc. Check the VTR's fault display.
NO EXT REFERENCE -	The reference signal is missing from the controller. This will appear when an auto function (EDIT or PREVIEW) is attempted without reference video connected to the controller.
R-VTR RECORD LOCK -	The VTR assigned as the edit recorder has a record lockout set, either at the controller, or at the machine.
NO VIDEO INPOINT -	THE R-VTR in the edit has no video inpoint marked.
NO AUDIO INPOINT -	The R-VTR in a split edit has no audio inpoint.
NO MARK -	One of the VTRs is missing a required inpoint or cue mark
ILLEGAL SPLIT DURATION-	The Audio Inpoint is later than the Video Outpoint, or vice-versa. In a split edit, the video and audio must overlap.

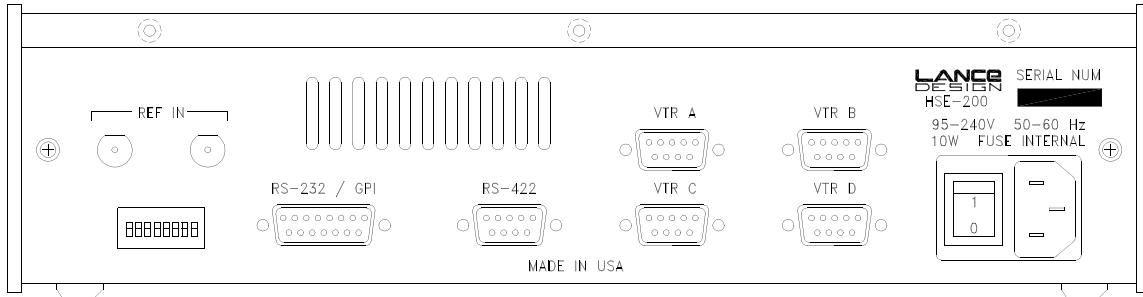
(continued)

FAULT AND ERROR MESSAGES (continued)

- NEGATIVE DURATION - Indicates that the outpoint is before the inpoint. This is a warning only; the edit will proceed but will be open-ended.
- SYNC ERROR - One of the VTRs involved in the edit or preview was unable to synchronize to the timeline during the preroll. This could be due to the color framing not being correct; to the preroll not being long enough, or to a VTR fault.
- CF SWAPPED - RETRY The attempted edit was aborted because the record VTR would not synchronize during preroll. The controller then changed the phase of the internal controller CF reference, and is prompting you to re-try the edit. This will only happen if Menu Item 13 (Color Frame) is set to AUTO.
- NO RESPONSE - One of the VTRs involved in an auto function (edit or preview) is not communicating with the controller.
- NOT READY - One of the VTR's involved in the edit is not in remote, or has no tape loaded.
- NO CUE SET - Displayed when the panel is in CUES mode, and PREROLL is pressed, if the selected cue register is empty.
- MULTIPLE RECORDERS - Displayed when more than one of the VTRs enabled has its editor turned on (assemble or insert buttons lit). Only one recorder is allowed at a time.
- CODE TYPE MISMATCH - If a calculation or other operation is attempted in which there is a combination of drop-frame and non-drop-frame timecode, this error message is displayed.

After some of the above messages a VTR designation will be displayed. This is the offending machine. If there are several problems, the first one encountered will be indicated. Once it is fixed, the next one will be displayed, etc.

INSTALLATION AND CONNECTIONS



HSE-200 REAR PANEL

POWER and FUSE

The HSE-200 will operate on any voltage from 95 to 250 VAC, 50 or 60 Hz. The power requirements are less than 10 watts. There is a 1 amp bi-pin fuse located on the main circuit board. A spare fuse is also stored in a socket on the main board. The power input connector is a standard IEC type.

VTR CONNECTIONS

Connect the 9-pin port(s) desired to the vtr's remote connectors using a standard pin-to-pin RS-422 cable, with male D-9 connectors on each end. This cable can be of almost any length (up to 1000 feet).

Device A, B, C, D Ports

Pin #	Function
1	Ground
2	-RX Data (from vtr)
3	+TX Data (to vtr)
4	Ground
5	(no connection)
6	Ground
7	+RX Data (from vtr)
8	-TX Data (to vtr)
9	Ground

Installation - continued

REFERENCE BLACK

For basic slo-mo control, reference black is not usually required, although it is recommended, since it determines when in the frame commands are sent to the vtr, and can result in more consistent and reliable operation. It is especially important when attempting to roll two machines in sync.

For editing functions, reference black (or bars, etc.) must be connected and be synchronous to the vtr's reference (at least within a line or so).

Also use reference black when operating in the "RP Delay" gang mode. This mode will operate without reference, but will not be completely accurate unless reference is connected.

UTIL RS-422 PORT

The utility RS-422 port currently has no function.

Pin #	Function
1	Ground
2	-RX Data (from device)
3	+TX Data (to device)
4	Ground
5	(no connection)
6	Ground
7	+RX Data (from device)
8	-TX Data (to device)
9	Ground

Installation - continued

RS-232/GPI CONNECTOR

The RS-232 port is currently unused. The GPI functions are supported as of software version 1.0.

GPI / RS-232

Pin #	Function
1	Ground
2	RS-232 RX (to HSE200)
3	RS-232 TX (from HSE200)
4	GPI In 1
5	GPI In 3
6	GPI Out 0
7	GPI Out 2
8	GPI Out 4
9	Ground
10	Ground
11	GPI In 0
12	GPI In 2
13	GPI In 4
14	GPI Out 1
15	GPI Out 3

IMPORTANT NOTE: The GPI inputs and outputs are connected to 74HC-series logic devices. Never connect external voltage to the GPI inputs or outputs, or damage may result. The inputs should be pulled to ground with either 'TTL-Level' devices, open-collectors, or relay closures to common/ground. The outputs should only be used to drive other 'TTL-level' inputs. They are capable of sourcing or sinking a maximum of 8 ma at 5 volts only.

DIPSWITCH FUNCTIONS

There is an 8-position DIP Switch on the rear of the rack-mount frame. These should all normally be in the OFF or down position. The functions of these switches are described below.

Sw 1 - not used

Sw 2 - not used

Sw 3 - when on, forces NTSC video standard (menu item)

Sw 4 - when on, prevents GANG MODE from being turned on (menu item)

Sw 5 - when on, forces HARD RECORD LOCKOUT for all vtrs

Sw 6 - not used

Sw 7 – When both switches 7 & 8 are turned on as the HSE-200 is powered up, all

Sw 8 - memory will be cleared and menus reset to factory default values.

end