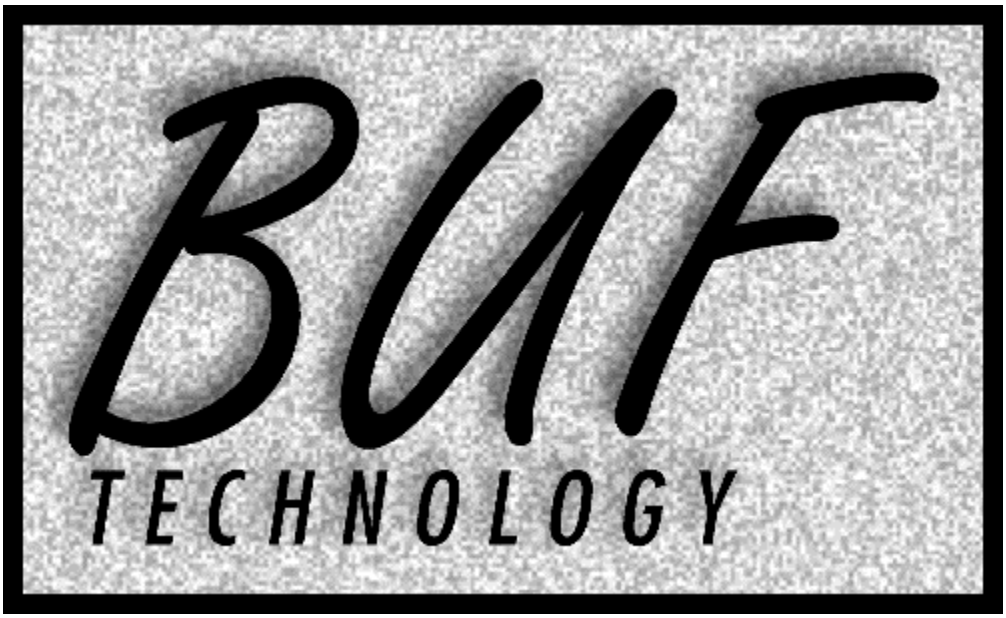

VTC-2000 SERIES

VTR REMOTE CONTROL SYSTEM

INSTRUCTION MANUAL

VERSION: 150702

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INTRODUCTION

FCC RADIO FREQUENCY INTERFERENCE STATEMENT

This device complies with part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

Changes or modifications not expressly approved by BUF Technology could void the user's authority to operate this equipment. Shielded cables must be used with this equipment to maintain compliance with FCC regulations.

WARRANTY STATEMENT

BUF Technology warrants that the equipment it manufactures is free from defects in materials and workmanship. Equipment that has been operated within its ratings and has not been subjected to mechanical or other abuse or modification and has failed because of such defects, will, at the option of BUF Technology, be repaired or replaced if it is returned, freight pre-paid, to BUF Technology within two years from the date of shipment. Equipment that fails under conditions other than described herein will be repaired at the price of parts and labor in effect at the time of repair.

This warranty is in lieu of all other warranties, express or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose. BUF Technology is not liable for any consequential damages.

OVERVIEW

The VTC-2000 Series of VTR Transport Control Systems provides a user friendly vehicle for the remote control of professional and broadcast videotape recorders and players. Any VTR or other device that conforms to the SONY (Japanese) or AMPEX RS-422 protocols can be controlled. Some RS-232 controlled VTRs, such as Panasonic's AJ-D230 DVCPRO VTR can be controlled (see RS-232 option below). Some RS-232 DVD players, such as Pioneer's DVD-V7400 can also be controlled. In addition to the basic playback functions, many other features are provided to aid in quality control, on air playback, scene logging, and many other uses. Cue points may be stored in the unit's non-volatile memory, timecode or tape timer may be selected, a safety timer protects an unattended machine from excessive tape and scanner wear, and a Loop Play mode allows segments to be automatically replayed indefinitely. Single machine assemble and insert editing is possible. An animation mode is included to simplify repetitive record operations.

The Switch option (-S models), provide a means for transferring control of the VTR to another controller such as a desktop graphics system or digital audio workstation. These models are useful for enhancement of VTR control in graphics, non-linear editing, and digital audio suites. A remote preread switching capability is included for D2, D3 and Digital Betacam VTRs. This option cannot be combined with the RS-232 option.

The RS-232 interface option (-RS models), allows timecode numbers to be captured and basic VTR functions to be controlled by a personal computer. Cue points may be loaded and used. These units provide a convenient and powerful VTR interface for computerized quality control systems. Alternately, the RS-232 option can be used to control certain Panasonic RS-232 controlled VTRs. This option cannot be combined with the Switch option.

PHYSICAL

The control panel is 4.65" (W) x 6.85" (D) x 3.5" (H), and slopes from 1.5" height in front to 3.5" height in the rear. The VTC-2000 panel consists of a four-key keypad, an optically encoded Knob, and a thirty-two character LED backlit LCD display. The keypad and Knob provide user input, while the display is used for the readout of VTR status and timecode tape position information and for guiding the user through the many menu features.

To keep cable clutter off the console, a standard 8 pin modular telephone cable connects the control panel to the included VTA-2001 adapter. The VTA-2001 adapts the modular cable to industry standard 9 pin 'D' connectors for VTR or video server interface, and to the included UL and CSA Listed Power Supply.

The optional VTA-2001-RS adapter provides an RS-232 interface connector that allows external computing equipment access to timecode information and all control functions. The VTA-2001-RS also enables control of certain RS-232 remote control equipped DVD and other devices.

The optional VTA-2001-S adapter provides an extra RS-422 control port that allows an alternate controller access to the connected VTR. Control of the VTR can be configured to be switched between the VTC-2000 and the alternate controller manually and/or automatically after the VTC-2000 has been idle for a preset period of time.

For more information about the optional VTA-2001 adapters, see the OPTIONS section.

INSTALLATION

Connect the included VTA-2001 RS-422 adapter to the control panel via the included 15 foot RJ45 cable. A longer cable may be used, but the maximum length is restricted to about 100 feet (30 meters) by voltage drop from the power supply (9.5VDC minimum at the panel). Note that the connectors are terminated “RJ45 telephone style” not “CAT-5 data style”: both connectors are crimped on the same surface of the flat 8-pin telco cable resulting in a reversal of conductor order. Improper termination will result in failure to operate, but will not cause damage. Connect the 9-pin ‘D’ RS-422 connector on the VTA-2001 directly to a VTR, RS-422 routing switcher or patch bay via a pin-for-pin DB9M-M cable; use shielded cable to meet FCC RF emissions standards. Connect the included power supply to the power input pigtail connector on the VTA-2001 and apply power to the power supply.

OPERATION

BASIC OPERATION

Used independently, the panel's four keys directly control the basic transport functions of the VTR. The keys are SQUARE, TRIANGLE, LEFT arrow, and RIGHT arrow. They put the VTR into Stop, Play, Rewind, and Fast Forward modes, respectively. Simply tap on the keys to enter these modes. Hold the SQUARE key down for one second to enter the Ready Off mode, this stops the scanner to prevent tape and video head wear.

Depending on the current mode, the rotary Knob provides these functions:

Turn the Knob while in the Stop mode to enter the Jog mode. Jog allows very accurate frame by frame control of tape position. Tape moves only while the Knob is turned and stops when the Knob is released. Use the Jog mode to locate a specific frame or field on the tape when you are close to that frame.

When in the REWIND or FAST FORWARD modes, the KNOB controls the speed of the tape. This is called the SHUTTLE mode. The SHUTTLE mode may also be entered at zero speed by tapping both the arrow keys together. Quickly scanning the tape for a particular scene is possible in this mode, as the tape speed can be optimized for speed vs. recognizable picture. The relative speed of the tape is indicated by the number of forward or reverse pointing arrows on the display.

When in the Play mode, tap the TRIANGLE key again to enter the Variable Play mode. Variable Play allows the tape to be played slower than normal, faster than normal, and on most VTRs, in reverse (refer to the SLO-MO ITEMS menu to set the maximum Variable Play speed to greater than 100% Play speed). Tape motion is displayed in percent of Play speed. The TRIANGLE key toggles between Play and Variable Play. Variable Play is entered at still speed unless the VAR PLAY MEMORY feature is enabled in the OPER PREFS menu, in which case the last used speed is recalled each time Variable Play mode is entered.

RECORD

First you must select a record or edit mode using the RECORD SETUP menu. The record or edit is then armed by holding both arrow keys in for one second. A message is displayed that allows you to cancel the edit by tapping the SQUARE key. The edit IN and OUT points may be viewed by tapping the arrow keys. The TRIANGLE key initiates the selected record function. In edit record modes, the currently selected cue point is used as the edit IN point, while the OUT point is the following cue point.

Hold the RIGHT arrow key in for one second to arm an edit preview. The preview is then initiated by tapping the TRIANGLE key. See the MENU section for more information on editing.

LOCATING OPERATIONS

The VTC-2000 Series of VTR Controllers have a powerful autolocation capability. One Thousand tape locations may be marked to VTR timecode or may be set explicitly. The VTR may be cued to any location, with or without preroll. CUEING EE MODE may be selected to cause the VTR input video to be passed on to the output during cueing. The cue memory is also used to store edit IN and OUT points (see the RECORD SETUP menu for more information about editing).

MARKING A CUE POINT

Marking a cue point may be done in any mode. Whether tape is moving or stopped, a location can be directly stored (marked) into the current cue point simply by tapping the SQUARE and LEFT arrow keys (the two left keys) together. Auto cue point increment and mark is done by tapping the SQUARE and RIGHT arrow keys together; this simplifies the marking of successive cue points for quality control purposes.

VIEWING CUE POINTS

Stepping to the next cue point is accomplished by tapping the TRIANGLE and RIGHT arrow keys together. The next cue number is displayed along with its current contents in hours minutes seconds and video frames. This is displayed for two seconds or until another key is tapped. Stepping to the previous cue point is done by

tapping the TRIANGLE and LEFT arrow keys. View the current cue point by tapping the TRIANGLE and both arrow keys.

CUEING WITH OR WITHOUT PREROLL

The VTR may be cued to the current cue point by holding in the SQUARE and TRIANGLE keys for one second. The VTR will Shuttle to the cue point and then enter the STOP mode If a looping mode is enabled in the LOOPING ITEMS menu, the Loop Play mode is commenced after cueing. Hold the LEFT arrow key to cue with preroll. Enable the OPER PREFS, CUE KEYS OPTION menu to allow just a tap of the SQUARE and TRIANGLE keys to cue rather than having to hold them.

Cue points may be scrolled though, viewed indefinitely, and explicitly set. See the CUEING ITEMS menu section for these capabilities.

COLD BOOT

If for any reason, you wish to reset the VTC-2000 back to the factory preset configuration, a 'COLD BOOT' may be performed. This operation erases all cue points, editing parameters, etc. A cold boot is accomplished by first disconnecting the power supply from the unit or unplugging the modular cable from the rear of the tabletop unit. hold all four keys in while reconnecting power. All memory will be erased except the factory preset data. (See the MISCELLANEOUS MENU ITEMS, INITIALIZE UNIT menu item for resetting the factory preset data.)

INITIALIZATION

The VTC-2000 can be completely initialized by using the MISCELLANEOUS MENU ITEMS, INITIALIZE UNIT menu. Use this menu when changing the configuration of the unit, for instance, when adding the -S (switch) or the -RS (RS-232) options. Due to the different mechanical configurations of the VTC-2000 (tabletop vs rack mount), the initialization process asks you to identify the keys. If the unit seems to have its keys in the wrong position, use this menu to correct the problem.

MENU

The menu system is entered by holding all four keys in for one second. While in the menu, the display shows icons that match the keys or Knob to indicate what the controls do. Turn the Knob to scroll through the various menu items (as indicated by the Knob shaped icon next to the word SCROLL). The arrow keys may also be used to step through the various menu selections. The triangle shaped icon by the displayed menu item means that the TRIANGLE key will select that item. Tap the SQUARE key to exit the menu or item. The last used selection in each menu is remembered to ease repetitive operations.

Entering the menu mode will not affect the current transport mode. That is, if you are in Play for instance, you may enter the menu mode without stopping the tape. The only exception is Loop Play; looping will not occur while in the menu mode.

NUMBER ENTRY

Menu items that involve entering numbers always work the same way. The round icon above a pair of digits means that turning the Knob will increment or decrement that pair. The arrow keys shift the Knob's control to the other settable pairs. When you are done changing numbers, tap the SQUARE or TRIANGLE key.

The menu items are:

KEY FUNCTIONS	Shows the various key and key combination functions
CUEING ITEMS	Allows viewing, setting, erasing and copying cue points
RECORD SETUP	Sets the record mode, channel enables, preroll, etc.
TIME CODE ITEMS	Selects the time code source, set tape time & TCG
LOOPING ITEMS	Sets the Loop Play modes
OPER PREFS	Customizes operational characteristics
SLO-MO ITEMS	Adjusts certain slow motion related parameters
COMMUNICATION	Sets nonstandard comm for testing & special installations
MISCELLANEOUS MENU ITEMS	Eject tape, self test, adjust display, initialize unit, etc.

KEY FUNCTIONS

Is a built-in instruction manual. Use it to remind yourself of the various one-key, multiple-key and hold-key functions. Here is a summary of these functions:

SQUARE	=	STOP
TRIANGLE	=	PLAY, then VARIABLE PLAY
HOLD TRIANGLE	=	LOCKED PLAY (if enabled)
LEFT ARROW	=	REWIND
RIGHT ARROW	=	FAST FORWARD
BOTH ARROWS TOGETHER	=	SHUTTLE STILL
SQUARE + LEFT ARROW	=	MARK CUE POINT
SQUARE + RIGHT ARROW	=	STEP TO NEXT CUE AND MARK IT
TRIANGLE + BOTH ARROWS	=	DISPLAY CURRENT CUE POINT
TRIANGLE + RIGHT ARROW	=	STEP TO THE NEXT CUE POINT
TRIANGLE + LEFT ARROW	=	STEP TO THE PREVIOUS CUE POINT
HOLD SQUARE + TRIANGLE	=	CUE THE TO THE CURRENT CUE POINT
HOLD LEFT ARROW	=	CUE WITH PREROLL
HOLD RIGHT ARROW	=	ARM PREVIEW IF EDIT ENABLED
HOLD BOTH ARROWS	=	ARM RECORD OR EDIT IF ENABLED
HOLD SQUARE	=	READY OFF (TURN THE SCANNER OFF)

The -S option (SWITCH option) models also have this function:

TAP ALL KEYS	=	RELEASE / ACQUIRE CONTROL OF VTR

CUEING ITEMS

A submenu containing these items:

SET CUE POINT
CHANGE CUE #
ERASE CUE RANGE
COPY CUE RANGE
CUEING EE MODE
FAST CUE MODE
FAST CUE RANGE

SET CUE POINT

Allows you to enter a cue location explicitly from a log or list. Use this item if you want to cue tape to a known timecode number.

CHANGE CUE #

Scrolls through all one thousand cue points by using the Knob. Cue points are displayed very rapidly, allowing you to watch timecode numbers while turning. This mode is useful for logging cue points that were marked earlier, or for recalling a cue point for autolocation or animation cell replacement.

ERASE CUE RANGE

Clears any range of cue points to zeros.

COPY CUE RANGE

Moves ranges of cue points between areas within the cue memory. You may want to keep a range of cue points in a reserved area of memory for later use.

CUEING EE MODE

Causes the VTR to output its input video while cueing. This is useful for dubbing operations: black video input to the source VTR is output to black the record VTR's tails after a dubbing pass while the source VTR is cueing for the next pass. See the LOOPING ITEMS menu for the LOOP AND PARK mode that automatically cues and parks the source VTR for the next dubbing pass.

FAST CUE MODE

Selects the mode used for cueing the tape. Normally, the VTR cue command is used. Some VTRs cue tape slowly using the cue command. By selecting the SHUTTLE or FFWD/REW fast cue modes, these commands are used for cueing until the tape position is within the FAST CUE RANGE (see below), then the cue command is issued.

FAST CUE RANGE

Sets the range within which the cue command will be sent to the VTR. In the fast cue modes, forward or reverse Shuttle or Fast Forward/Rewind commands are used until the tape becomes within this range of the cue point. The cue command is then sent to the VTR to finish the cueing process.

RECORD SETUP

A submenu that allows you to set the record mode and to adjust other record related settings.

Once you have set the desired record or edit mode, recording is armed by holding both arrow keys in for one second. A message is displayed that allows you to cancel the edit by tapping the SQUARE key. The edit IN and OUT points may be viewed by tapping the arrow keys. The TRIANGLE key initiates the selected record

function. An edit preview is preformed by holding the RIGHT arrow to arm, and tapping TRIANGLE. For edit modes, the IN point is the current cue point and the OUT point is the following cue point (unless open ended).

Select a record mode using the Knob and register it by tapping TRIANGLE; the selection is copied from the lower display line to the upper line. If the record mode selected is an insert edit type, CH EN: followed by an indication of the enabled insert channels is shown on the upper display line. Use the Knob to scroll the lower display line through the various channel choices (VID, A1-A4, CUE and TC) and toggle them on or off with the TRIANGLE key. If you choose the ANIMATION mode, you are also prompted for a CEL DUR, which you can set in hrs:min:secs to any DURATION you want (see NUMBER ENTRY for instructions on setting timecode entries).

The available record modes are:

RECORD INHIBIT
HARD RECORD
ASSEMBLE EDIT
INSERT EDIT
OPEN ENDED INSERT EDIT
ANIMATION
OPEN ENDED ASSEMBLE EDIT

RECORD INHIBIT

Makes it impossible to make any type of recording from the VTC-2000.

HARD RECORD

The “hard” or “crash” record mode destroys any control track information that may already exist on the tape at both the IN and the OUT points. Subsequent playback at and around the beginning and end of a hard recording will breakup with noise. Hard recording should be used only for the first recording onto a blank tape, or when it is paramount to get into record quickly (without preroll).

ASSEMBLE EDIT

The assemble edit mode destroys any control track information that may already exist on the tape at the OUT point resulting in picture breakup when playing back just after the OUT point. It should only be used to edit sequentially onto the end of an existing recording.

INSERT EDIT

When editing onto a tape that already has video recorded on it, the insert edit mode allows you to make edits with clean IN and OUT points. The insert edit modes allow you to define which tracks (video, audio, timecode, etc.) should be replaced with the edit. After selecting this mode with the TRIANGLE key, use the KNOB to select edit channels, and the TRIANGLE key to alternately enable or disable them. Enabled channels are shown on the upper display line. Tap the SQUARE key when done.

EDIT CHANNEL	KEY
VIDEO	0
AUDIO 1	1
AUDIO 2	2
AUDIO 3	3
AUDIO 4	4
CUE	5
TIMECODE	6

OPEN ENDED INSERT EDIT

Same as INSERT EDIT (see above) except recording continues until the SQUARE key is tapped. At that time, the edit is ended and if auto tag is enabled (see SET AUTO TAG below), the cue point is incremented,

allowing easy marking of the new in point by tapping the two left hand keys together. A record of all edits is inherently maintained as a sequence of cue points, so replacing any edit is accomplished by changing to the INSERT EDIT record mode, selecting the cue point to replace, and re-editing.

ANIMATION

Used for multiple fixed-duration edits. It is an insert edit mode where a CELL DURATION is specified in minutes, seconds, and/or frames. The CELL DURATION is automatically used as each edit's DURATION. Because auto tagging is used (even if SET AUTO TAG is OFF), a list of all edits is inherently stored as a sequence of cue points. Any cell may be replaced simply by selecting the cue point of the cell to be re-recorded and re-editing. This mode is useful for recording telecine pin registration, pencil sketch tests, cell animation, etc.

OPEN ENDED ASSEMBLE EDIT

Same as OPEN ENDED INSERT EDIT, except the ASSEMBLE EDIT mode is used (see above).

These additional settings may be changed while in the RECORD SETUP menu:

SET IN POINT
SET OUT POINT
SET PREROLL
SET AUTO TAG

SET IN POINT

Allows you to set the edit IN point explicitly. This operation is the same as using the SET CUE POINT function as the current cue point is also the edit IN point.

SET OUT POINT

Allows you to set the edit OUT point explicitly. This timecode number defines the first frame after the edit that will not be replaced. The VTC-2000 uses the next cue point after the current one for the edit OUT point.

SET PREROLL

Defines the preroll time used for editing and for the cue with preroll command. Some VTRs will not obey this command, so it may have no effect on edit preroll. It will always affect the cue with preroll command.

SET AUTO TAG

Enables/disables the auto tag feature. If enabled (the default), when an edit is completed, the VTC-2000 automatically increments the current cue point to make the old OUT point become the new IN. This simplifies the process of sequential editing. If disabled, the cue point is incremented twice so that a record of non-sequential edits is kept as pairs of cue points.

TIME CODE ITEMS

A submenu containing these items:

TC SOURCE
SET TAPE TIMER
PRESET TIMECODE GENERATOR
TC GENERATOR MODE

TC SOURCE

Specifies what numbers should be displayed on the VTC-2000 display and the character output on the VTR (if equipped). Choices include Longitudinal timecode (LTC) which is usually recorded on an audio track on

the tape, VITC, a timecode recorded on an invisible area in the video track or AUTO (the default), where the VTR decides which timecode type to send. TAPE TIMER creates numbers by counting control track pulses (videotape magnetic sprocket holes), or by measuring tape motion with a tach wheel. Tape timers usually cannot be trusted to keep exactly accurate track of tape position. TAPE TIMER 2 is available on some VTRs and can be selected also.

SET TAPE TIMER

Sets the tape timer numbers inside the VTR. Some VTRs will not allow the tape timer to be set, so this item may have no effect.

PRESET TIMECODE GENERATOR

Presets numbers into the TC generator on some VTRs. This is useful if you want an edit or hard record to start the tape timecode at a particular number. Some VTRs don't support this command.

TC GENERATOR MODE

Allows control of the timecode generator on some VTRs. Many VTRs do not support the TCG mode commands, so this setting may have no effect. Default is VTR LOCAL CONT, which inhibits sending of any TCG mode commands, allowing front panel control of the TCG mode. HARD PRESET-EDIT REGEN puts the VTR's TCG into internal LTC regen before any edit. Assemble edits (and insert edits with the TC track enabled) will be recorded with contiguous timecode. When a hard (crash) recording is made, a TCG PRESET command is automatically sent which presets and holds the VTR's TCG to the numbers and drop frame status last used in the PRESET TIMECODE GENERATOR menu. This is useful for recording on raw tape stock using hard record for the first recording, then changing to assemble edits thereafter. FREE RUN, RECORD RUN, INTERNAL REGEN, INTERNAL VITC REGEN, EXTERNAL REGEN, and EXTERNAL VITC REGEN modes are also available. See the VTR operation manual for descriptions of these TCG modes.

LOOPING ITEMS

A submenu containing these looping related items:

DISABLE LOOPING (OFF)
CONTINUOUS LOOPING (CONT)
LOOP AND PARK (ONCE)
CUE-PLAY-NOLOOP (Q-PLY)
LOOPING EE MODE
SET END OF LOOP

DISABLE LOOPING (OFF)

Disables the Loop Play mode.

CONTINUOUS LOOPING (CONT)

In this mode playback will loop indefinitely between the current cue point and the next one.

LOOP AND PARK (ONCE)

Causes the VTR to cue back to the current cue point and stop when playback reaches the following cue point. This is useful for multiple pass dubbing operations. (Enable the LOOPING EE MODE to output black video while cueing.)

CUE-PLAY-NOLOOP (Q-PLY)

Causes the VTR to enter the Play mode when a cueing operation reaches the cue point.

LOOPING EE MODE

May be used in conjunction with LOOP AND PARK for dubbing operations. It is identical to the CUEING ITEMS, CUEING EE MODE menu item. This mode causes the VTR input video to be output when the VTR is cueing.

SET END OF LOOP

Allows the cue point following the current cue point (loop-end point) to be set explicitly.

OPER PREFS

A submenu containing these operational preference items:

KNOB SENSITIVITY
JOG MAX SPEED
JOG SENSITIVITY
JOG INCH SPEEDS
ARROW KEY FUNCTION
SQUARE KEY FUNCTION
VAR PLAY MEMORY
CUE KEYS OPTION
SHUTTLE FORWARD LIMIT
SHUTTLE REVERSE LIMIT
PLAY LOCK MODE
AUTO SWITCH TIMEOUT (applicable only to -S Switch option)

KNOB SENSITIVITY

Reduces the overall sensitivity of the Knob by two or four fold. If you feel the Knob is too sensitive in all modes, use this item to reduce it's sensitivity.

JOG MAX SPEED

Limits the maximum speed tape will move while in the Jog mode. Use the Knob to set the fastest speed tape will travel by turning the Knob in the Jog mode. The JOG MAX SPEED may be set from zero to 500% Play speed. The JOG MAX SPEED defaults to 300% Play speed

JOG SENSITIVITY

Adjusts the speed the Knob must be turned in the Jog mode to reach the JOG MAX SPEED.

JOG INCH SPEEDS

Sets the forward and reverse speeds at which tape will be bumped when the arrow keys are used for Jog Inch. This also affects the Jog Inch command available to the optional RS-232 port. The default is 35 units for forward and reverse which typically results in a 1 field bump.

ARROW KEY FUNCTION

Changes the function of the arrow keys from the default REW/FF to either full Shuttle rev/fwd or Jog Inch rev/fwd. Some VTRs unload tape to enter REW and FF, so setting the arrow key function to full Shuttle prevents this.

SQUARE KEY FUNCTION

Changes the function of the SQUARE key from the Stop command to Jog still. The default is Jog.

VAR PLAY MEMORY

Allows enabling of the Variable Play memory feature. When enabled, as Variable Play is entered, the last used speed is recalled. If disabled (default), Var Play is always entered at still speed.

CUE KEYS OPTION

Allows the “hold keys” requirement to be removed from the cueing operation. Normally, the SQUARE and TRIANGLE keys must be held in for one second to send a cue command. This is to prevent tape from taking off cueing when both keys are accidentally hit when Stop is intended. You can change HOLD to TAP so cueing can be done faster, simply by tapping the SQUARE and TRIANGLE keys together.

SHUTTLE FORWARD LIMIT

Specifies the maximum Shuttle speed, expressed in percent of the maximum speed argument sent to the VTR. This feature allows Shuttle speed to be limited to that witch provides the best compromise between speed and recognizable picture. It does not affect the Rewind/Fast Fwd speeds. If in Shuttle while using this menu item, the results take effect as you make the adjustment. The best way to set this item is as follows: Set to zero, exit this menu item, tap the RIGHT arrow key and turn the Knob to the maximum speed. Since the limit is set at zero, the tape won't move. Then reenter this menu item and adjust the maximum speed as desired.

SHUTTLE REVERSE LIMIT

Same as SHUTTLE FORWARD LIMIT, but for the reverse direction.

PLAY LOCK MODE

Enables/disables the Locked Play mode (default is disabled). Locked Play is entered by holding in the TRIANGLE key for one second. Bumping the keyboard will not take the VTR out of Play when in Locked Play. The only way to regain control of the VTR when locked is to again hold in the TRIANGLE key. This mode is intended to provide security of the Play mode when controlling important playback functions such as uplinking or on-air.

AUTO SWITCH TIMEOUT (applicable only to -S Switch option)

Adjusts the delay before control of the VTR is automatically released to another controlling device when equipped with the Switch (-S) option, and when the unit is configured for AUTOMATIC SWITCH operation (see MISC, INITIALIZE). The default delay is 5 minutes.

SLO-MO ITEMS

A submenu containing these slow motion operational adjustments:

FORWARD SPEED LIMIT
REVERSE SPEED LIMIT
FORWARD KNOB TRAVEL
REVERSE KNOB TRAVEL
STILL KNOB TRAVEL
DÉTENTE TIME PERIOD
SPEED RESOLUTION

FORWARD SPEED LIMIT

Limits the maximum forward speed tape will move while in the Variable Play (slo-mo) mode. Use the Knob to set the fastest slo-mo speed you desire. Slow motion speed limits may be set from zero to 500% Play speed. The default is 100% (Play speed).

REVERSE SPEED LIMIT

Same as FORWARD SPEED LIMIT except limits slow motion speed in the reverse direction.

FORWARD KNOB TRAVEL

Sets how far the Knob needs to turn in the slo-mo mode to change speed from zero to full forward slow speed. Turn the Knob backwards until the display reaches the minimum value of 0001. Then turn the Knob forward the amount you want to have to turn it during slow motion operation to reach maximum slo-mo speed. The default is a count of 240 (1/2 Knob turn).

REVERSE KNOB TRAVEL

Same as FORWARD KNOB TRAVEL, but for the reverse slo-mo direction.

STILL KNOB TRAVEL

Changes or eliminates the slo-mo still speed deadband. This is the amount the Knob can be turned between the slowest forward and reverse slo-mo speeds without moving tape. It defaults to 80 (1/6 Knob turn) and can be inhibited entirely by setting it to zero.

DÉTENTE TIME PERIOD

The Knob has a software détente at still speed that allows you to find still by whipping the Knob in the direction opposite tape motion and letting go. This works by setting a timer when tape is moving faster than a preset speed. Speed will not reverse direction at the request of a Knob turn until this time delay has elapsed. Four different settings are available (default is 213 1/3 MS), NO DÉTENTE TIMER inhibits this feature.

SPEED RESOLUTION

Normally, slo-mo speeds are sent to the VTR using the two byte speed argument form of the Variable Play command. This allows very accurate speeds to be sent to the VTR (Sony protocol VTRs only). Most older VTRs can't operate at accurate speeds so this speed resolution may not be necessary, but it shouldn't cause any harm. If Variable Play does not work with a particular device, you can try changing this item to force the lower resolution one byte speed argument form of the command to be used.

COMMUNICATION

A submenu containing these items:

COMM TEST MODE
RESPONSE DELAY
NO CONTROL MODE
TIMECODE MESSAGE FILTER

COMM TEST MODE

Allows override of the automatic protocol identification feature. Normally, the VTC-2000 alternately sends SONY and AMPEX (and RS-232 if configured with the RS-232 VTR CONTROL OPTION) protocol status requests when no VTR is responding. This menu item allows you to force a specific protocol to be used. Response from the VTR is not required if a protocol is forced.

RESPONSE DELAY

Alters the time delay between commands sent to the VTR. It is set in 33 millisecond increments from 33 to 330 ms. Normally, if the VTC-2000 is connected directly to the VTR or through an RS-422 router or patch bay, this item should be set to the 33 ms minimum (the default). Use longer delays when wireline or fiber optic long distance links are used that add delay to the signals to and from the VTR. The delay should be

set to the shortest period that works reliably because longer delays increase the response lag between the use of the controls and the action of the VTR.

NO CONTROL MODE

Use this mode to monitor status and timecode responses from a VTR that is being controlled by another device. In this mode, the RS-422 transmit lines are put into a high impedance state. The VTC sends no commands to the VTR but simply monitors and displays the status and timecode messages that are returned to the controller from the VTR. If the RS-232 (-RS) option is installed, the timecode is accessible by a personal computer. Simply 'Y' the RS-422 9-Pin cable that connects the controller to the VTR to the VTC-2000 'VTR' connector (if the -S Switch option is installed, connect the controller to the CONTROLLER connector, and the VTR to the VTR connector).

TIMECODE MESSAGE FILTER

Used in conjunction with NO CONTROL MODE to filter out any unwanted time responses that are requested by the primary controller. Some controllers continually ask the VTR for various time parameters such as user bits, timecode generator, IN and OUT points, etc. This will cause a display flicker on the VTC as it shows these responses in real time. The RS-232 port (if equipped) will return the time data last received prior to the request. This menu item lets you program the VTC-2000 to ignore any combination of the 24 possible time messages. If you want to show only Longitudinal or Corrected timecode, for instance, leave the LTC and CTC items enabled; disable all the others. This setting affects only SONY protocol VTRs.

MISCELLANEOUS MENU ITEMS

A submenu containing these items:

EJECT TAPE
VERSION AND TEST
DISPLAY ANGLE
READY TIMEOUT
VTR DEVICE TYPE
INITIALIZE UNIT

EJECT TAPE

When EJECT TAPE is shown on the menu display and the VTR is in the Stop mode, tap ENTER to Eject the cassette. (Some VTRs do not respond to this command.)

VERSION AND TEST

Displays the software version date and performs a test of the program PROM. If the PROM test fails, a PROM FAILED! message appears; the program PROM needs replacement. The unused stack space (MEM FREE:) is also displayed and should be a non-zero number, if not, please call the factory.

DISPLAY ANGLE

Adjusts the display contrast to optimize for viewing angle.

READY TIMEOUT

Adjusts the delay before the scanner is shut down when tape is not moving. This may be set in minutes and seconds, or disabled completely by entering zero. This feature is independent of the timer included in most VTRs and will operate whenever the VTR is left stationary, whether in stop, Jog, still Variable Play, or still Shuttle. This prevents excessive scanner and tape wear when an operator takes a break.

NOTE: In the case of RS-232 VTRs, a frame bump is sent to the VTR every minute to inhibit the VTR's internal still timer when in JOG, Shuttle still or VP still. Since the ready timer is reset each time a key is

tapped or VTR timecode seconds change, this ready timer will extend as seconds roll over, and therefore may never time out if set to delays over about 15 minutes.

VTR DEVICE TYPE

Displays the four digit hexadecimal identification code reported by a connected Sony protocol VTR. This is an engineering aid used to determine the type of device connected, or to determine which device is being emulated by connected equipment that is capable of emulating multiple devices.

INITIALIZE UNIT

Allows you to alter the factory preset system configuration. Use this menu item if you install an optional Switch type (VTA-2001-S) or RS-232 type (VTA-2001-RS) adapter module onto the VTC-2000, or if you move the unit between locations with different types of VTA-2001 adapter modules. After confirming by tapping all four keys, The display will ask you to identify each key and then ask if the unit has the Switch or RS-232 option, and also asks questions about the type of these options. Once these questions are answered, the data is put into a protected area of memory along with error detection data. Whenever the unit is rebooted (hard or soft), this area is checked for validity, and if the tests fail, the questions are asked again.

OPTIONS

SWITCH OPTION (-S SUFFIX, CANNOT BE COMBINED WITH -RS OPTION)

The Switch option is an active RS-422 switch that allows VTR control to be released to another controlling device such as an editing system, digital audio workstation or desktop graphics workstation. Simply connect the controlling device to the CONTROLLER connector on the VTA-2001-S adapter module, and connect the VTR to the VTR connector. To toggle control of the VTR between the VTC-2000 and the alternate controller, simply tap all four keys. CONTROL RELEASED is displayed when the VTC-2000 is bypassed.

AUTO SWITCH may be selected as the switch mode when initializing (see MISCELLANEOUS MENU ITEMS, INITIALIZE UNIT). Normally, switching occurs as described above. The auto switch mode causes control to be released to another controlling device automatically when no keys are tapped for a preset period of time. This release time is adjustable using the OPER PREFS, AUTO SWITCH TIMEOUT menu. Control of the VTR is regained automatically by tapping any transport key.

In many applications, switching control away from another device accidentally could cause severe problems. Typical examples are entering JOG during air play or taking control away from an editor during an edit. Since brushing up against the knob could cause this to happen, an additional question is asked. If you answer NO to the KNOB ACTIVATED? question, a transport key must be hit to take control, turning the Knob will not. If you answer YES, any turning of the Knob will take control of the VTR in JOG mode. If knob activated operation is desired, you may want to set the OPER PREFS, AUTO SWITCH TIMEOUT menu to a short delay of one or two seconds.

PREREAD SWITCHING

If the VTR is equipped with preread capability, the preread mode may be switched on when in the CONTROL RELEASED mode by tapping the TRIANGLE key, and off by tapping the SQUARE key. The display will show the preread status if an acknowledge is received from the VTR, but keep in mind that if the preread mode is changed locally at the VTR (by ejecting a tape, for instance), the VTC will not show the change. Simply wire the editing system's record VTR port to the CONTROLLER connector, and the VTR connector to the record VTR.

RS-232 OPTION (-RS SUFFIX, CANNOT BE COMBINED WITH -S OPTION)

When initialized for RS-232 (see MISCELLANEOUS MENU ITEMS, INITIALIZE UNIT), the RS-232 connector can be set to communicate with some Panasonic RS-232 controlled VTRs including the AJ-D230 “half-rack” DVCPRO VTR, or some RS-232 controlled DVDs including the Pioneer DVD-V7400. The unit will still recognize and operate RS-422 VTRs connected to the VTR connector, and will automatically recognize certain RS-232 VTRs or DDRs connected to the CONTROLLER connector. A device on one connector must be disconnected before a device on the other connector will be recognized.

Some features available for RS-422 VTRs will not operate when controlling RS-232 VTRs such as insert and assemble editing, and other capabilities are limited such as Jog range and Shuttle speeds. It is possible to Shuttle at various speeds with a viewable picture. Cueing operations work only with timecode and will not work when using CTL time. A tape protect override feature is included that allows still pictures to be maintained longer than the VTR normally allows (see MISC, READY TIMEOUT). This feature sends a frame bump to the VTR once per minute when the VTR is left in Jog, Shuttle or VP still modes. The VTC-2000 ready timer turns the scanner off after the duration set in the MISC, READY TIMEOUT menu. Please note that the scanner will never time out, possibly causing excessive scanner wear if the READY TIMEOUT is set to zero or more that about 15 minutes! See below for connection information.

When initialized to LIMITED or NORMAL RS-232 mode, this option provides rudimentary remote control via a terminal or personal computer running terminal emulation or proprietary software. Timecode from the VTR may be captured at any time, whether or not tape is moving. The VTR may be cued to any tape position. Connect the connector labeled CONTROLLER to the RS-232 port of the PC. The 9-pin 'D' connector is wired to connect pin for pin to standard 9-pin 'D' RS-232 connectors. Normally, the RS-232 port sends all display information, responds to keystrokes, and simulates Knob turning when receiving arrow key ASCII codes. This allows the VTR to be controlled via a dumb terminal, even if connected via a telephone MODEM. If you chose LIMITED RS-232 while initializing (see MISCELLANEOUS MENU ITEMS, INITIALIZE UNIT), which limits RS-232 response simply to sending timecode when an ASCII “T” is received, no other data is sent.

The pinout is:

CONTROLLER conn	SIGNAL	
2	TX	Connect to pin 2 on DB25M for RS-232 VTR connection
3	RX	Connect to pin 3 on DB25M for RS-232 VTR connection
5	GND	Connect to pin 7 on DB25M for RS-232 VTR connection
6,7,8	(Connected together internally to accommodate hardware handshaking)	

The communications settings are fixed at 9600 BAUD, 8 bits, 1 stop bit, no parity. Commands are effected by sending ASCII characters, uppercase or lowercase. The available commands are:

SEND	COMMAND
S	STOP (ALSO, A SPACE CHARACTER STOPS THE VTR)
<ENT>	PLAY
R	REWIND
F	FAST FORWARD
J	JOG INCH FORWARD
B	JOG INCH BACKWARD
T	SEND TIMECODE Returned in ASCII with format: TYP HH:MM:SS:FF*
	TYP=LTC, VTC, CTC, TT1, or ATC indicating the type of timecode sent, * = field 2
Q	SET CURRENT CUE POINT with packed BCD format timecode, 4 bytes, frames first
	Example, ‘Q’ followed by hex bytes: 12H, 34H, 56H, 01H sets the cue point to 01:56:34:12
C	CUE VTR to current cue point
+	STEP AHEAD TO NEXT CUE POINT
-	STEP BACK TO PREVIOUS CUE POINT
A	ARM A RECORD OR EDIT
M	ENTERS THE MENU MODE

See the COMMUNICATION menu section for more information on using the RS-232 interface.