The SM-2
Slow Motion Controller

Operator's Handbook

Software Version A5

Manufactured in the UK by
Ash Vale Electronics.

SM-2 SLOW MOTION CONTROLLER - TABLE OF CONTENTS

INTRODUCTION

The SM-2 is an advanced Slow Motion Controller for use with VTR machines on the now standard RS422 serial format. It is intended for use in Broadcast and Professional TV Studios, Outside Broadcast vehicles and similar environments.

Cassette format VTR's are difficult to control with any subtlety from the front panel, even with practice. However, smooth and precise control of tape motion is possible with the SM-2, even by relatively inexperienced operators. The control buttons are large and well spaced out, and are grouped in logical sections for ease of use, especially under 'live' conditions.

Improved facilities over the SM-1 are:

Jog-Knob, with SHUTTLE, JOG and VARIABLE modes.

199 Battery-backed Cues, with flexible control and viewing.

Ability to control TWO VTR's, separately or ganged.

Display of Variable speed, even when in STILL mode.

The same four shuttle modes are provided as on the SM-1, allowing the operator to move tape at one third speed, 4x speed, 8x speed, or Full speed. 8x speed is about as fast as most cassette VTR's will go whilst giving a viewable picture. This speed is available by pressing two adjacent buttons simultaneously - no twiddling a knob to try and find 8x. All these shuttle speeds are in addition to the shuttle speeds available on the Jog Knob. This wide range of fixed and variable speeds available enables the operator to locate specific action shots quickly, and replay them at either normal and non-normal speeds. Variable speeds range from -1x to +3x speed, depending upon the VTR under control.

During use, the operator may display either TAPE-TIME or TIMECODE, and the display on the VTR under control is normally made to follow this switch. This facility may be disabled.

Indicator lights tell if a successful RS422 connection has been made, whether or not the VTR is in Remote and whether or not a Tape or Cassette is present. Warning of Record-Lockout is also given, and on some VTR's a

warning of nearing the end of tape is given.

There are 199 cues available in the SM-2, and all are retained when the unit is switched off. Each cue entry increments the cue number, which is displayed on a four-digit alphanumeric display. Cues and times may be entered freely, and searched-to, from any mode except Variable modes. All cues are available to both of the controlled VTR machines.

When the VTR comes out of RECORD mode, an 'OUT' cue is automatically entered with 10 frames subtracted. When replaying a 'Slo-Mo' in VARiable mode, the VTR will stop at this cue point. The primary use for this facility is to prevent running out of replay pictures. However, the cue can be moved, and thus can be used to mark a particular end point to the slo-mo, such as a close up of a goalscorer. On replay, the VTR will stop at the chosen point. The 'OUT' cue may be erased and it may also be ignored. A separate out cue is memorised for each VTR machine under control.

INSTALLATION AND CONNECTION

Before use, please take time to read the safety information on page 21. Failure to do this may endanger the operator or others.

Few connections are needed to use the SM-2 controller: a mains supply and a 9-pin lead to each VTR machine.

A check should first be made that the mains voltage selector is switched to the correct voltage (240V or 120V). The SM-2 is tested down to 100 volts on the 120V setting, and 200 volts on the 240V setting. Mains should then be applied to the IEC connector at the rear, and the unit switched on.

The 'POWER' LED should light, and if no VTR is connected the 8-Digit display will show all dashes (-- : -- : -- : --), and the alphanumeric display will show 'SM-2'. If a VTR is connected, the 'COMM' LED should light up. This indicates that a successful connection has been made. The 'TAPE-TIME' or 'TIMECODE' light will also light up and the 8-Digit display will show the correct numbers. The Alpha Display will show the next cue to be entered. If the TIMER lamps flash, then the timer mode on the VTR is different to that of the SM-2. The same displays should be present for each of the controlled VTR's. If none of these things occurs, or occurs intermittently, then communication is breaking down, or is non-existent. Refer to the troubleshooting section of the manual. If the VTR is now switched to remote, the 'REM' LED should now light up. This indicates that the SM-2 has control of the machine. Flashing of the REM light indicates that the record lockout is set, or the record tab is off in the cassette.

The 'TAPE' LED will light up if a tape or cassette is present. It will flash near the end of tape on some VTRs. (Typically 4 mins on a BVH2000, and five minutes on an AJD350.)

All four of the previously described LED's are at the left end of the display panel in a vertical line: POWER; COMM; REM; TAPE. It can be seen that a set of four green lights is needed for successful control of a VTR. This 'FOUR-GREENS' display is easy to recognise and after a short period of familiarisation, the operator will not need to look deliberately for this condition.
The type of time display is selected by the switch on the right side of the time display panel. LEDs confirm the setting. It is a matter of personal preference whether TAPE-TIME or TIMECODE is selected, and the display on the VTR under control will follow the SM-2 switch setting. It is possible to

disable this automatic following of the display, and further details are given under 'OPTIONS'. When automatic following is disabled, should the VTR's display differ from that of the SM-2, then the TIMER LED will flash until the condition is removed.

OPERATION

Operation of the SM-2 can be divided into four parts: machine control; slow motion replay; cue memories and search; out cue.

MACHINE CONTROL

The functions of the transport control buttons on the SM-2 are identical to their counterparts on the VTR machine being controlled. Some of the buttons have additional functions when used in conjunction with one another, as described later. Operators familiar with the SM-1 controller will find a very similar layout, and identical functions.

The buttons are placed in a manner which is comfortable for fast control of tape motion, under conditions of operational pressure. Controls which are not essential for efficient Slow-Motion control have been omitted.

STOP, REWIND («), FAST-FORWARD (»), JOG, SHUTTLE and PLAY all have their normal functions and can be used in any order. Pressing PLAY and RECORD together puts the VTR into 'RECORD' mode as normal. The RECORD button is guarded by mechanical barriers, as is the SEARCH button. This acts both as a defence against accidental pressing, and as an additional tactile confirmation of the button.

When in 'STOP' mode, pressing the RECORD button puts the VTR temporarily into 'E/E' mode. Any new command restores 'TAPE' mode. This allows the operator to view the input to the machine whilst parked. This facility is disabled in all modes other than 'STOP' mode. It is available on all VTR's, even those which do not have this facility on their front panel.

The FAST-FORWARD (») and REWIND («) buttons are momentary: releasing the button stops the machine. This mode is very helpful in avoiding 'overshuttling' under pressure, as release of all buttons brings the machine to a halt. The facility may be disabled, and instructions for this are given in the 'OPTIONS' section.

Full speed means 24x, 32x, 48x or 50x, depending on the VTR machine. Some digital machines give a visible picture at 50x, whilst BETA SP machines for example, blank out at full speed.

Pressing either FAST-FORWARD (») or REWIND («) buttons at the same time as the STOP button results in tape motion at 8x speed. At this speed it is just possible to follow sports such as Soccer and Horse-racing, and all VTR's give a visible picture.

Pressing FAST-FORWARD (») or REWIND («) when in STILL, JOG, SHUTTLE, VAR, or FAST VAR results in a shuttle speed of 4x (2x on D3 VTRs). This is an excellent speed for reversing to find a suitable action cue. It is possible at 4x speed to follow fast sports, such as Boxing and Ice Hockey. To engage this speed from RECORD or STOP mode, momentarily press STILL to engage STILL mode, and then press REWIND («). The tape will now go at -4x. This method ensures quick return to a replay point when perhaps no cue was entered. On release, STILL mode is resumed. Pressing FF or « whilst holding down the STILL button gives a speed of approx 0.3. This may be used instead of the T-BAR or JOG knob for replay of slow items, such as a vault in Gymnastics, or a High-Jump or Pole-Vault in Athletics. It is also a most useful speed for locating exact frames; for example, a Footballer celebrating a goal.

The SHUTTLE and JOG modes are identical to those found on the front of the machine. (The range of jog speeds can be limited - see the options section) Because of the quick acceleration of modern VTRs, most operators use the JOG mode in preference to either SHUTTLE or FF/REW. However, it is worth experimenting with the shuttle knob of the SM-2, as greater latitude has been incorporated around the 4x to 8x speeds.

Because the FF (») and REW («) buttons are not latching, it can be easier to shuttle by 'dabbing' these, than by using SHUTTLE. Some VTRs are very poor at acceleration, and this technique will be useless on those. The way to discover which modes suit any particular VTR is by trial and error.

SLOW MOTION REPLAY

The main controls for slow motion replay are located towards the left of the control panel. There are three buttons and a 'T-Bar'.

The STILL button engages 'STILL' mode. This mode is used when parked prior to replaying an item, or when transmitting a still picture. In this mode, the still command is sent continually to the VTR. The picture will thus stay 'ready' indefinitely. STILL mode is also entered automatically after a 'Search-to-Cue'. If the STILL button is held down, then the alpha display will indicate the preset speed of either the T-bar, or the JOG knob, whichever is moving. The display is in %. This is most useful to predict the initial speed when pressing VAR.

When displaying a still picture, it is important to be in 'STILL' and not 'STOP' mode. On some VTR machines in 'STOP' mode, tape tension is released, and the top of the still picture is impaired. In others,(eg Beta SP), a black or grey 'dropout' bar appears somewhere in the picture.

The white VAR button on the left puts the machine in variable play mode. The range of speed available on the 'T-Bar' is from STILL (at the end nearer the operator) to NORMAL play speed. (at the end further away from the operator). The 'speed versus position' of the 'T-BAR' is determined in software, and it has been chosen to give good control at both high and low speeds, and a smooth slow down to a stop. In this mode, the actual speed of the VTR under control is displayed continuously on the alphanumeric display, again in %.

Because the limits of speed in this mode are 0 to +1 times normal, it is impossible to play events either faster than normal or backwards. Although interlocks are useful, it is possible in a panic to override them: the SM-2 system will not allow you to play pictures backwards if you don't intend to! In VARiable mode, the VTR will stop at the time of a previously recorded out cue. This is described more fully under 'cues'. Holding down the VAR button enables the VTR to play past the out cue, even going past the end of your recording if you so wish.
The FAST VAR button also puts the VTR into variable play mode. However, the range of speeds is now increased, and is from -1 times normal to +3 times normal, depending on the VTR under control. These speeds are useful for visual effects and in editing etc. Again, the speed is displayed in percent. A useful point to note is that with the T-BAR nearest to the operator, pressing the FVAR button results in a speed of -1x. This can be

useful if a quick 'reverse' is needed whilst parked waiting for a replay.
The orange VAR button towards the centre of the controller also engages variable play mode, but now on the JOG knob. The speed range is normally 0 to +100%. As with VAR on the T-bar, the speed is constantly displayed on the alpha display. If the orange VAR button is held down, then the range of available speeds is from -100% to +300%, depending on the VTR under control. There are click stops at 0% and +100%. Release of the VAR button once again restricts the range to 0 to 100%. If the speed is outside this range when the button is released, then the speed is adjusted to bring it within the range.

As mentioned previously, a speed of +/- 0.3 is available in these variable modes by holding down the STILL button and pressing FF or «. This can be used as a fixed speed for replay 'on-air'.

NB. When in VARiable mode on the T-bar, it is possible to view the preset speed of the JOG knob by pressing the VAR-VIEW key on the 16 key keypad. This reverse is also true, and pressing VAR-VIEW when in Variable on the knob, will show the T-bar preset speed. It is thus possible to match the speeds and change over in mid-replay.

CUE MEMORIES AND SEARCH

The memories in the SM-2 controller can be described in three parts:

1) The 199 main cues.
2) The 9 quick-store memories
3) The out cue memory.

1) THE MAIN CUES

a) Enter and search

i) Normal mode

Two large buttons, ENTER and SRCH, are the main controls for this function. They are located towards the bottom right of the main control panel. They are used in conjunction with the PRE-ROLL switches, and the 16 key input keypad.

When the ENTER button is pressed, the time on the 8-Digit display at that moment, (T/C or Timer) is stored in memory at the cue number indicated on the alpha display. The cue number is incremented ready for the next cue entry. The numbers will stop incrementing at 199, and the last cue will be overwritten. To change the cue number, see 'Changing cue number'.

When the SRCH button is pressed, the VTR searches to the last entered cue, which is one before the number indicated. Suppose the diplay says C045. Pressing the ENTER button will enter the current time in cue 45, and the display will now say C046. Pressing SEARCH will search to cue 045. The alpha display will say S045, and the S will flash. The S will stay flashing when parked, to remind the operator that the VTR is parked at cue 045. Pressing STILL (or any other button) will make the display reset to the current cue number.

ii) Cue-Hold Mode

Cue-hold mode is entered by holding down the **ST** button and pressing and releasing the **CUE VIEW** button. The letter **'C'** in the cue number display changes to an **'H'**.

In this mode, every press of the **ENTER** button overwrites the existing value

in the cue number displayed, and the number *does not increment.* Pressing the **SEARCH** button searches to the cue number displayed.

Whilst in this mode, the cue number being displayed can be incremented by pressing the **SET** button on the numeric keypad, and can be decremented by pressing the **RET** button.

All other cue entry and time entry modes are valid whilst in the cue-hold mode.

Cue-hold mode may be cancelled by pressing once again the **ST** and **CUE VIEW** buttons.

Normal & Cue-hold modes

On 1" VTRs only, the tape will be reversed a short way before searching. This is to ensure that clean Timecode is under the replay head. Then the VTR is commanded to search to the time in the memory.

If the PRE-ROLL ON/OFF switch is on, then the VTR will go to the cue time less the preroll time. The maximum pre-roll is 9 seconds.

The SM-2 will continue to control the VTR, and park it in the STILL mode, even if the operator switches to the other VTR on the front panel of the SM-2.

b) Searching to a time entry

The VTR may be sent to a time which is not in memory. Press the TIME-ENT button. The display clears to 00:00:00:00. The desired time may now be entered on the numeric keypad. If eight digits are pressed, then the time is checked to see if it is valid, and if not, then the display is reset. If less than eight digits are entered, then checking is only done on pressing the SEARCH button. If a wrong digit is entered, then pressing RES and then TIME-ENT again will clear the display. Pressing the SEARCH button now prerolls the VTR to the time entered.

c) Viewing cues.

Cues may be inspected by pressing the CUE-VIEW button on the small keypad. The cue number is displayed on the alpha display, and the time is

displayed on the 8-digit display. The cue number displayed may be changed by rotating the JOG knob. The character to the left of the cue number indicates whether the cue was entered from VT-A (↑), VT-B (↓), entered from the keypad (:) or is an non-existent cue (blank). Pressing SEARCH will send the VTR to the indicated cue, and the arrow will flash whilst searching, and when parked. If it is desirable to start the CUE-VIEW at a number much different from the current cue, then simply enter the desired number on the keypad before pressing CUE-VIEW.
N.B. If the SM-2 is in JOG, VAR or SHTL mode, then the Knob is disengaged when in Cue View mode. The appropriate orange button flashes. To resume JOG, VAR or SHTL, press the button once more

d) Changing cue number

The number of the next cue to be entered can be changed at any time except in VARiable modes. Enter the cue number desired, and press the SET button on the numeric keypad. This is now the current cue number, and subsequent entries will increment from this number.

Note that cues 1 to 9 may be used as 'Quick-Stores' (See below)

e) Erasing cues

All the cues memories in the SM-2 are retained even when the unit is switched off, as is the current cue number. (memory life 10 years). Eventually the entire memory will be filled up! If the cue number is altered as above, then no memories are erased. However, all the cues above that number may be erased at the same time by holding down the small 'ST' button whilst pressing the SET button. The cue number changes to that indicated, and all subsequent cue memories are erased.

f) Entering times

Times can be entered and placed anywhere in the cue list. To enter a time in the current cue, press TIME-ENT, enter the time, and press ENTER. The cue is entered, and the cue number incremented in the normal way. A cue may also be entered in a specific place. eg. To enter 14:56:00:00 at cue 126. Press 1,2,6 ; the display now reads E126. Press TIME-ENT; the display now reads 00:00:00:00 E126 ; enter the time 1,4,5,6,0,0,0,0 ; press ENTER. The time is entered into cue memory 126, and the cue number reverts to the previous setting.

All the previous operations may be carried out STOP, STILL, PLAY and RECORD modes. Thus it is possible to enter a cue for an incident just passed, or for a quick re-cue, even whilst recording.

It is also important to note that NO interference can be made to the VTR under control by using the 16-key numeric pad. Any machine control has to made using the main control buttons.

2) QUICK STORE MEMORIES

By pressing and holding the **ST** button and any of the numeric buttons 1 to 9, it is possible to store a time to cue number 1 to 9 directly. This is true regardless of the current cue number. This facility is useful when storing important events, such as goals or falling wickets.

Users of the SM-1 controller will note that the quick-store is similar to the cues on the SM-1, and may be used in the same way.

When stored, the cue has the same status as any other cue, and can be viewed and searched at will. eg. Search cue 4 - Press button 4, then SEARCH.

The quick cues will also be remembered when the SM-2 is switched off.

3) OUT CUE

The SM-2 has an 'out' or 'auto-stop' cue which halts the VTR at the cue point in VARiable mode.

This cue is erased whenever the VTR goes into RECORD and is re-entered when the VTR is brought out of RECORD. The actual cue time is the out time less 4 frames (15 on 1" vtrs). A valid cue time is denoted by the lighting of the ST button.

When replaying the recorded material, the tape will stop at the cue point. Note that this auto-stop only works in VARiable mode, either on the knob or on the T-bar, and not in FAST VAR or PLAY.

NB. The actual picture at the freeze will not be 100% predictable. This is due to several factors.

Some VTR machines take longer times to stop than others. This will depend on the mechanics of the machine itself.
The auto-tracking (AST or DT) will jump to the nearest FIELD and may not always be predictable.
The Time in the auto-stop cue represents one FRAME and therefore will not define any particular picture. Be aware of these factors if trying to freeze exactly, on a winning post for example.

The cue can be ignored by holding down the either VAR button. In this case, the tape continues as if there were no cue.
The cue can be simply erased by flicking the TIMER switch across and back again. This can be done in any mode, with little chance of upsetting the VTR.

The auto-stop cue can be moved or re-entered. This is done by pressing both STILL and ST together. This useful facility can be used to preset the time at which the picture will freeze on replay.

The time in the auto-stop cue may be displayed by holding down the STOP button and pressing the ST button.

The VTR may be searched to the out cue time by holding down the ST button and pressing and releasing the main SRCH button. The ST button will flash during the search, and afterwards until another command is entered. Note that preroll, if selected, will be applied to the cue before searching.

Being able to go directly to the end of recording is most useful, especially when recording over earlier material. If the current end of recording is not followed by blank tape, then it will be almost impossible to detect at speed.

WORKING WITH TWO VTR MACHINES.

a) Independent VTR's

The SM-2 can control two VTR's at any time: simply select which VTR to control by moving the VTA/VTB switch. The SM-2 can be considered as TWO slo-mo controllers working independently, but sharing one control panel.

Working with two VTRs is quite straightforward, and should present few problems, as long as a logical approach is made. Each machine has its own identity within the SM-2, and the individual needs of each type of VTR are satisfied. The SM-2 remembers the mode of each machine, and thus both VTRs can be in any mode. It is possible to have one VTR at say 60% on the VAR knob, and the other at 45% on the VAR knob. A VTR parked at a cue point will continue to indicate so, even if the operator switches away, and operates on the second VTR before switching back.

Separate 'Out' cues are stored for the two VTR's, and each VTR will freeze at its own chosen point. Thus the unselected VTR can be left to stop on its own whilst some other operation is performed on the selected VTR.

There are advantages and disadvantages to being able to control two VTR machines. One operator can control VTRs at opposite ends of a Football pitch, or a Cricket wicket, thereby saving space and money. However, operating this way demands extreme care and clear thinking, both of which tend to diminish under 'live' working conditions.

b) Parallel-Running (Gang mode)

This is a more powerful mode, and is therefore more difficult to operate. The parallel-run mode is engaged by holding down the ST button and pressing the red PAR-RUN button on the keypad. It is released by pressing the red PAR-RUN button only.

In this mode, the SM-2 controls both VTR's simultaneously. Both VT select led's flash. The displays and the lamps in the switches show the status of whichever VTR is selected on the VTA/VTB switch. The other VTR will follow every command given.

Entering a cue will save the time of the VTR selected, but pressing SRCH will command both VTR's to go to that time. It is thus essential that both

VTR's have the same timecode. This will usually be the case, but if not, then there is an alternative. Switch the T/C-T/T switch to T/T, and zero both timers (ST + ENTER). The tape-timers in the two VTR's will now track each other, and parallel-run mode will be successful.
The parallel-run mode will be found most useful when both VTR's have to go back for a slo-mo and run in synchronism every time. Both will search to a cue point, and will stay in step (to within a frame or so) by use of PLAY, VAR & STILL. If no cue has been entered, then jog or move the selected VTR to the chosen point, press ENTER and then SRCH. Both VTR's will search to the chosen point.

If either (or both) VTR's are likely to go back alone, then it is usually better to stay out of parallel-run mode, and use the VTA/VTB switch.

Points to note

Although the SM-2 will happily control dissimilar VTR's, it is unlikely that they will stay in step during parallel variable-speed operation. This is due to the different ways in which various VTR's interpret speed commands.

Out-cues are stored independently for each VTR. If a Slo-mo replay is performed in parallel mode, then both VTR's will freeze at their own selected out points.

NB. The parallel-run mode will be **disengaged** if any of the following occurs:

Communication is lost with a VTR
A VTR is switched into LOCAL control mode
A tape or cassette is removed from the VTR

On removal of the problem, then parallel-run may be re-engaged by the normal button presses.

In parallel-run mode, both VTR's will be stopped together, both will be taken out of RECORD together and both will be put into RECORD together. **Great care** must be taken when using this mode!

OPTIONS

There are five options available on the SM-2 controller.

Mains supply

The switch for mains voltage selection is on the rear panel and the two options are marked on the switch.

Jog speed range limit

It may be an advantage to limit the range of the jog function to +/- 100% of normal speed. Switching ON SW1 (brown), of the 4-way DIP switch on the processor board, will limit the speed. Switching it OFF will restore the full range of approx +/- 4x speed. The DIP switch may be found by removing the right side case cover. The processor board is on the rear panel of the SM-2, and the switch is obvious.
The SM-2 is supplied with SW1 off. ie. full-range jog speed.

Shuttle mode

As described previously, FAST-FORWARD (») and REWIND («) can be either latching or momentary. The control of this function is on SW2 (red). OFF selects momentary shuttle, and ON selects latching shuttle.
The SM-2 is supplied with SW2 OFF: ie. momentary shuttle.

VITC request

Normally the SM-2 requests auto-TC ie. VITC at slow speeds and LTC at faster speeds. This is true for all VTRs except BVH2000 series VTRs and MII. These are better on LTC only.
Should there be a likelyhood of differences between VITC and LTC, the switching on SW3 (orange) will request only LTC. This will result in poor reading at very slow speeds on some VTRs.
The SM-2 is supplied with SW3 OFF : ie. auto-TC

Remote timer control

This is controlled by SW4 (yellow) on the main board.
With this switch OFF, the display on the VTR machine is switched to correspond with the SM-2.
When ON, the VTR is unchanged, and it is up to the operator to change the SM-2 to the same.
The SM-2 is supplied with SW4 OFF : ie. auto switching of display.

TROUBLESHOOTING

Power LED does not light....
Check that mains is reaching the rear socket.
Check that mains switch is on and the neon is lit.
Check mains fuse on the rear panel.
Check the two 1 amp fuses on the PSU board. This board is easily seen by removing the right hand side cover.

COMM. LED does not light....
When the RS422 socket is connected to a suitable VTR, then the COMM. LED should light. This is true regardless of whether or not the VTR is in remote.
If this LED does not light, or goes out intermittently, then communication is difficult or impossible. Possible causes are:
VTR remote selector in the wrong position : eg. 50-pin remote.
RS422 lead open circuit, short circuit, or wrongly wired.
Two competing controllers trying to control the same machine - many VTR's have remote in and out sockets which are connected in parallel; make sure only one device is connected.
On digital VTRs, check remote mode on Setup Menu - select the appropriate in/out socket

VTR shuttles to beginning or end of tape during search....
This is caused by the Timer Display Mode of the VTR being different to that of the SM-2. The Tapetime/Timecode LED on the display panel flashes.
To cure, change either the VTR or the SM-2

FRAME BAR in picture during VARiable speed playback....
There are two causes of this:..
VTR has R/P head selected instead of D/T head.
VTR is in edit mode, which also selects R/P head.
To cure either of these problems, switch the VTR to LOCAL, rectify the condition, and resume REMOTE mode.

PARALLEL-RUN mode will not engage....
Check that two VTR's are connected properly.
Check that both VTR's are in REMOTE.
Check that both VTR's have Tapes or Cassettes.

QUICK FUNCTION GUIDE

E/E mode	...	REC button - Any command cancels. (Stop mode only)
8x Shuttle	...	STOP + » or «.
4x Shuttle (2x on D3)	...	» or « whilst in STILL mode.
0.3x Shuttle	...	STILL + » or «.
Display T-bar speed	...	Hold down STILL
Display Jog-Knob speed	...	VAR VIEW (in STILL)
Display alternate speed	...	VAR VIEW
Enter main cue	...	ENTER
Enter quick cue	...	ST + 1 (or 2,3etc)
Search to last cue	...	SRCH
Search to cue number	...	(number) ⇒ SEARCH
Search to Time	...	TIME ENT ⇒ (time) ⇒ SEARCH
Enter Time	...	TIME ENT ⇒ (time) ⇒ ENTER
Enter Time at Cue	...	(cue) ⇒ TIME ENT ⇒ (time) ⇒ ENTER
Change cue number	...	(number) ⇒ SET
Change cue number & erase subsequent cues	...	(number) ⇒ SET + ST
Display current cue	...	CUE VIEW (+ Jog Knob)
Display earlier cue	...	(number) ⇒ CUE VIEW (+ Jog Knob)
Store out cue	...	ST + STILL
Search out cue	...	ST + SRCH
Display out cue	...	ST + STOP
Erase out cue	...	move TIMER switch.
Reset tape time	...	ST + ENTER (only in Tape-Time mode)
Engage PAR-RUN mode	...	ST + PAR-RUN
Disengage PAR-RUN	...	PAR-RUN

IMPORTANT SAFETY INFORMATION

The SM-2 slow-motion controller is designed and built to a high standard. However, care in the use and storage of the unit is essential if reliability and safety are to be maintained.

IN USE

Do not open or otherwise tamper with the controller when power is connected - dangerous voltages exist within the casing.

Do not allow water or other liquids to come into contact with the controller

Always use the controller indoors in a dry place.

Always use a correctly wired and rated mains supply.

Connect the 9-pin sockets only to a suitable video recorder via a properly wired cable.

Only use the controller for the purpose for which it is designed.

WHEN NOT IN USE

Store the controller in a clean dry place, preferably in a box or case.

When the controller has been stored at very low temperatures, allow time for it to attain room temperature before use.

Do not subject the controller to unnecessary vibration and rough treatment.

SPECIFICATIONS

Device : RS422 controller for slow motion replay.

Power supply : 240v OR 120v 47-63 Hz. Max 20W.

Control type : RS422 Transmit/Receive 38,400 baud.

Connector : 9-pin 'D' type.

Dimensions : Width 230mm : Depth 225mm : Height 135mm

Weight : 2.6 Kg

Suitable VTR's : 1", MII
Beta, Beta SP, Beta SX
D1, D2, D3, D5
Digital Betacam
Digital 'S' (D9)
Almost any VTR using Sony Protocol

Accessories supplied

Mains lead - IEC to open end.

RS422 lead - 9 pin to 9 pin - 3 metres. (Two supplied)

Operator's handbook.

Spare fuses & bulbs.

This controller complies with the requirements of the following EC Directives when used in accordance with the above instructions.

CE Electromagnetic Compatibility (89/336/EEC)
Low Voltage Directive (73/23/EEC)