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# **Model 2034CL-SX-PBIO (& 2034CL-SX-PBIO-T)**

## **300 Clip Instant Access System**

*SONY SX PROTOCOL*

**FOR SONY SX HYBRID RECORDERS**

**WITH PERIPHERAL BUS INTERFACE OPTION**

## **USER MANUAL**

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## **1. REVISION HISTORY**

- |        |          |  |
|--------|----------|--|
| 092303 | Rev. 2.3 | Company header information revised.  |
| 110403 | Rev. 2.4 | Added DNF Controls Limited Warranty.<br>Updated Receive Cue List & Transmit Cue List Function description. |

## 2. SYSTEM DESCRIPTION

- \* NOW, production switchers can load & play video clips on SONY SX Hybrids.
- \* Use the EMEM or SNAPSHOT Learn & Recall functions of the production switcher, to load and play a video clip from a Recall or timeline.
- \* Use the Run and Trigger functions of the production switcher to Play, Stop or Recue the video clip. Instantly load a video clip at the press of a button.
- \* Instantly load a FILL clip & KEY clip at the press of ONE button, then play out both channels in sync. LOOP up to 3channels.
- \* Control up to 3 video channels individually or ganged.

The 300 Clip Instant Access System consists of the ST300-SSM VTR Controller, STS420 Shotbox and Shotlist Software.

SHOTLIST provides fast access to existing video clips stored in SONY SX Hybrids. The SHOTLIST contains up to 300 CLIP IDs, stored in non-volatile memory in the ST300.

Any clip in the SHOTLIST can be quickly loaded by simply entering the associated 3-digit number of its location, then pressing [**LOAD**]. Press [**PLAY**] to play the clip. Press [**RECUE**] to recue to the beginning of the clip or to the “recalled” time if defined.

Upon receipt of the Learn command, the ST300 saves the CLIP IDs of the currently loaded clips, the current time of each clip, the VTRs they are loaded on and the current GANG mode into the appropriate Cue Point.

When the Recall command is received, the ST300 loads the learned Clips onto the learned VTRs, cues the Clips to the learned time and restores the learned GANG mode.

Learn & Recall may also be done directly from the ST300.

## DEFINITIONS

- Throughout this document, the hard disk drive in the SX unit will be referred to as “Video Server”. HDD refers to the hard disk drive video recorder in the SX device.
- The ST300-S/SM as the ST300.
- The ST420SHOTBOX is referred to as “SHOTBOX.” SHOTKEY refers to the 1-30 switches on the SHOTBOX
- Words surrounded by brackets, for example, [**ENTER**], are keys on the ST 300 or SHOTBOX. [**XXX**] + [**XXX**] means hold the two keys down simultaneously.
- “Softkeys” are the row of keys directly below the display that perform multiple functions in Menu and other modes.

## ***Getting Started . . .***

### **3. SYSTEM INSTALLATION**

#### **SHOTBOX**

1. Plug one end of a standard 9 pin, RS422 serial cable, into the OUTPUT connector on the rear of the SHOTBOX. Plug the other end of the cable into the AUX connector on the rear of the ST300.
2. Connect the 5 VDC, 1Amp POWER SUPPLY into the POWER connector on the rear of the SHOTBOX. Plug the Power Supply into an outlet, 90VAC - 240VAC.

#### **ST300-S/SM, VTR/DDR CONTROLLER**

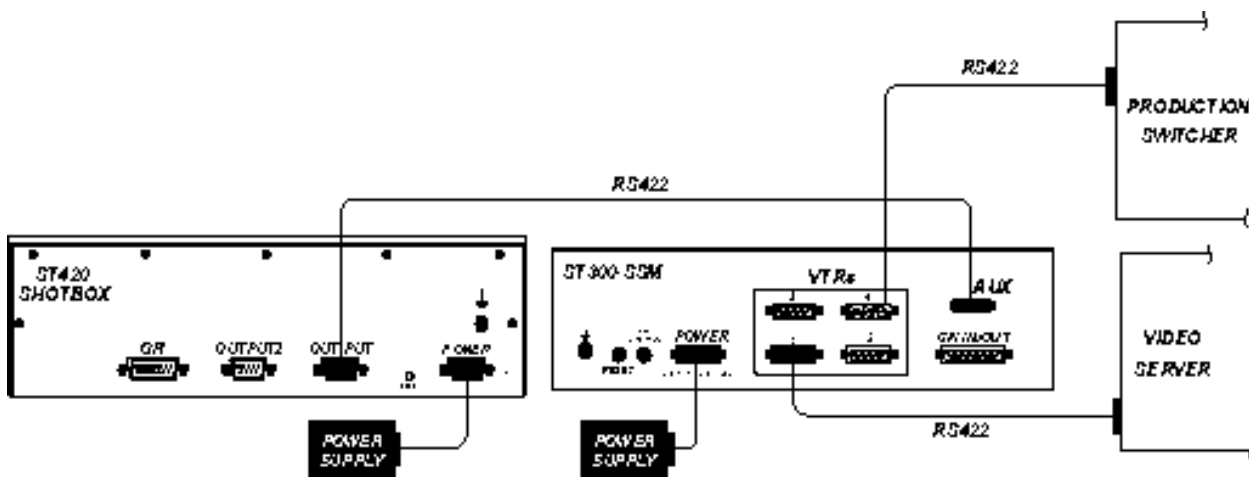
1. Plug one end of a 9 conductor, RS422 serial cable into the VTR 1(2 or 3) connector on the rear of the ST300. Plug the other end of the cable into the REMOTE connector on the SX Hybrid Machine.
2. Connect the +5, +12, -12 VDC POWER SUPPLY into the POWER connector on the rear of the ST300. Plug the Power Supply into an outlet, 90 VAC - 240 VAC.
3. For frame accuracy on Ver 3.0 ST300, plug video sync reference into the video reference connector and enable SYNC in the ST300's MENU.
4. Check SETUP MENU prior to using the ST300 to confirm proper Record mode and other User settable modes.

#### **PRODUCTION SWITCHER**

1. Connect a standard cable (RS422, 9 pin serial cable) to the supplied turnaround adapter. Plug the turnaround adapter into the "VTR4" connector on the rear of the ST300. Connect the other end of the cable to the Peripheral Bus Connector on the production switcher. (Communication Format- 38.4K, N, 8,1)
2. The ST300 has 3 Peripheral Device Addresses, one for each VTR that it controls.  
To set the Device Address for each VTR:
3. Press [MENU] on the ST300.
4. Turn the Wheel clockwise until "Peripheral Address" is displayed.
5. Press VTR [1], VTR[2] or VTR[3] to select a VTR.

Installation is complete.

## CONNECTION DIAGRAM



### 4. VIDEO SERVER SETUP

1. When you switch to “Local” mode on the SX, the SX goes to the beginning of the first clip on the list
2. Clips loaded from the front panel of the SX will not be Learned or displayed on the ST 300 or ST 420.
3. The SONY DNW unit must have the following or higher software versions:
  - 1.) SY1=3.22; SY2=3.22;SSX=3.20;SV1=3.20
  - 2.) DNW extended menu item 210:DiskProtcl must be V1.0 (Load errors occur otherwise).
4. Assuming DNW PLAYER=TAPE, RECORDER=DISK MASTER:
  - 1.) ST300/VTR 1 disk operation.  
 DNWPB/EE enabled: TC Reader display is from tape when VTR EE mode is active. During disk PB, TC reader display is from DISK MASTER. Refer to DNW extended menu item 108 AUTO EE SELECT.  
 DNW PB enabled: TC reader display is from DISK MASTER only.
  - 2.) ST300/VTR2 tape operation: TC reader display is from tape regardless of DNW PB/EE selection.
5. SETUP MENU/RECORD MODE. Crash and Lockout are the only modes supported. Hybrid cannot perform INSERT Edit to either TAPE or DISK MASTER.

## 5. OPERATION MODE SETUP

1. Press [**MENU**].
2. Press the VTR [**1**], [**2**] or [**3**] to select the VTR you control the DNW from.
3. Turn the Wheel until "Player: REC:" is displayed.
4. Press [**MENU**] to toggle between the following operation modes of the SX unit:  
Player = Ext, REC = Tape                      Player = Disk, REC = Tape  
Player = Ext, REC = Disk                      Player = Disk, REC = Tape  
Player = Tape, REC = Disk
5. Repeat steps 2-4 to configure all SX units you want to configure.
6. Press [**ESC**] at anytime to exit.

### ***SWITCHING BETWEEN HD and TAPE***

Switching between tape and HD, press [**TAPE**] to assign control to the Tape or the HD.

If the LED above [**TAPE**] is on you are controlling the tape drive. The time code on the ST300's display is the tape drives' time code and the video signal comes from Tape (Assuming SX operation mode is set to Player = Tape, Rec = Disk or Player = Disk, Rec = Tape).

If the LED above [**TAPE**] is off, you are controlling HD; Time Code and Video come from the HD. **NOTE:** The Clip List function is not available on the Tape drive.

When you LEARN on the HD, the CLIP ID, time and data are stored in the Cue Point. When you do a LEARN and the Tape is active, only current Timecode and Gang data are stored in the Cue Point.

## 6. SETUP MENU

Press [MENU]. The MENU indicator will turn on.

Turn the Wheel to select item to change.

Press [MENU] **OR** use the Softkeys to change the desired mode for that option.

Turn the Wheel at anytime to select another item.

Press [ESC] at anytime to exit SETUP MENU. The MENU indicator will turn off.

**MENU MODES:** (Turning Wheel clockwise)

**RECORD** Press [MENU] to select the desired record mode:

Lockout, Assemble, Crash (Full) or Insert.

Only in INSERT mode: Press the associated Softkey, located below the display, to toggle Video(V), Audio1(A1), Audio2(A2), Audio3(A3) on/off

**WIND** Press Softkey to select:

**MODE** HOLD (fast wind is maintained only while key is depressed)

**OR**

LATCH (fast wind is initiated and maintained with momentary key press)

Select fast wind speed (3.9 to 23.7) by pressing Softkey below SPD.

**SLOMO** ST300 display shows:

SLOMO with:	WHEEL
TBAR      Speed	Prset

Press Softkey [**TBAR**] (or [**WHEEL**]) to toggle between them.

The T-BAR has a speed range of 0→+200 with a detent at +100 % play speed **OR** a range of 0→+100 (detent at +100 % Play speed).

**For Wheel only:**

Press Softkey [**SPEED**] to select SLOMO speed ranges:

Press Softkey to select: 0 ->+200 **OR** -100 -> +200.

Press Softkey [**BACK**] to return to SLOMO MENU.

Press [ESC] to exit **OR** turn the Wheel to select another item.

**For Wheel only:**

Press Softkey [**PRSET**] to select the SLOMO Preset Speed Mode

Press Softkey [**UPDATE**]

When exiting SLOMO mode,

the last used speed is saved in the Preset Speed register.

Press Softkey [**STATIC**]

ThePreset Speed register is NOT updated when exiting SLOMO mode

It is only changed by [**SHIFT**] + [**SLOMO**] (PRESET SLOMO).

**ST300  
SETUP**

ST300 SETUP	
Clear Cues	SetDefault

Press Softkey beneath ClearCues to clear all Cue Points to 00:00:00:00.  
Press Softkey [YES] when asked “Are You Sure?”  
Press Softkey beneath SetDefault to set ST300 to default settings.  
Press Softkey [YES] when asked “Are You Sure?”

**DISPLAY SOFTWARE VERSION** The version number for the currently installed software is displayed.

**SET OPERATION MODE** Sets the operation mode of the DNW. See Sec. 4 for more details.

**SYNC SETUP** For Version 3.0 hardware **ONLY**: Set video sync polling ON if video reference is connected to BNC connector on rear panel.  
Default = OFF

**RECORD** Press Softkey to select single button or 2 button record.  
RECORD = [REC] Only **OR** [REC] + [PLAY]

**PREROLL** Enter preroll value (Default =5sec).

**RECORD DELAY** Enter up to 99 Frames. Default = 19 frames.

**PBIO ADDRESS** Press VTR key to assign PBIO address.  
Display shows:

PBIO Address = 00
Enter 00-23

Enter address number desired on numeric keypad. Repeat for all VTRs assigned.

**SWITCHER TYPE** Select your switcher type. GVG = Grass Valley Group (default) or Sony. For Phillips DD35 with PBus, use GVG.

**PARITY** Select ODD, EVEN or NONE. This is the parity sent via the Peripheral Bus (PBIO) to the ST300.

**TRANSMIT** Transmit cuelist to another ST300 or to a PC  
**CUELIST**

**RECEIVE** Receive cuelist from another ST300 or PC.  
**CUELIST**

## 7. CREATE NEW CLIPS

1. Press [**CLIP LIST**]. The CLIP LIST indicator will turn on.  
The display will show “CREATE NEW CLIP?”.  
Press [**LOAD**] to create a new clip **OR** turn the Wheel for next option.
2. Enter a CLIP ID (up to 20 characters) using the numeric keypad  
**OR** the SHOTBOX “qwerty” keyboard:
3. Press [**LOAD**] on the ST300 to create the selected CLIP ID.
4. Press [**REC**] to record video into the newly created CLIP ID.
5. Press [**STOP**] to end the recording.
6. The clip **MUST** be reloaded to view the recorded material.

## 8. LOAD

1. Select a VTR by pressing VTR [1], VTR [2] or VTR [3].
2. Press [**CLIP LIST**]. The CLIP LIST indicator will turn on.
3. Turn the Wheel to scroll through the list of available CLIPS  
**OR**  
Type in the desired CLIP ID using the “qwerty” keyboard on the SHOTBOX  
**OR**  
Enter the desired CLIP ID using the numeric keypad on the ST300.
4. Press [**LOAD**] on the ST300 or the SHOTBOX to load the desired clip.
5. Locate the clip to the desired IN time.
6. Repeat steps 1 – 6 until clips are loaded into the desired VTRs
7. Set the GANG mode, if required. (Refer to the Function Table for Details).
8. Press [**ESC**] at anytime to exit CLIP LIST.

## 9. LEARN

**NOTE:** The ST300, SHOTBOX and Production Switcher all reference the SAME Cue List, stored in the ST300. You **DO NOT** have to LEARN information on the SHOTBOX **IF** you have already done so on the ST300 or Production Switcher.

### LEARN ON THE ST300

1. Select the desired Cue Point by pressing [NEXT CUE], [LAST CUE] or by manually entering the Cue Point using the numeric keypad.

The selected Cue Point number is shown on the bottom line of the display.

2. Press [SHIFT] + [MARK] to initiate the LEARN.

The display will show:

Press VTR:
------------

MARK-Lrn	ESC-Cancel
----------	------------

3. Press the VTR key desired: [1],[2],[3].

4. Press [MARK] and the ST300 will: LEARN (save) the VTR Number (1,2,3), loaded CLIP ID and current IN/OUT time to the selected Cue Point.

### LEARN ON THE SHOTBOX

1. Press [LEARN]. The LEARN indicator will turn on.
2. Select the desired BANK and ShotKey.
3. Press [LEARN] to exit at anytime.  
**NOTE:** The [LEARN] key toggles LEARN mode on/off.

### LEARN ON THE PRODUCTION SWITCHER

1. Select and enable the Peripheral Device Addresses for the ST300.
2. Do a LEARN to the desired REGISTER.  
The ST300 will save the VTR number, loaded CLIP ID and current IN time into the REGISTER number in the ST300.

## 10. RECALL

### RECALL ON THE ST300

1. Select the desired Cue Point by pressing [NEXT CUE], [LAST CUE] or by manually entering the Cue Point using the numeric keypad.  
The selected Cue Point number is shown on the bottom line of the display.
2. Press [LOAD] on the ST300.

## RECALL ON THE SHOTBOX

Select the desired Cue Point by pressing the bank and the switch key.

## RECALL ON THE PRODUCTION SWITCHER

1. RECALL the desired REGISTER NUMBER.
2. The ST300 will automatically load the Learned clips on the Learned VTRs, cue the clips to the Learned time, then set the Learned GANG mode.

## 11. TRIGGER

The operator fires a trigger using the Timeline or Run function on the production switcher. The ST300 puts the Video Server into the following modes based on the trigger value:

### GRASS VALLEY GROUP

<u>Trigger Value</u>	<u>Mode</u>
0	Play
1	Recue to beginning of clip
2	Slo-mo using ST300 Preset Speed
3	Reverse Play
4	Still Frame
5	LoopPlay
6 or greater	Play

### SONY

<u>Trigger Value</u>	<u>Mode</u>
0	Recue to beginning of clipPlay
1	Play
2	Slo-mo using ST300 Preset Speed
3	Reverse Play
4	Still Frame
5	LoopPlay
6 or greater	Play

To control more than one VTR, enable the Peripheral Device Address for the required VTRs. The Trigger will be sent to the enabled devices.

**OR**

GANG the required VTRs on the ST300. See the Menu Table for GANG instructions. Enable the Peripheral Device Address for one of the GANGED VTRs. The Trigger will be sent to the enabled VTR. The other VTRs in the GANG will perform the same action.

## *Advanced Features . . .*

### **12. CAPTURE**

The CAPTURE function allows source material from the tape drive of the Hybrid Machine, to be easily and quickly recorded into the HDD. A CLIP ID is created and the source material is transferred into the HDD.

Use the transport function keys to control the source Drive.

#### **SETTING THE IN (OUT) POINT**

1. Locate the clip to the desired IN (OUT) time
2. Press [IN] ([OUT]).  
The IN (OUT) indicator comes on  
**OR**  
Press [SHIFT] + [IN] ([OUT]) to manually enter a new IN (OUT) time.

#### **VIEW THE IN (OUT) POINT**

1. When the IN (OUT) indicator is on,  
Press [IN] ([OUT]) to view the existing IN (OUT) Point.
2. While viewing the IN (OUT) Point:  
Press [MARK] to overwrite the saved time with the current time.  
Press [RECUE] to search to the IN (OUT) point.

#### **CLEARING AN IN (OUT) POINT**

Press and hold [DEL] then press and release [IN] ([OUT]).  
The IN (OUT) indicator goes out.

#### **ENTER PREROLL VALUE**

1. Press [MENU]. The MENU indicator will turn on.
2. Turn the Wheel until "Enter PREROLL:" is shown on the display.
3. Enter the desired preroll value using the ST300's numeric keypad.
4. Press [ENTER] to save the entered value **OR** [ESC] to exit without saving.

**SET THE RECORD DELAY** (See MENU for details).

## EXECUTE CAPTURE FUNCTION

1. Press [**SHIFT**] + [**RECORD**].  
The display will prompt you for a CLIP ID.
2. Enter the new CLIP ID using the numeric keypad on the ST300  
**OR** the “qwerty” keyboard on the SHOTBOX.
3. Press [**LOAD**] **OR** [**ENTER**] to start capturing.

The ST300 will create the new CLIP ID on the Video Server.

The Source VTR will preroll to the IN Point, then play.

At the Source VTR’s IN point, the RECORDER will go into record.

At the Source VTR’s OUT point, the RECORDER will terminate record,  
post-roll for 2 seconds, then stop.

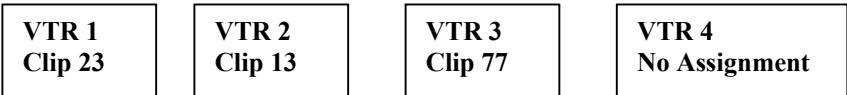
The Source VTR will search to the OUT point and stop; The OUT point will be cleared.

The IN indicator will stay on. The OUT indicator will turn off.

## 13. VIEW CONTENTS OF CUE POINTS

1. Press [**VIEW**]. The VIEW indicator comes on.
2. Press the switch for which you would like to see the content.
3. The switch turns RED and the content (CLIP ID) of the corresponding Cue Point is displayed on a virtual display.

For Example:



**NOTE:** All the remaining switches are not illuminated.

4. Release the keys to return to normal operation.

## 14. SHOTBOX SHOTKEY MAPS

The SWITCHES on the SHOTBOX access the SHOTLIST locations as follows:

BANK 0, SWITCHES 1 → 30 access SHOTLIST locations 001 → 030.  
BANK 1, SWITCHES 1 → 30 access SHOTLIST locations 101 → 130.  
BANK 2, SWITCHES 1 → 30 access SHOTLIST locations 201 → 230.  
BANK 3, SWITCHES 1 → 30 access SHOTLIST locations 301 → 330.  
BANK 4, SWITCHES 1 → 50 access SHOTLIST locations 401 → 430.  
BANK 5, SWITCHES 1 → 30 access SHOTLIST locations 501 → 530.  
BANK 6, SWITCHES 1 → 30 access SHOTLIST locations 601 → 630.  
BANK 7, SWITCHES 1 → 30 access SHOTLIST locations 701 → 730.  
BANK 8, SWITCHES 1 → 30 access SHOTLIST locations 801 → 830.  
BANK 9, SWITCHES 1 → 30 access SHOTLIST locations 901 → 930.

## 15. PBIO REGISTER MAPPING TO SHOTLIST LOCATION

Register 0-30	➔	Cue Point 0-30
Register 31-60	➔	Cue Point 101-130
Register 61-90	➔	Cue Point 201-230
Register 91-99	➔	Cue Point 301-309

## 16. TRANSFERRING CUELISTS

The TRANSMIT CUELIST function allows you to transmit your list of Cue Points to a PC, using the provided utility software on the PC, or to another ST300. Transfer to a PC requires OpSuite 3.0 software, which runs on a Windows-based computer. Contact DNF Controls for more information.

### To Transmit Cue Points to the ST300:

1. Connect the VTR 4 connector on the rear of the ST300 to the VTR4 connector of the receiving ST300 using an RS422 9-pin cable with TX and RX lines crossed. (A “turnaround” cable)
2. Press [MENU] and scroll the Wheel until  
“Transmit CUE List? YES=Enter, Exit=ESC” is displayed.
3. Press [ENTER] to start transmitting.  
The Display shows “Waiting to transmit” on the first line.
4. When the Receiver is ready, transfer starts automatically.  
The Display now shows ”Transmitting cue list”.
5. After the transfer is over, the display shows “Transfer is over” for one second and then shows “Waiting to transmit” again.
6. Connect another ST300 to transmit the list again  
**OR** press [ESC] twice to exit the MENU mode.

### To Transmit Cue Points to the PC:

1. Connect the VTR4 connector on the back of the ST300 to one of the COM ports on the PC using a RS422 to RS232 adapter.
2. Repeat steps 2-6 of the TRANSMIT CUE POINTS to the ST300 section.

## RECEIVE CUELIST FUNCTION

The RECEIVE CUELIST function allows you to receive your list of Cue Points from a PC or from another ST300. Transfer to a PC requires OpSuite 3.0 software, which runs on a Windows-based computer. Contact DNF Controls for more information.

### To Receive Cue Points from the ST300:

1. Connect the VTR4 connector on the back of the ST300 from the VTR4 connector of the transmitting ST300 using RS422 9-pin cable with TX and RX lines crossed. (A “Turnaround” Cable)
2. Press [MENU] and scroll the Wheel until  
“Receive CUE List? YES=Enter, Exit=ESC” is displayed.
3. Press [ENTER] from start receiving.  
The Display shows “Waiting to receive” on the first line.
4. When the Transmitter is ready, transfer starts automatically.  
The Display now shows “Receiving cuelist”.
5. After the transfer is over the display shows “Done-Success! Press any key...”
6. Press any key. The display shows “Receive cuelist?” message.
7. Press [ESC] to exit the MENU mode.

### To Receive Cue Points from the PC:

1. Connect the VTR4 connector on the back of the ST300 to one of the COM ports on the PC using RS422 to RS232 adapter
2. Repeat steps 2-7 of the RECEIVE CUE POINTS from the ST300 section.

## Reference . . .

### 17. FUNCTION TABLE

Function	Key Press	Description
GANG	[SHIFT] + [VTR #1] OR [SHIFT] + [VTR #2] OR [SHIFT] + [VTR #3]	Individually press the VTR keys to be included in the gang. The LED above the key will turn on. Press the VTR key again to remove from gang, the LED above the key will turn off. Press [ESC] to exit.  The VTR LEDs that are on show the gang. The flashing LED shows which VTR is currently selected.
GOTO ENTERED TIME	[SHIFT] + [RECUE]	Search the VTR to the manually entered time <b>OR</b> use the ST300 numeric keypad, then Press [ENTER] or [RECUE].
FFWD	[FFWD]	Press and HOLD to shuttle. Release key to stop. Set WIND Speed in MENU.
JOG	[JOG]	Select JOG mode and enable Wheel.
LAST CUE	[LAST CUE]	Step to the previous Cue Point Location.
NEXT CUE	[NEXT CUE]	Step to the next Cue Point Location.
RECORD	[REC]	Places VTR into the Record mode selected by RECORD MODE in the SETUP MENU. Press [RECORD] or [RECORD] + [PLAY].
REWIND	[RWD]	Press and HOLD to shuttle. Release key to stop. Set WIND Speed in MENU.
SHUTTLE	[SHUTTLE]	Select SHUTTLE mode and enable Wheel.
SLOMO	[SLOMO]	Press [SLOMO] to slo-mo the VTR. Turn the Wheel (or move the T-Bar, if available) to change the play speed. Press [SLOMO] to STILL frame <b>OR</b> press any transport key to exit SLOMO.
SLO-MO SPEED PRESET	[SHIFT] + [SLOMO]	For WHEEL <b>ONLY</b> : Press [SHIFT] + [SLOMO] to preset the slo-mo speed. Turn the Wheel to select desired speed. Press [ESC] or any transport key to exit.
STOP	[STOP]	Press once to STILL frame VTR. Press again to put VTR into STOP mode.
TIME MODE SELECT	[TIME MODE]	Press to toggle between Timecode (TC), VITC (VT) or Tape Timer (TM) display modes.

## 18. SPECIFICATIONS

### **ST300**

Power:	90 VAC to 265VAC adapter supplied with IEC connector
Size:	(L" x W" x H") 12" x 6" x 1.5" (front) 3.0" (rear)
Weight:	4 lbs.
Rear Panel Connectors:	VTR1, VTR2, VTR3, VTR4..... All DB9F GPI..... DBF15F Power.....DB9M Aux .....DB9F
Display:	Easy to read 2 line, back-lit LCD display (User adjustable contrast)
Jog/Shuttle Wheel:	With mechanical detents.
Optional "T"-bar:	Slo-mo 0-200% of Play Speed

### **RS422 SERIAL CONNECTOR 9 Pin D type, female**

Pin #	1	Frame Ground	6	Receive Common
	2	Receive A ←	7	Receive B ←
	3	Transmit B →	8	Transmit A →
	4	Transmit Common	9	Frame Ground
	5	Spare		

### **POWER CONNECTOR 9 Pin D type, male**

Pin #	1	+5v DC	6	+5 VDC
	2	+5v DC	7	Ground
	3	Ground	8	Ground
	4	+12 VDC	9	Ground
	5	-12 VDC		

### **AUX PORT RS422 SERIAL CONNECTOR 9 Pin D type, female**

Pin #	1	Frame Ground	6	Transmit Common
	2	Receive A ←	7	Receive B ←
	3	Transmit B →	8	Transmit A →
	4	Receive Common	9	Frame Ground
	5	Spare		

### **GPI CONNECTOR 15 Pin D type, female DB15F**

Pin #	Description		
		8	Ground
1	GPI 1 Out	9	GPI 1 In
2	GPI 2 Out	10	GPI 2 In
3	GPI 3 Out	11	GPI 3 In
4	GPI 4 Out	12	GPI 4 In
5	GPI 5 Out	13	GPI 5 In
6	GPI 6 Out	14	GPI 6 In
7	GPI 7 Out	15	GPI 7 In

NOTE: The GPI connector is not programmed in this model.

### **ST420 (SHOTBOX)**

Power:	90 VAC to 265VAC adapter supplied with IEC connector
Size:	[L" x W" x H"] 11.5" x 6.5" x 1.75" (front) 3.5" (rear)
Weight:	4 lbs.
Rear Panel Connectors:	Power.....DB9M
	OUTPUT .....DB9F
	Aux.....DB9F

### **RS422 SERIAL CONNECTOR 9 Pin D type, female**

Pin #	1	Frame Ground	6	Transmit Common
	2	Transmit A →	7	Transmit B →
	3	Receive B ←	8	Receive A ←
	4	Receive Common	9	Frame Ground
	5	Spare		

### **POWER CONNECTOR 9 Pin D type, male**

Pin #	1	+5v DC	6	No Connection
	2	+5v DC	7	Ground
	3	Ground	8	Ground
	4	No Connection	9	Ground
	5	No Connection		

## 19. TROUBLESHOOTING

### ST420 Troubleshooting:

1. All keys are RED - no communication with ST300.
2. All keys are dark - No communication between the ST300 and the Video Server.
3. The version of the ST420 must comply in the software version with the ST300 it is connected to.

To determine the software version of the ST420 do the following:

A. Press [**SHIFT**] + [**STOP**] + [**PLAY**].  
The key that displays the current version is RED.

B. The ST420 displays:  
“SELECT ST300 V2.1 or V2.0 or V 3.0.”

Press the key for the software version of ST300 you are using. Please refer to the ST300 to determine the Version if needed.

## **20. DNF CONTROLS LIMITED WARRANTY**

DNF Controls warrants its product to be free from defects in material and workmanship for a period of one (1) year from the date of sale to the original purchaser from DNF Controls.

In order to enforce the rights under this warranty, the customer must first contact DNF's Customer Support Department to afford the opportunity of identifying and fixing the problem without sending the unit in for repair. If DNF's Customer Support Department cannot fix the problem, the customer will be issued a Returned Merchandise Authorization number (RMA). The customer will then ship the defective product prepaid to DNF Controls with the RMA number clearly indicated on the customer's shipping document. The merchandise is to be shipped to:

DNF Controls  
12843 Foothill Blvd., Suite D  
Sylmar, CA 91342  
USA

Failure to obtain a proper RMA number prior to returning the product may result in the return not being accepted, or in a charge for the required repair.

DNF Controls, at its option, will repair or replace the defective unit. DNF Controls will return the unit prepaid to the customer. The method of shipment is at the discretion of DNF Controls, principally UPS Ground for shipments within the United States of America. Shipments to international customers will be sent via air. Should a customer require the product to be returned in a more expeditious manner, the return shipment will be billed to their freight account.

This warranty will be considered null and void if accident, misuse, abuse, improper line voltage, fire, water, lightning or other acts of God damaged the product. All repair parts are to be supplied by DNF Controls, either directly or through its authorized dealer network. Similarly, any repair work not performed by either DNF Controls or its authorized dealer may void the warranty.

After the warranty period has expired, DNF Controls offers repair services at prices listed in the DNF Controls Price List. DNF Controls reserves the right to refuse repair of any unit outside the warranty period that is deemed non-repairable.

DNF Controls shall not be liable for direct, indirect, incidental, consequential or other types of damage resulting from the use of the product.

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