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Model 2034CL-SX (& 2034CL-SX-T)

300 Clip Instant Access System

SONY SX PROTOCOL

FOR SONY SX HYBRID RECORDERS

USER MANUAL

Table of Contents

1.	REVISION HISTORY	4
2.	SYSTEM DESCRIPTION	5
	DEFINITIONS	5
<i>GETTING STARTED . . .</i>		6
<hr/>		
3.	SYSTEM INSTALLATION	6
	a. SHOTBOX	6
	b. ST300-S/SM, VTR/DDR CONTROLLER	6
4.	VIDEO SERVER SETUP	7
5.	OPERATION MODE SETUP	7
6.	SETUP MENU	9
7.	CREATE NEW CLIPS	11
8.	LEARN ON THE SHOTBOX	12
	a. LOAD A CLIP ON THE ST300	12
	b. DO A LEARN ON THE SHOTBOX	12
9.	RECALL ON THE SHOTBOX	13
<i>ADVANCED FEATURES . . .</i>		14
<hr/>		
10.	VIEW CONTENTS OF CUE POINTS	14
11.	SHOTBOX SHOTKEY MAPS	15
12.	SHOTBOX CONTROL SWITCHES	15
13.	TRANSFERRING CUELISTS	15
	a. TRANSMIT CUE LIST FUNCTION	15
	b. RECEIVE CUE LIST FUNCTION	16
14.	CAPTURE FUNCTION	17
	a. SET AN IN POINT	17
	b. SET AN OUT POINT	17
	c. VIEW THE IN POINT	18
	d. VIEW THE OUT POINT	18
	e. CLEAR THE IN POINT	18
	f. CLEAR THE OUT POINT	18
	g. ENTER PREROLL VALUE	18
	h. SET THE RECORD DELAY	18
	i. EXECUTE CAPTURE FUNCTION	19

<i>REFERENCE . . .</i>	20
15. FUNCTION TABLE	20
16. SPECIFICATIONS	21
17. TROUBLESHOOTING	23
ST420	23
18. ST300 KEY LAYOUT	24
19. ST420 KEY LAYOUT	25
20. DNF CONTROLS LIMITED WARRANTY	26

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1. REVISION HISTORY

111703 Rev. 1.1	Reformatted. Company header information revised. Revised Connection Diagram. Updated Receive Cue List & Transmit Cue List Function description. Added Key Layout. Added DNF Controls Limited Warranty.
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2. SYSTEM DESCRIPTION

The 300 Clip Instant Access System consists of the ST300-SSM VTR Controller, STS420 Shotbox and Shotlist Software. The Video Server must support SONY DP Protocol.

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.

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

The user can remotely view the CLIP IDs that exist in the DDR under control. Desired clips can be MARKed into the SHOTLIST at a single location or at multiple locations.

DEFINITIONS

- ❑ Throughout this document, the hard disk drive in the SX unit will be referred to as “Video Server.”
- ❑ The ST300-S/SM as the ST300.
- ❑ The ST420 SHOTBOX 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 ST300 or SHOTBOX.
- ❑ [XXX] + [XXX] means hold the two keys down simultaneously.
- ❑ HDD refers to the hard disk drive video recorder in the SX device.
- ❑ “Softkeys” are the row of keys directly below the display that perform multiple functions in Menu and other modes.

Getting Started . . .

3. SYSTEM INSTALLATION

a. SHOTBOX

- 1) Plug one end of a standard 9-pin, RS422 serial cable, into the OUTPUT connector, 9-pin female, on the rear of the SHOTBOX. Plug the other end of the cable into the 9-pin connector, AUX, 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, 90 VAC – 240 VAC.

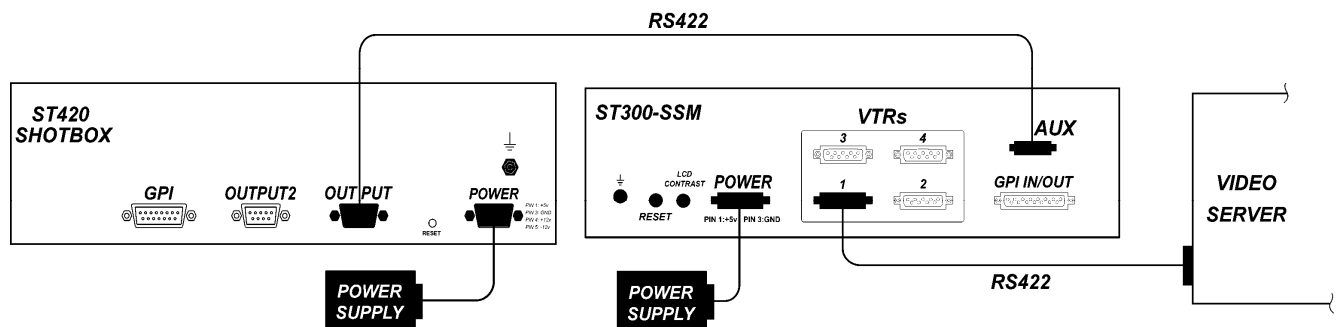
DO NOT HOT PLUG!

b. ST300-S/SM, VTR/DDR CONTROLLER

- 1) Plug one end of a 9-conductor, RS422 serial cable into the 9-pin connector (VTR 1-4) on the rear of the ST300. Plug the other end of the cable into the 9-pin 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 a wall outlet, 90 VAC - 240 VAC.
- 3) Check SETUP MENU prior to using the ST300 to confirm proper Record mode and other User settable modes.

Installation is complete.

CONNECTION DIAGRAM



4. VIDEO SERVER SETUP

- a. When you switch to “Local” mode on the SX, the SX goes to the beginning of the first clip on the list.
- b. Clips loaded from the front panel of the SX will not be Learned or displayed on the ST300 or ST420.
- c. 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.)
- d. 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.
- e. 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

On the ST300 setup as follows:

- a. Press **[MENU]**.
- b. Press the VTR **[1]**, **[2]** **[3]** or **[4]** to select the VTR you control the DNW from.
- c. Turn the Wheel until “Player: REC:” is displayed.
- d. 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	
- e. Repeat steps b-d to configure all SX units you want to configure.
- f. 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 you are monitoring 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, Crash (Full)

WIND MODE Press Softkey to select:
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].

The Preset 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 VIDEO SERVER SETUP Section for more details.

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.

**TRANSMIT
CUELIST**

Transmit cuelist to another ST300 or to a PC.

**RECEIVE
CUELIST**

Receive cuelist from another ST300 or PC.

7. CREATE NEW CLIPS

- a. 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.
- b. Press **[LOAD]** to create a new clip.
The display will show: “Enter New Clip Name.”
- c. Enter a CLIP ID (up to 20 characters) using the numeric keypad
OR type in the alphabetical name on the ST420.
- d. Press **[LOAD]** on the ST300 to create the selected CLIP ID.
- e. Press **[REC]** to record video into the newly created CLIP ID.
- f. Press **[STOP]** to end the recording.
- g. The clip **MUST** be reloaded to view the recorded material.

8. LEARN ON THE SHOTBOX

a. LOAD A CLIP ON THE ST300

- 1) Press [CLIP LIST]. The LED above the key will turn on.
- 2) Turn the wheel.
The top line of the display will show "CLIP ID."
The bottom line of the display will show "xxxxxxxxxxxxxxxxxxxx:"
Where "xxxxxxxxxxxxxxxxxxxx" is the 20-character CLIP ID.
The CLIP ID can contain up to 24 characters. The display of the ST300 is capable of displaying a maximum of 20 characters. If a CLIP ID is loaded with more than 19 characters, the last character is a "→".
- 3) Turn the wheel to scroll through the list of available CLIPs.
OR
Type in the desired clip name using the "qwerty" keyboard on the ST420 or on the numeric keys on the ST300.
- 4) Press [ESC] at any time to exit [CLIP LIST].
- 5) Press [LOAD] on the ST300 or ST420 to load the desired clip.
- 6) Locate the clip to the desired IN time.
- 7) Once a clip is **LOADED** it can be **LEARNED** on the SHOTBOX **or** on the ST300.

Then . . .

b. DO A LEARN ON THE SHOTBOX

- 1) Press the [LEARN] key. The key light indicator will turn on, showing that you are in the LEARN mode.
- 2) Select the desired BANK and ShotKey.
- 3) The Learned CLIP ID will be displayed on the pressed key.
NOTE: This will overwrite what you had assigned to the key previously.
- 4) The ST300 will remember the loaded clip(s), current time and gang configuration of the active VTR(s).
- 5) Press the [LEARN] key to exit at any time.
NOTE: The [LEARN] key toggles LEARN mode on/off.
- 6) For example:
VTR1 and VTR2 are ganged together. (VTR1 and VTR2 are active.)
Clip01 is loaded on VTR1 and parked at 00:00:10:00
Clip02 is loaded on VTR2 and parked at 00:00:20:00

To LEARN this configuration into Cue Point 215:

- Press the [LEARN] key on the ST420.
- Press the BANK [2] key.
- Press the switch [15].

9. RECALL ON THE SHOTBOX

- a. Select the desired Cue Point by pressing the bank and the switch key.
- b. For example: to RECALL the Cue Point 215 (see the LEARN example):
 - 1) Press the bank [2] key.
 - 2) Press the switch [15].
 - 3) The ST300 will:
 - Load Clip 01 on VTR1 and park it at 00:00:10:00
 - Load Clip 02 on VTR2 and park it at 00:00:20:00
 - VTR1 and VTR2 will be ganged.
 - NOTE:** The loaded switch will turn RED when completed.

Advanced Features . . .

10. VIEW CONTENTS OF CUE POINTS

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

For Example:

VTR 1
Clip 23

VTR 2
Clip 13

VTR 3
Clip 77

VTR 4
No Assignment

NOTE: All the remaining switches are not illuminated.

- d. Release the keys to return to normal operation.

11. 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.

12. SHOTBOX CONTROL SWITCHES

- a. [PLAY]: Plays out the selected clip.
- b. [RECUE]: Returns to the beginning of the clip.
- c. [STOP]: Stops playout of the clip.

13. TRANSFERRING CUELISTS

a. TRANSMIT CUE LIST FUNCTION

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.

1) To Transmit Cue Points to the ST300

- a) 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)
- b) Press [MENU] and scroll the Wheel until “Transmit CUE List? YES=Enter, Exit=ESC” is displayed.
- c) Press [ENTER] to start transmitting.
The Display shows “Waiting to transmit” on the first line.
- d) When the Receiver is ready, transfer starts automatically.
The Display now shows “Transmitting cuelist.”
- e) After the transfer is over, the display shows “Transfer is over” for one second and then shows “Waiting to transmit” again.
- f) Connect another ST300 to transmit the list again
OR press [ESC] twice to exit the MENU mode.

2) To Transmit Cue Points to the PC

- a) 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.
- b) Repeat steps b)-f) of the TRANSMIT CUE POINTS to the ST300 section.

b. RECEIVE CUE LIST 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.

1) To Receive Cue Points from the ST300

- a) 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)
- b) Press [MENU] and scroll the Wheel until “Receive CUE List? YES=Enter, Exit=ESC” is displayed.
- c) Press [ENTER] from start receiving.
The Display shows “Waiting to receive” on the first line.
- d) When the Transmitter is ready, transfer starts automatically.
The Display now shows “Receiving cuelist”.
- e) After the transfer is over the display shows “Done-Success! Press any key...”
- f) Press any key. The display shows “Receive cuelist?” message.
- g) Press [ESC] to exit the MENU mode.

2) To Receive Cue Points from the PC

- a) Connect the VTR4 connector on the back of the ST300 to one of the COM ports on the PC using RS422 to RS232 adapter
- b) Repeat steps b)-g) of the RECEIVE CUE POINTS from the ST300 section.

14. CAPTURE FUNCTION

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.

Select the Tape Drive and . . .

a. SET AN IN POINT

- 1) Press **[IN]** to set the IN Point. The IN key indicator on the ST300 will turn on. The display will show “IN xx:xx:xx:xx” indicating the saved time.

OR

Press **[SHIFT]** + **[IN]** to manually enter a new IN time.

- 2) Press **[ENTER]** to save the entered time or press **[ESC]** to exit without saving.

When the IN key indicator is on, pressing the IN key will only display the IN time.

While viewing the IN Point:

Press **[MARK]** to overwrite the saved time with a new time.

Press **[RECUE]** to search to the IN time.

b. SET AN OUT POINT

- 1) Press **[OUT]** to set the OUT Point. The OUT key indicator on the ST300 will turn on. The display will show “OUT xx:xx:xx:xx:”, which is the saved time.

OR

Press **[SHIFT]** + **[OUT]** to manually enter a new OUT time.

- 2) Press **[ENTER]** to save the entered time or press **[ESC]** to exit without saving.

When the OUT key indicator is on, pressing the **[OUT]** key will only display the OUT time.

While viewing the OUT Point:

Press **[MARK]** to overwrite the saved time with a new time.

Press **[RECUE]** to search to the OUT time.

c. VIEW THE IN POINT

- 1) When the [IN] key indicator is on, press the [IN] key to view the existing IN Point.
- 2) While viewing the IN Point:
 - Press [MARK] to overwrite the saved time with the current time.
 - Press [SHIFT] + [IN] to manually enter a new IN time.
 - Press [RECUE] to search to the IN point.
 - Press [DEL] + [IN] to clear the IN point. The IN key indicator will turn off.

d. VIEW THE OUT POINT

- 1) When the OUT key indicator is on, press the [OUT] key to view the existing OUT Point.
- 2) While viewing the OUT Point:
 - Press [MARK] to overwrite the saved time with the current time.
 - Press [SHIFT] + [OUT] to manually enter a new OUT time.
 - Press [RECUE] to search to the OUT point.
 - Press [DEL] + [OUT] to clear the OUT point.
(The OUT indicator will turn off.)

e. CLEAR THE IN POINT

- 1) Press and hold the [DEL] key.
- 2) Press and release the [IN] key. The IN key indicator will turn off.

f. CLEAR THE OUT POINT

- 1) Press and hold the [DEL] key.
- 2) Press and release the [OUT] key. The OUT key indicator will turn off.

g. ENTER PREROLL VALUE

- 1) Press the [MENU] key. The MENU key 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
Press [ESC] to exit without saving.

h. SET THE RECORD DELAY

See **SETUP MENU** Section for details.

i. 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 on the “qwerty” keypad on the ST420.
- 3) Press **[LOAD]** to start capturing.
OR
Press **[ENTER]** to start capturing.

The ST300 will create the new CLIP ID on the DDR.

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

Reference . . .

15. FUNCTION TABLE

Function	Key Press	Description
GOTO ENTERED TIME	[SHIFT] + [RECUE]	Search the VTR to the manually entered time OR 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]. (See SETUP MENU.)
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 OR press any transport key to exit SLOMO.
SLO-MO SPEED PRESET	[SHIFT] + [SLOMO]	For WHEEL ONLY : 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.

16. SPECIFICATIONS

ST300

Power:	90 VAC to 265 VAC 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 AuxDB9F
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		
1	GPI 1 Out	8	Ground
2	GPI 2 Out	9	GPI 1 In
3	GPI 3 Out	10	GPI 2 In
4	GPI 4 Out	11	GPI 3 In
5	GPI 5 Out	12	GPI 4 In
6	GPI 6 Out	13	GPI 5 In
7	GPI 7 Out	14	GPI 6 In
		15	GPI 7 In

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

ST420 (SHOTBOX)

Power: 90 VAC to 265 VAC 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
OUTPUTDB9F
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		

17. TROUBLESHOOTING

ST420

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

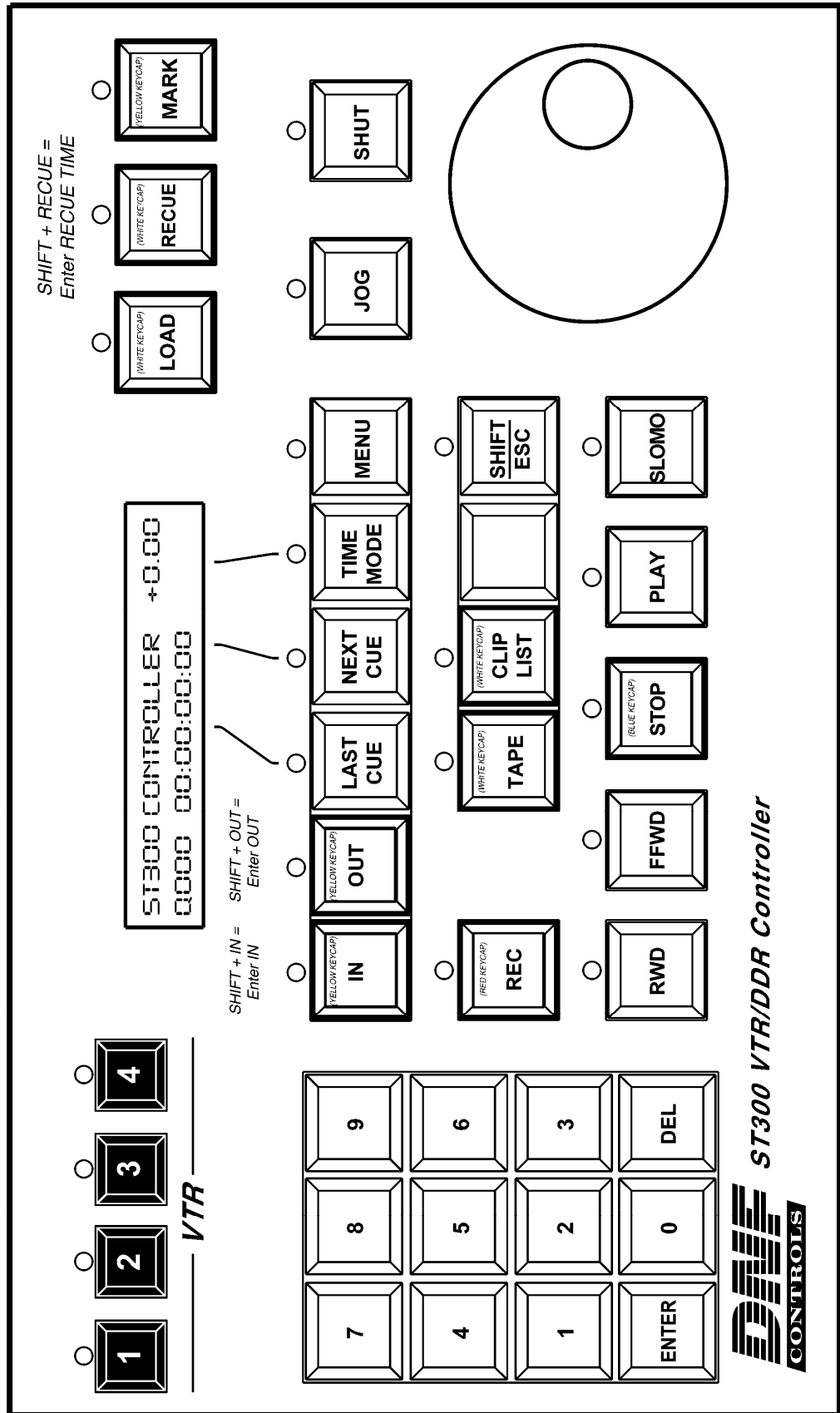
To determine the software version of the ST420 do the following:

- 1) Press **[SHIFT]** + **[STOP]** + **[PLAY]**.
The key that displays the current version is RED.
- 2) 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.

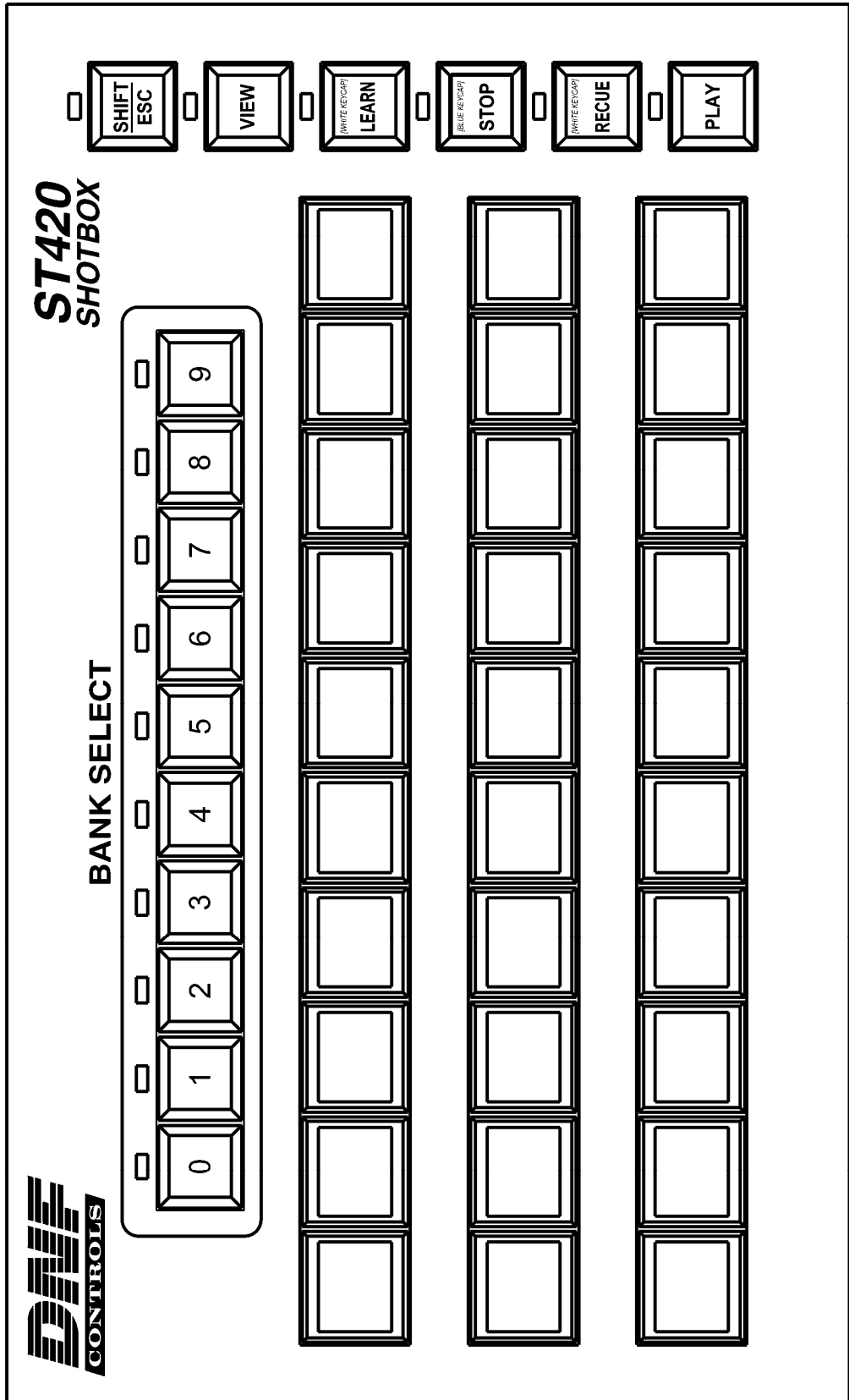
18. ST300 KEY LAYOUT

ST300 KEY LAYOUT 2034CL-SX (-T & -PBIO)



19. ST420 KEY LAYOUT

ST420 KEY LAYOUT STANDARD



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 C
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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