# Model No. 2034CL-L
# (& 2034CL-L-T)

# 300 CLIP INSTANT ACCESS SYSTEM

## *Louth* Protocol

## VERSION 3.0 SOFTWARE

## NOTE:  Supports up to 4 Video Server Channels

# User Manual

# Table of Contents

# 1.    REVISION HISTORY

052803  Rev. 2.2        Updated SETUP MENU, added key layout.

061903  Rev. 2.3        Added Recall Mode setup, Clear Single Cuepoint section.

062703  Rev. 2.4        Changed Key Layout.

110303  Rev. 2.5        Added DNF Controls Limited Warranty
Updated Receive Cue List & Transmit Cue List Function description.

120903  Rev. 2.6        Added CREATING SUBCLIPS section.

012204  Rev. 2.7        Changed Key Layout.

020504  Rev. 2.8        Added note to cover and System Description: Supports up to 4 Video
Server Channels.

040307  Rev. 2.81       Minor corrections.

# *Getting Started . . .*

## 2.    SYSTEM DESCRIPTION

The 300 Clip Instant Access System consists of the ST300-SSM VTR Controller, ST420 SHOTBOX and Shotlist Software.

The ST300 controls up to 4 video channels individually or ganged.

The Video Server must support Louth Automation Protocol.

SHOTLIST provides fast access to existing video clips stored in Grass Valley Group PROFILE, LEITCH VR or other DDR / VDR / Video Servers supporting Louth Automation Protocol.

The SHOTLIST can contain up to 300 CLIP IDs, stored in non-volatile memory in the ST300.

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.

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.

### DEFINITIONS

❑    Throughout this manual, VTR, DDR, VDR & Video Server will be referred to collectively as "Video Server."

❑    The ST300-S/SM is referred to 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 the SHOTBOX.  [**XXX**] + [**XXX**] means hold the two keys down simultaneously.
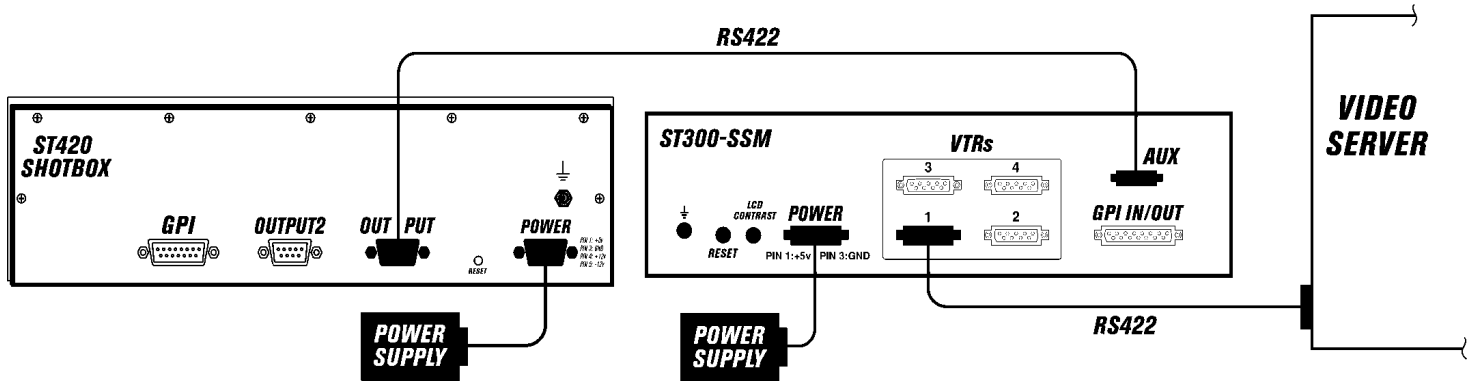
# 3. SYSTEM INSTALLATION

## a. 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, 90 VAC to 240 VAC.

## b. ST300 CONTROLLER

1) Plug one end of a 9-conductor, RS422 serial cable into the VTR 1 (2, 3 or 4) connector on the rear of the ST300. Plug the other end of the cable into the 9-pin REMOTE connector on the Video Server.

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 to 240 VAC.

3) Assign logical Louth ports to ST300's VTR connectors.

   a) Press [**MENU**].

   b) Turn the Wheel until VTR Louth Address is displayed.

   c) Press VTR[**1**], VTR[**2**], VTR[**3**] or VTR[**4**] to select VTR.

   d) Assign a Louth Port address for that VTR 0-9. (0 turns that channel **OFF**.)

   e) The second line of the display will show "Input=Enter, Out=ESC"

   f) Press [**ENTER**] to select an Input Port.
      (A "-" will appear in front of the selected number.)
      **OR**

      Press [**ESC**] to select an Out Port.

   g) Repeat steps c – f to assign a Louth Address to ALL VTRs you want to use.

   h) Press [**ESC**] to leave the MENU mode.

4) Check the other options in the 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)    Select LOUTH Broadcast communications protocol on the VIDEO SERVER to be controlled.

b)    If required, assign a serial port on the VIDEO SERVER through which the ST300 will control it.

**NOTE**: In LOUTH mode, the VIDEO SERVER **ONLY** allows Full Record. (INSERT and ASSEMBLE record modes are disabled.)

Setup is complete.


## 5.    LOAD

a.    Select a VTR by pressing VTR[**1**], VTR[**2**], VTR[**3**] or VTR[**4**].

b.    Load the desired clip using the CLIP LIST function.  (See Section 9, CLIP LIST FUNCTION.)

c.    Repeat steps a - b until clips are loaded into the desired VTRs.

d.    Set the GANG mode, if required.  (Refer to the Function Table for Details.)

# 6.  LEARN

## a.  LEARN ON THE SHOTBOX

1)  Press [**LEARN**].  The LEARN indicator will turn on.

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 have 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 [**LEARN**] to exit at any time.
    **NOTE:**  The [**LEARN**] key toggles LEARN mode on/off.

## b.  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**].

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

# 7.    RECALL

## a.    RECALL ON THE SHOTBOX

Select the desired Cue Point by pressing the BANK and ShotKey.

## b.    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.

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.

# 8.    SHOTBOX SHOTKEY MAPPING TO SHOTLIST LOCATIONS

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

# 9.    CLIP LIST FUNCTION

a.    Press [**CLIP LIST**] to view the list of CLIP IDs that are resident on the Video Server. The CLIP LIST indicator will turn on.

b.    Turn the Wheel to view clip IDs on the Server.
**OR**

Enter a CLIP ID (maximum of eight characters) using the numeric keypad
**OR** the SHOTBOX's "qwerty" keyboard.

d.    Press [**LOAD**] on the ST300 or SHOTBOX to load the entered CLIP ID.

# *Advanced . . .*

## 10.   CREATING A CLIP

a.     Select Louth Input Port.  (See **SYSTEM INSTALLATION**, Section 3.)

b.     Select the desired clip Duration.  (See **ENTER RECORD DURATION**, Section 12.)

c.     Press [**CLIP LIST**].  The CLIP LIST indicator will turn on.
       The display will show "CREATE NEW CLIP."

d.     Press [**LOAD**].  The display will show the default CLIP ID.

e.     Press [**LOAD**] to accept the default CLIP ID.
       **OR**

       Use [**NEXT CUE**], [**LAST CUE**] and Wheel to edit the CLIP ID.

       Use the [**NEXT CUE**] and [**LAST CUE**] keys to position the cursor.
       Turn the Wheel to select the desired letter.
       **OR**

       Enter a name with a maximum of 8 characters on the SHOTBOX keyboard.

f.     Press [**LOAD**] on the ST300 or on the SHOTBOX to create the selected CLIP ID.

g.     If the selected CLIP ID already exists, a warning message will be displayed.  To load the
       existing clip, press [**ENTER**].  Press [**ESC**] to exit without loading the existing clip.

       **NOTE:** On the SHOTBOX, for numbers, use bank keys 0-9, with 0 being "10."

h.     Press [**REC**] or [**REC**] + [**PLAY**] (depending on the selection made in MENU) to start
       recording the clip.

i.     Press [**STOP**] to stop recording the clip.

**NOTE:**  You can ONLY create new clips if the INPUT Port is selected.
           You must first create a clip to record on.

# 11. CREATING SUBCLIPS

## a. MARK IN (OUT) POINT

1) Press [**IN**] ([**OUT**]).

2) The current Timecode is saved as [**IN**] ([**OUT**]) point. **IN** ([**OUT**]) indicator turns on.

## b. DELETE IN (OUT) POINT

1) Press [**DEL**] key and [**IN**] ([**OUT**]).

2) The [**IN**] ([**OUT**]) point is cleared. The [**IN**] ([**OUT**]) indicator is turned off.

## c. MANUALLY ENTER IN (OUT) POINT

1) Press [**SHIFT**] and [**IN**] ([**OUT**]).

2) The display prompts to enter new [**IN**] ([**OUT**]) point

3) Type in the new timecode using numeric keypad.

4) Press [**ENTER**] to save the new [**IN**] ([**OUT**]) point.
**OR**

Press [**ESC**] to leave without saving
**OR**

Press [**RECUE**] to save the new [**IN**] ([**OUT**]) point and recue to it.

## d. CREATE SUBCLIP

1) Mark or Enter **IN** and **OUT** points as described above.

2) Press [**SHIFT**] + [**CLIP LIST**] keys.

3) The display prompts to enter a subclip name.

4) Enter the name using the Shotbox keyboard or the numeric keypad.

5) Press [**ENTER**].

6) The subclip with the specified name and the IN and OUT points is created.

## 12. ENTER RECORD DURATION

a. Press [**SHIFT**] + [**REC**].

b. The display shows current Record Duration.

c. Enter the desired Record Duration using the ST300's numeric keypad.

d. Press [**ENTER**] to save the entered value.
   **OR**

   Press [**ESC**] to exit without saving.


## 13. RECUE THE CURRENTLY LOADED CLIP

a. Press [**RECUE**] to reload the currently loaded clip to the IN point.

b. Press [**SHIFT**] + [**RECUE**].
   The display will show:  "xx:xx:xx:xx"
   (Where xx:xx:xx:xx = Last entered RECUE time.)
   "Enter RECUE time "
   Enter the desired time using the ST300's numeric keypad.

   Press [**ENTER**] to reload the currently loaded clip at the entered time.
   **OR**

   Press [**ESC**] to exit without searching.


## 14. VIEW THE CLIP ID OF THE CURRENTLY LOADED CLIP

a. Press and hold [**SHIFT**], then press and release [**LOAD**].

b. The bottom line will show:  "Loaded Clip: xxxxxxxx"
   Where xxxxxxxx is the CLIP ID.

## 15.  VIEW CONTENT OF CUE POINTS ON THE SHOTBOX

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<br>Clip 23 | VTR 2<br>Clip 13 | VTR 3<br>Clip 77 | VTR 4<br>No Assignment |
|---|---|---|---|

Note:  All the remaining switches are not illuminated.

d.       Release the keys to return to normal operation.


## 16.  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.


## 17.  CLEAR SINGLE CUEPOINT

On the Shotbox, press [**SHIFT**] + the Shotkey, the content of which you wish to clear.  The
Shotkey becomes blank, the corresponding cuepoint is cleared.

# 18.  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 VTR4 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**].

    c)    Scroll the Wheel until "Transmit CUE List? YES=Enter, Exit=ESC" is displayed.

    d)    Press [**ENTER**] to start transmitting.
The Display shows "Waiting to transmit" on the first line.

    e)    When the Receiver is ready, transfer starts automatically.
The Display now shows "Transmitting cuelist."

    f)    After the transfer is over, the display shows "Transfer is over" for one second and then shows "Waiting to transmit" again.

    g)    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 - g of the "TO TRANSMIT CUE POINTS TO THE ST300" section.

### b. 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.

**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**].

c) Scroll the Wheel until "Receive CUE List? YES=Enter, Exit=ESC" is displayed.

d) Press [**ENTER**] to start receiving.
The Display shows "Waiting to receive" on the first line.

e) When the Transmitter is ready, transfer starts automatically.
The Display now shows "Receiving cuelist."

f) After the transfer is over the display shows "Done-Success! Press any key…"

g) Press any key. The display shows "Receive cuelist?" message.

h) 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 – h of the "TO RECEIVE CUE POINTS FROM THE ST300" section.

# *Reference . . .*

## 19.   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.  The MENU indicator will turn off.

| MENU MODES | (Turning Wheel Clockwise) |
|---|---|
| **SET LOUTH PORT** | Allows user to select Louth Port for each VTR. |
| **RECORD** | Press [**MENU**] to select the desired record mode: Lockout or Crash (Full). |
| **EXTENDED IDs** | Toggle Extended IDs ON/OFF.<br>Extended IDs ON allows access up to 32 characters, OFF – up to 8 characters. |
| **CLIP SOM** | Press displayed softkey to toggle between "ZERO" and "NOT ZERO."<br><br>Select ZERO if the clips that you are using start with 00:00:00:00.<br><br>Select NOT ZERO if the clips that you are using do not start with 00:00:00:00. |
| **RECALL MODE** | Press Normal or Redirect (Redir).<br>When one and only one clip is learned into a Cue Point, the Clip will be REDIRECTED to load on the currently selected VTR if REDIR is on.<br><br>If REDIR is off, the Clip will be loaded on the VTR it is LEARNED into. |
| **VIDEO STANDARD** | Press displayed softkey to select PAL, NTSC (non-drop frame), or DF (drop frame). |
| **WIND MODE** | Press Softkey to select:<br>HOLD  (Fast wind is maintained only while key is depressed.)<br>**OR**<br>LATCH  (Fast wind is initiated and maintained with momentary key press.)<br><br>Select fast wind speed (3.9 to 23.7) by pressing Softkey below SPD. |

| | |
|---|---|
| **SLOMO** | ST300 display shows (Non T-Bar Version): |

<table>
<tr><td>SLOMO with:</td><td>WHEEL</td></tr>
<tr><td><b>SpdRange</b></td><td><b>Preset</b></td></tr>
</table>

Press Softkey [*SPEED*] to select SLOMO speed ranges:
Press Softkey to select: 0 → +200% **OR** –100% → +200%.
**NOTE:** 100% is normal speed

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

Press [**ESC**] to exit SETUP MENU and save changes.
**OR**
Turn the Wheel to select another item.

ST300 display shows (T-Bar Version):

<table>
<tr><td>SLOMO with:</td><td>TBAR</td></tr>
<tr><td><b>WHEEL</b></td><td></td></tr>
</table>

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).
**NOTE:** 100% is normal speed

**For Wheel <u>only:</u>**
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** | |

<table>
<tr><td>ST300 SETUP</td><td></td></tr>
<tr><td>Clear Cues</td><td>SetDefault</td></tr>
</table>

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. |
| **SYNC** | Toggle the softkey to enable/disable reference Video. |

| | |
|---|---|
| **RECORD** | Press Softkey to select single button or 2-button record. <br> RECORD = [**REC**] Only **OR** [**REC**] + [**PLAY**]. |
| **PREROLL** | Enter Preroll value. |
| **TRANSMIT CUELIST** | Transmits Cuelist to another ST300 or to a PC. |
| **RECEIVE CUELIST** | Receives Cuelist from another ST300 or a PC. |

# 20. FUNCTION TABLE

| Function | Key Press | Description |
|---|---|---|
| GOTO ENTERED TIME | [**SHIFT**] + [**RECUE**] | Search the VTR to the manually entered time.<br><br>Use the ST300 numeric keypad.  Press [**ENTER**] OR [**RECUE**].<br><br>NOTE: Use  00:00:00:00 to recue a clip to ET=0 if start time is not ET=0 |
| GANG | [**SHIFT**] + [**VTR #1**]<br>OR<br>[**SHIFT**] + [**VTR #2**]<br>OR<br>[**SHIFT**] + [**VTR #3**]<br>OR<br>[**SHIFT**] + [**VTR #4**] | 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.<br><br>The VTR LEDs that are on show the gang.<br>The flashing LED shows which VTR is currently selected. |
| 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.<br>Press [**SLOMO**] to STILL frame.<br>**OR**<br>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.<br>Press [**ESC**] or any transport key to exit. |
| STOP | [**STOP**] | Press once to STILL frame VTR.<br>Press again to put VTR into STOP mode. |
| TIME MODE SELECT | [**TIME MODE**] | Press to toggle between ET (Elapsed Time) and RT (Running Time) display modes. |

## 21.  SPECIFICATIONS

### ST300

Power:                    90 VAC to 265 VAC adapter supplied with IEC connector

Size:                     (L" x W" x H") 10 1/2" x 6" x 1.5" (front) 3.0" (rear)
                           (-T Bar Version)  (L" x W" x H") 12 5/8" 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 (2X Normal Speed)

### RS422 SERIAL CONNECTOR
**9-Pin D-Type, Female**
**(VTR1-VTR4)**

| 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 IN/OUT Connector
### 15-Pin D-Type, Female (DB15F)

| Pin # | Function | Pin # | Function |
|-------|----------|-------|----------|
| 1 | GPI OUT 1 | 9 | PLAY |
| 2 | GPI OUT 2 | 10 | STOP |
| 3 | GPI OUT 3 | 11 | RECUE |
| 4 | GPI OUT 4 | 12 | NEXT CUE |
| 5 | GPI OUT 5 | 13 | LAST CUE |
| 6 | GPI OUT 6 | 14 | RECALL |
| 7 | GPI OUT 7 | 15 | GPI 7 IN (disabled) |
| 8 | Ground | | |

## ST420 (SHOTBOX)

| | |
|---|---|
| Power: | 90 VAC to 265 VAC adapter supplied with IEC connector |
| Size: | [L" x W" x H"] 12" x 7.25" x 1.5" (front) 3.5" (rear) |
| Weight: | 5.5 lbs. |
| Rear Panel Connectors: | Power ............... DB9M<br>OUTPUT ......... DB9F<br>Aux .................… DB9F |
| Display: | Six characters on each of three lines on each Shotkey.<br>Liquid Crystal Display |

## RS422 SERIAL CONNECTOR
### 9-Pin D-Type, Female
### ("OUTPUT")

| 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 | | |

**NOTE**: The GPI connector and OUTPUT 2 are not used with this System.

# 22. TROUBLESHOOTING

## a. 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 V3.0"

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

## b. VERSION 3.0 HARDWARE OF ST300 ONLY

**VIDEO REFERENCE SETUP**

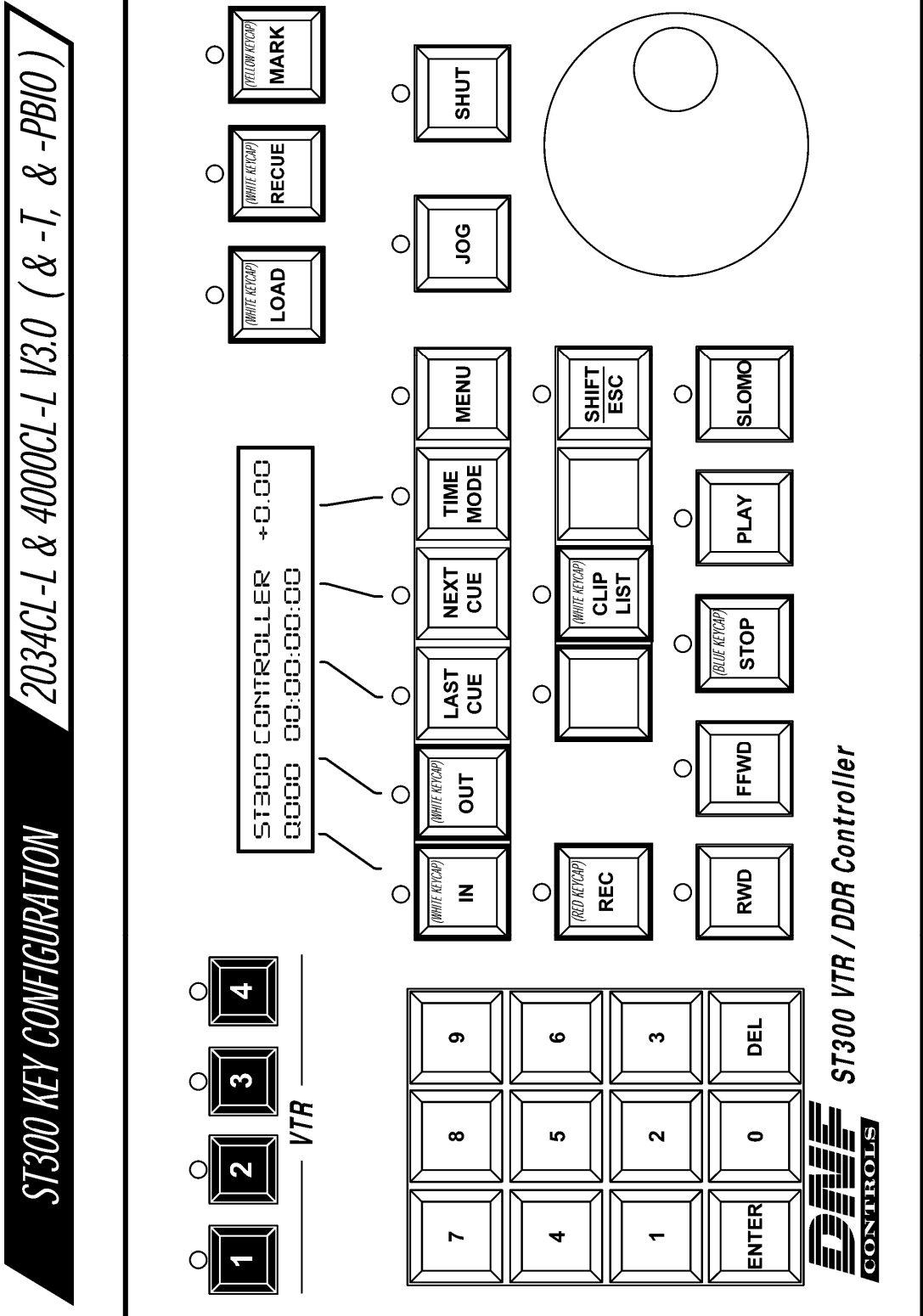Plug the video reference BNC cable into the BNC connector on the back of the ST300.

Plug the same video reference into the SYNC IN connector on the rear of the Video Server.

Press [**MENU**].

1) Turn the Wheel until the display says "SYNC."

2) Press the Softkeys to toggle between SYNC ON and OFF. (Default = ON)

Installing sync into the ST300 and the Video Server, and selecting Sync ON will help assure that several channels in the gang will roll in sync. (For example, Fill and Key.)

## 23. KEY LAYOUT



ST300 KEY CONFIGURATION 2034CL-L & 4000CL-L V3.0 ( & -T, & -PBIO )

ST300 VTR / DDR Controller

# 24.  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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