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# Model No. 4000CL-Q-PBIO (& 4000CL-Q-T)

## 400 CLIP FAST ACCESS SYSTEM

**_Quantel_ Protocol**

## USER MANUAL

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# 1. REVISION HISTORY

| | | |
|---|---|---|
| 072903 | Rev. 2.0 | Changed Connection Diagram.<br>Changed Specification Section.<br>Added Loop Clip Section.<br>Changed Key Layout. |
| 112403 | Rev. 2.1 | Company header information revised.<br>Added DNF Controls Limited Warranty. |
| 013004 | Rev. 2.2 | Added Transferring Cue List section. |
| 081004 | Rev. 2.3 | Changed T-bar dimension. |

# 2. SYSTEM DESCRIPTION

NOW, production switchers can load & play video clips on Quantel Video Servers.

- 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.

The 400 Clip Fast Access System consists of the ST300-SSM VTR Controller and Shotlist Software. The Video Server must support Quantel Protocol.

The PERIPHERAL BUS INTERFACE Option for the ST300 VTR Controller is special software in the ST300. With this Option, the ST300 has 4 Peripheral Device Addresses, one for each VTR that it controls. This allows the production switcher to control any and all VTRs connected to the ST300.

Upon receipt of the Learn command from the production switcher, 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 Clip to the "Learned" time, then restores the "Learned" GANG mode.

Learn & Recall may also be done directly from the ST300 without the production switcher.

The Trigger function on the production switcher puts the selected VTRs into Play, Stop, Recue or other available modes.

The SHOTLIST contains up to 400 CLIP IDs, and provides fast access to existing video clips stored in non-volatile memory in the ST300. Remotely view the CLIP IDs that exist in the Video Server under control.

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 document VTR, DDR, VDR & Video Server will be referred to collectively as "Video Server."

The ST300-S/SM is referred to as "ST300."

Words surrounded by brackets, for example, [**ENTER**], are keys on the ST300.
[**XXX**] + [**XXX**] means hold the two keys down simultaneously. **XXX** = Key name.

# 3. SYSTEM INSTALLATION

## a. ST300-S/SM, VTR/DDR CONTROLLER

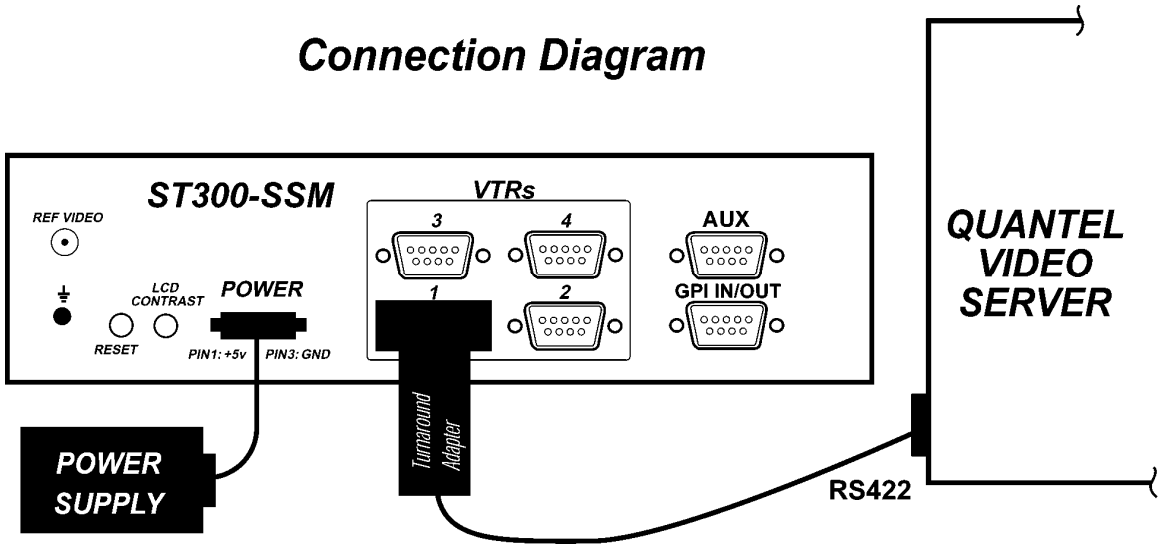
**NOTE:** When switching protocols, verify that U11 on the main board of the ST300 is a Dallas DS1245Y.

1) Plug one end of a 9-conductor, RS422 serial cable into the 9-pin connector (VTR 1, VTR 2, VTR 3 or VTR 4) on the rear of the ST300. Plug the other end of the cable into a Turnaround Adapter, then into the 9-pin REMOTE connector on the Video Server. (See specification section for Turnaround Wiring diagram.)

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) Check SETUP MENU prior to using the ST300 to confirm proper Record mode and other User settable modes.

Installation is complete.



## b. PRODUCTION SWITCHER

1) Connect a RS422, 9-pin serial cable to the AUX 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, 8.1)

2) To select a Production Switcher type. (Default = Grass Valley Group)

   a) Press [**MENU**] to turn the Wheel until "SWITCHER" is displayed.

   b) Press Softkey to toggle between Sony and Grass Valley.

   c) Press [**ESC**] at anytime to exit MENU mode.

3) The ST300 has 4 Peripheral Device Addresses, one for each VTR that it controls.

   To set the Device Address for each VTR:

   a) Press [**MENU**] and turn the wheel until "Peripheral Address" is displayed.

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

   c) Assign a Peripheral Device Address for that VTR, from 0 to 23, by entering the desired address using the numeric keypad.

      Press [**DEL**] to turn off the device. Any address greater than 23 turns the device off.

   d) Select the next VTR and assign a Peripheral Device Address for it.

   e) When done, press [**ESC**] to exit MENU mode.

4) Configure the production switcher:
   Enable the Peripheral Bus.
   Enable the Peripheral Device Addresses assigned to the ST300.
   Enable the appropriate Learn/Recall levels.
   Enable the Timeline or Recall Trigger function.

# 4. VIDEO SERVER SETUP

Refer to Quantel Operators Manual. Set serial ports to the following format:

Baud Rate – 9600
Parity – None
Data Bits – 8
Stop Bits – 1

# 5. LOAD A CLIP

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

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

c. Press [**CREATE**] to create and load a new clip.
(Creating a clip is described in the CREATE NEW CLIPS section.)
**OR**

Turn the Wheel to view the existing CLIP IDs on the video server.

Turn the Wheel clockwise to scroll forward, or counter-clockwise to scroll backward, through the list of available CLIPs. Backward scrolling is limited to the last 10 CLIP IDs viewed.
**OR**

Manually enter a CLIP ID using the ST300 numeric keypad, or PC keyboard (if KBIO option).

d. Press [**LOAD**] to load the selected CLIP ID for playout.

If more than one Clip ID matches the entered/selected ID, the display will show "More Than 1 Found."

Using the wheel, scroll through the list of clips.
Select the desired clip, then press [**LOAD**].

e. Repeat steps a - d to load clips on desired VTRs.

f. Set the GANG mode, if required.

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

Press [**SHIFT**] + [**LOAD**]. The bottom line will show the name of the loaded clip.

# 7. LEARN A CLIP OR CLIP COMBINATION

## a. LEARN ON THE PRODUCTION SWITCHER

1) On the production Switcher, select and enable the Peripheral Device Addresses for the ST300.

2) Do a LEARN to the desired REGISTER.

   The ST300 will: LEARN (save) the VTR number, loaded CLIP IDs and current time into the REGISTER number in the ST300.

## b. LEARN ON THE ST300

1) Load a clip on the desired VTRs. (See Section 4, **LOAD A CLIP**.)

2) Select the desired Cue Point by pressing [**NEXT CUE**], [**LAST CUE**] or by manually entering the Cue Point using the numeric keypad, followed by [**ENTER**].

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

3) Press [**SHIFT**] + [**MARK**] to start the LEARN. The first line of the display will show "Select VTRs:" The second line of the display will show "Mark-Lrn, ESC-cancel."

4) Press VTR[**1**], [**2**], [**3**] or [**4**] to select the VTR to be learned into the current Cue Point. If the VTRs are ganged, select one VTR that is part of the Gang. The rest of the Gang will be learned automatically.

5) Press [**MARK**] to complete the LEARN.
   **OR**

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

   The ST300 will: LEARN (save) the VTR Number (1,2,3,4) loaded CLIP ID and current IN time to the selected Cue Point.

# 8. RECALL A CLIP OR CLIP COMBINATION

## a. RECALL ON THE PRODUCTION SWITCHER

RECALL the desired REGISTER NUMBER.

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.

## 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.

# 9. RECUE THE CURRENTLY LOADED CLIP

Press [**RECUE**]. If an IN Point is marked (the IN indicator is on), the clip will RECUE to the IN Point.

If the IN point is not marked, the clip will RECUE to the start of the clip.
**OR**

Press [**SHIFT**] + [**RECUE**].

a. Enter the desired time to search to using the ST300's numeric keypad.

b. Press [**ENTER**] to search to the entered time.
   **OR**

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

# 10. PBIO ENABLE/DISABLE

On the ST300, press the **[PBIO]** key to enable or disable PBIO. When disabled, the ST300 will ignore all Pbus commands. When enabled, the ST300 will respond to all Pbus commands.

When enabled and Pbus commands are received, the key's LED will flash.

# 11. TRIGGER

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

**GRASS VALLEY GROUP VALUES:**

| Trigger Value | Mode |
|---|---|
| 0 | Play |
| 1 | Recue to beginning of clip |
| 2 | Slo-mo using ST300 Wheel Preset or T-Bar Speed |
| 3 | Reverse Play |
| 4 | Still Frame |
| 5 | Play |
| 8 or greater | Play |

**SONY VALUES:**

| Trigger Value | Mode |
|---|---|
| 0 | Recue to beginning of clip |
| 1 | Play |
| 2 | Slo-mo using ST300 Wheel Preset or T-Bar Speed |
| 3 | Reverse Play |
| 4 | Still Frame |
| 5 | Play |
| 8 or greater | Play |

# 12. LOOP CLIP

a. LOAD a clip from CLIPLIST or RECALL a learned clip.

b. Press [**LOOP ENABLE**]. The LOOP ENABLE indicator will turn on.
Press [**PLAY**] to loop a loaded clip. The second line of the display will show "Looping clip . . ."
**OR**

Press [**SHIFT**] + [**PLAY**]. The clip will be reloaded and start playing in a Loop.

c. Press [**STOP**] to stop the loop play. **NOTE**: The ST300 will **NOT** respond to any other keys while a clip is looping. Only [**STOP**] is recognized in this mode.

**NOTES**: The LOOP function can be performed on a SINGLE CHANNEL ONLY. Loop will automatically be disabled if the Channel becomes part of a gang.

If the clip ID ends with an asterisk ("*"), it will automatically loop when either [**LOOP ENABLE**] or [**PLAY**] is pressed.

# 13. CREATE NEW CLIPS

a. Set record mode using [**MENU**].

b. Press [**SHIFT**] + [**RECORD**] to set clip length.
Prompt will show: "Enter REC Duration."
Manually enter desired clip duration using numeric keypad on ST300.

c. Press [**ENTER**] to save or [**ESC**] to exit without saving.

d. Press [**CLIP LIST**]. Prompt will show: "CREATE NEW CLIP"
"Press LOAD to create"
Press [**LOAD**].

e. Prompt will show "NEW CLIP:"
Manually enter new clip name using numeric keypad or PC keyboard (with KBIO option).

f. Press [**ENTER**] to create clip or [**ESC**] to exit without creating clip.

g. If clip is successfully created, prompt will show: "Ready to Record"
"Press REC or STOP"

Press [**REC**] to record.
Press [**STOP**] to pause record.
Press [**STOP**] again to terminate record.

# 14. TRANSFERRING CUELIST

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.

## a. TRANSMIT CUE LIST FUNCTION

**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**] and scroll the Wheel to “Transmit CUE List? YES=Enter,Exit=ESC”.

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 to "Receive CUE List? YES=Enter, Exit=ESC."

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.

## *Reference . . .*

# 15. 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:<br>Lockout, Assemble, Crash (Full) or Insert.<br><br>Only in INSERT mode: Press the associated Softkey to toggle Video(V), Audio1(A1), Audio2(A2), Audio3(A3), Audio4(A4) on/off. |
| **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):<br>SLOMO with: WHEEL<br>**SpdRange** **Preset**<br><br>ST300 display shows (T-Bar version):<br>SLOMO with: TBAR<br>**Wheel** **SpdRange** **Preset**<br><br>**NOTE** - The T-BAR has a fixed speed range of 0 → +200 with a detent at +100% play speed.<br><br>**For Wheel only:**<br>Press Softkey [**SPDRANGE**] to select SLOMO speed ranges:<br>Press Softkey to select: 0 → +200 **OR** -100 → +200.<br><br>Press Softkey [**BACK**] to return to SLOMO MENU.<br><br>Press [**ESC**] to exit.<br>**OR**<br><br>Turn the Wheel to select another item.<br><br>(Continued on next page) |

| | |
|---|---|
| | **For Wheel only:**<br>Press Softkey [**PRSET**] to select the SLOMO Preset Speed Mode.<br><br>Press Softkey [**UPDATE**]. When exiting SLOMO mode, the last used speed is saved in the Preset Speed register.<br><br>Press Softkey [**STATIC**].<br>The Preset Speed register is NOT updated when exiting SLOMO mode. It is only changed by [**SHIFT**] + [**SLOMO**] (PRESET SLOMO). |
| **ST300 SETUP** | ST300 SETUP<br><br>Clear Cues SetDefault<br><br>Press Softkey beneath ClearCues to clear all Cue Points to 00:00:00:00.<br>Press Softkey [**YES**] when asked "Are You Sure?"<br><br>Press Softkey beneath SetDefault to set ST300 to default settings.<br>Press Softkey [**YES**] when asked "Are You Sure?" |
| **DISPLAY SOFTWARE VERSION** | The version number for the currently installed software is displayed. |
| **SYNC** | OFF or ON |
| **PBIO ADDRESS** | Press [**VTR1**], [**VTR2**], [**VTR3**] or [**VTR4**] key to select a VTR. To assign a PBIO address, enter the desired address number on the numeric keypad.<br>Repeat for all VTRs assigned. |
| **SWITCHER TYPE** | Select your switcher type. GVG = Grass Valley Group (default) or Sony.<br>For Philips DD35 with PBus, use GVG. |
| **PARITY** | Select Switcher's Parity type:<br>ODD, EVEN or NONE |

# 16. 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**]. |
| 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. Press [**SLOMO**] to STILL frame **OR** press any transport key to exit SLOMO. |
| SLO-MO SPEED PRESET | [**SHIFT**] + [**SLOMO**] | For WHEEL **ONLY**: To preset the slo-mo speed. Turn wheel to select desired speed. 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 Timecode (TC), VITC (VT) or Tape Timer (TM) display modes. |

# 17. 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)<br>(T-Bar unit is 12.6" long) | |
| Weight: | 4 lbs. | |
| Rear Panel Connectors: | VTR1, VTR2, VTR3, VTR4 | (All DB9F) |
| | GPI | (DBF15F) |
| | Power | (DB9M) |
| | Aux | (DB9F) |
| | Reference Video | (BNC) |
| Display: | Easy to read 2-line, back-lit LCD display<br>(User adjustable contrast) | |
| Jog/Shuttle Wheel: | With mechanical detents. | |
| Optional "T"-bar: | Slo-mo 0-200% of Play Speed | |

## VTR 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 | Receive Common |
| | 2 | Receive A ← | 7 | Receive B ← |
| | 3 | Transmit B → | 8 | Transmit A → |
| | 4 | Receive Common | 9 | Frame Ground |
| | 5 | Spare | | |

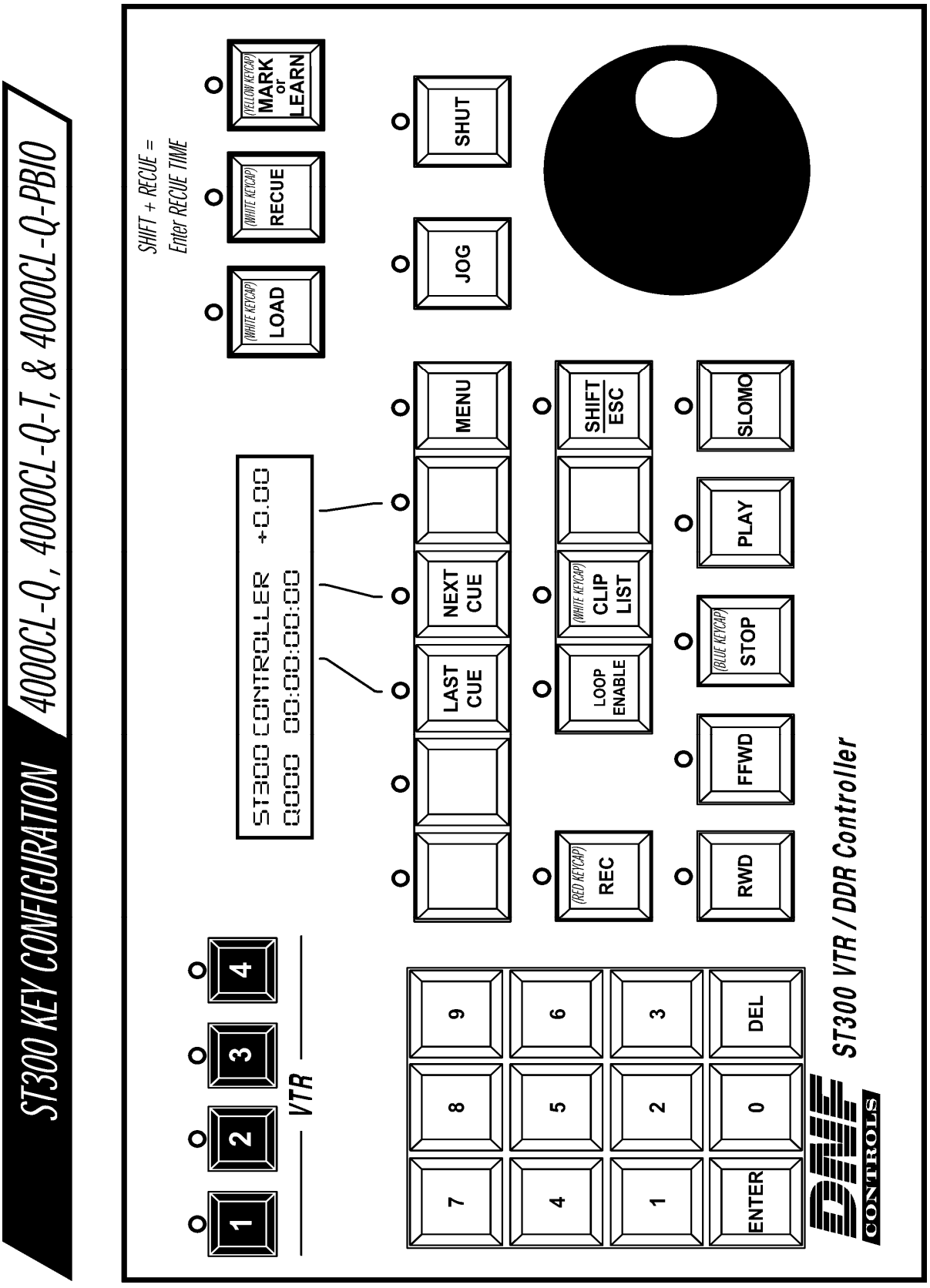
## GPI IN/OUT CONNECTOR
**15-Pin D-Type, Female (DB15F)**

| Pin # | Description | Function | Pin # | Description | Function |
|---|---|---|---|---|---|
| 1 | GPI 1 Out | | 9 | GPI 1 In | Play |
| 2 | GPI 2 Out | | 10 | GPI 2 In | Stop |
| 3 | GPI 3 Out | | 11 | GPI 3 In | Recue |
| 4 | GPI 4 Out | | 12 | GPI 4 In | Next Cue |
| 5 | GPI 5 Out | | 13 | GPI 5 In | Last Cue |
| 6 | GPI 6 Out | | 14 | GPI 6 In | Recall |
| 7 | GPI 7 Out | | 15 | GPI 7 In | |
| 8 | Ground | | | | |

## TURNAROUND ADAPTER

| | DNF Side<br>9-Pin D-Type, Female | | Quantel Side<br>9-Pin D-Type, Male |
|---|---|---|---|
| 1 | Frame Ground | 1 | Frame Ground |
| 2 | Receive A ← | 2 | Transmit A → |
| 3 | Transmit B → | 3 | Receive B ← |
| 4 | Transmit Common | 4 | Transmit Common |
| 5 | No Connection | 5 | No Connection |
| 6 | Receive Common | 6 | Receive Common |
| 7 | Receive B ← | 7 | Transmit B → |
| 8 | Transmit A → | 8 | Receive A ← |
| 9 | Frame Ground | 9 | Frame Ground |

## 18. KEY LAYOUT



# 19. 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.

# # #