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**SET-UP guide**


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1 System Set-up

**Clock Board MkII 1.862.667.xx**

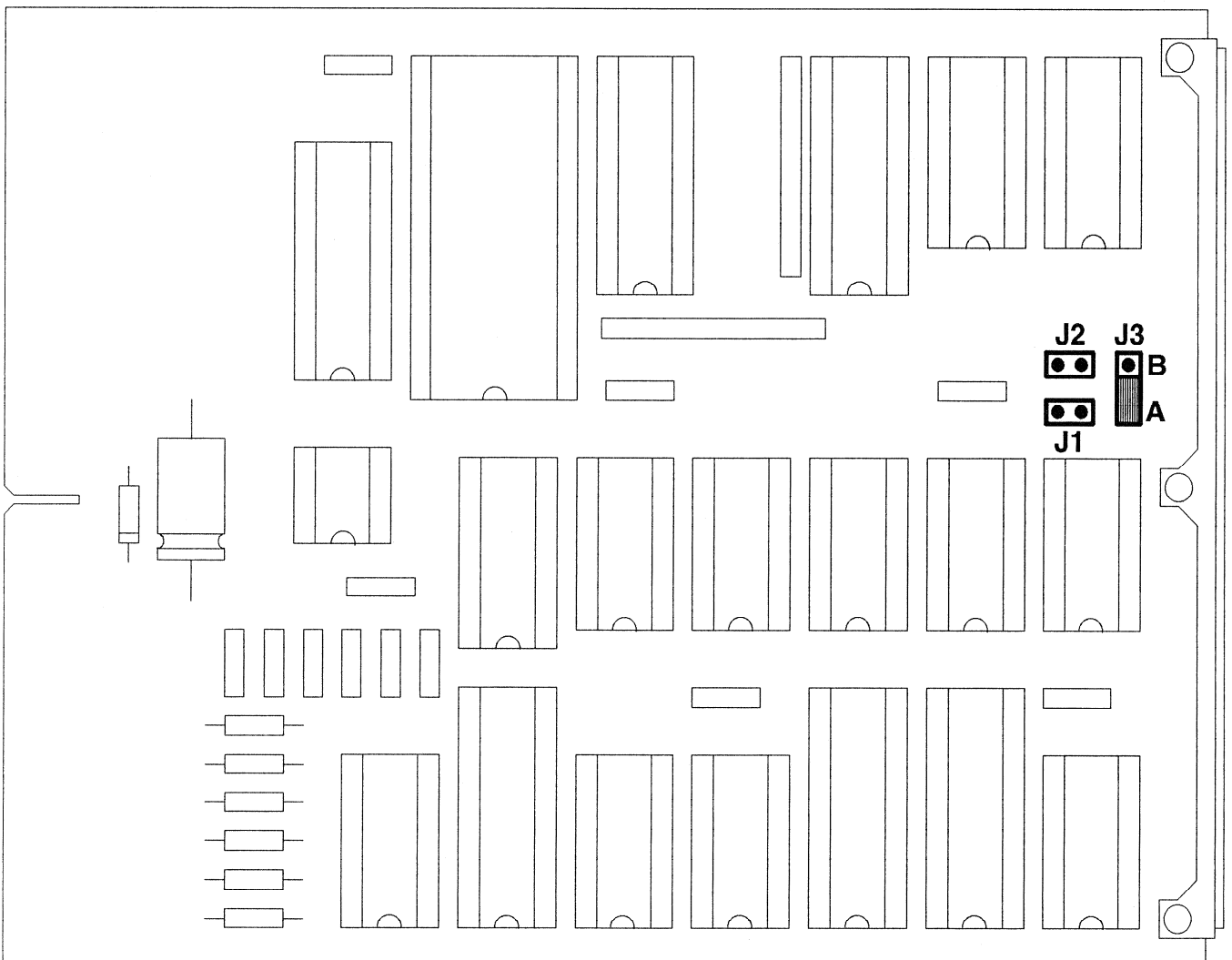
Jumpers to be set: Input impedances for video, sector clock, word clock, square wave, and polarity of video sync pulse.

All jumper positions and functions are labelled on the Clock Board MkII 1.862.667.xx.

**Tape Deck Counter Timer Board 1.820.823.xx**

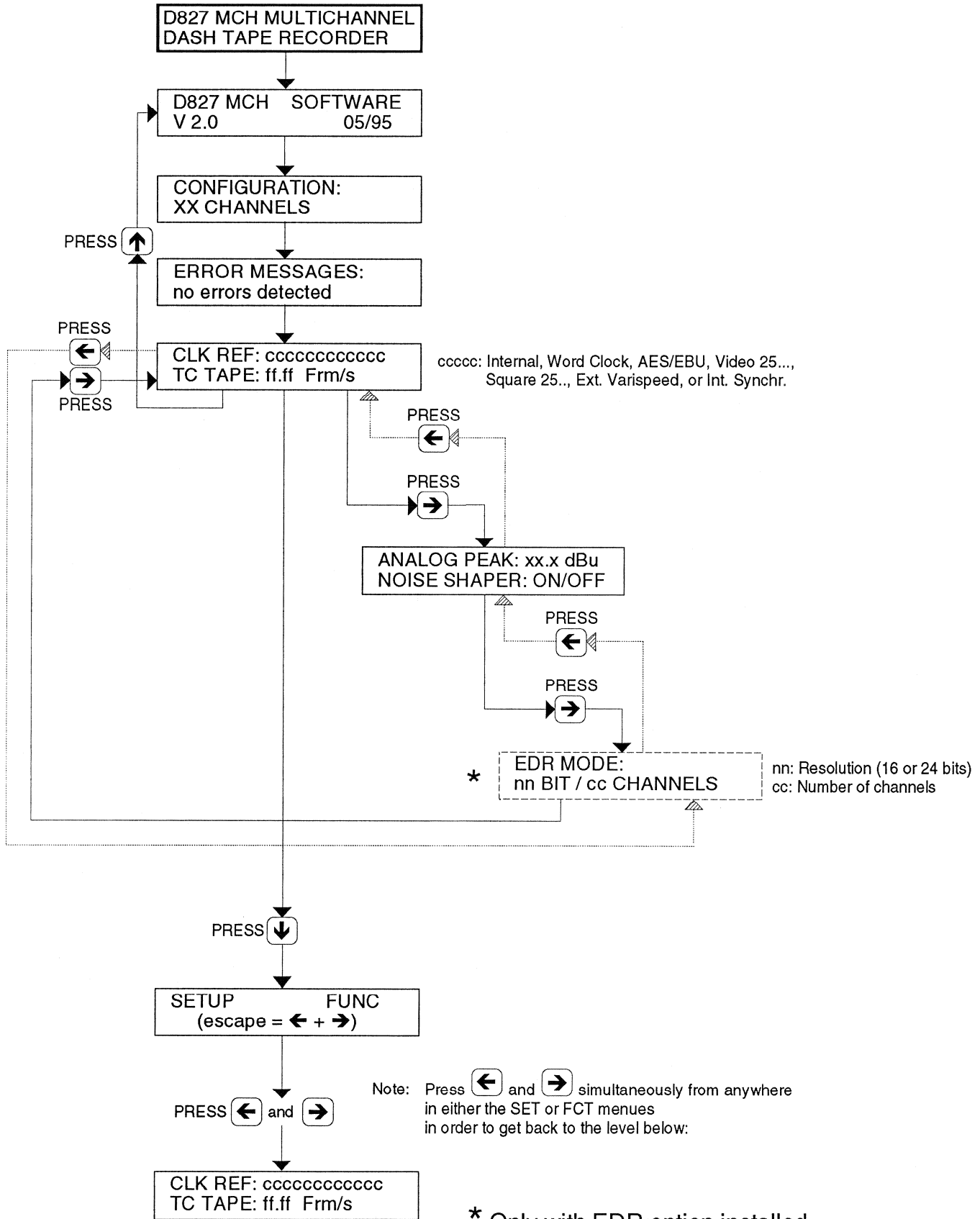
**Important:** Change the INTERNAL MOVE PULSES (GENERAL SETUP TREE: SYNCHRONIZER, S029) according to the jumper setting.

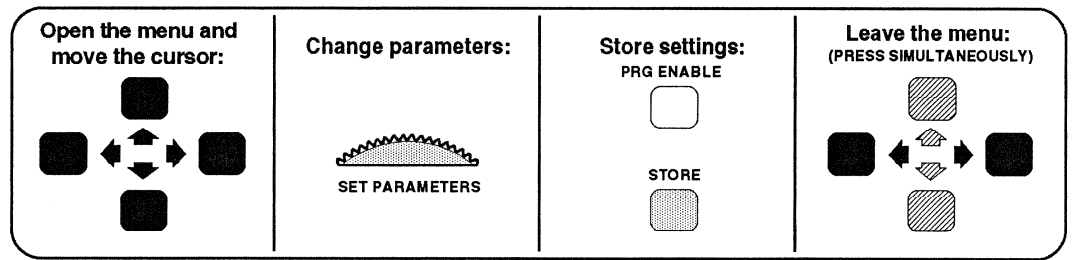
| Jumper Position | Meaning                              |
|-----------------|--------------------------------------|
| J3A             | 1024 Hz pulse at 30 inch/s (default) |
| J1+J3B          | 64 Hz pulse at 30 inch/s             |
| J2+J3B          | 32 Hz pulse at 30 inch/s             |



2 Software Trees

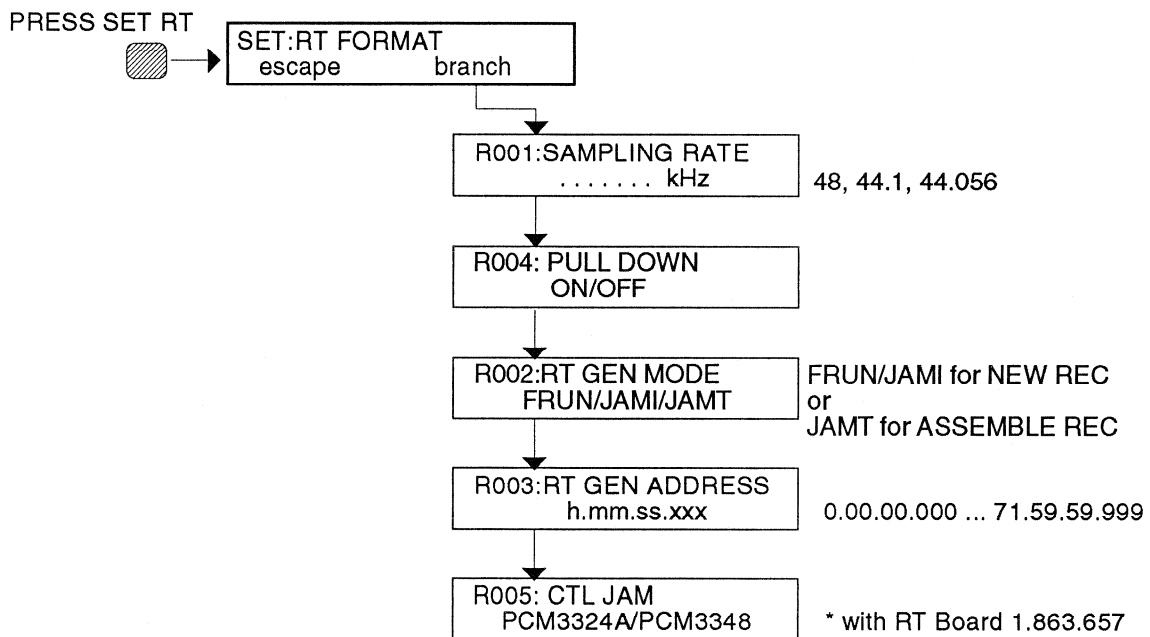
2.1 System Tree



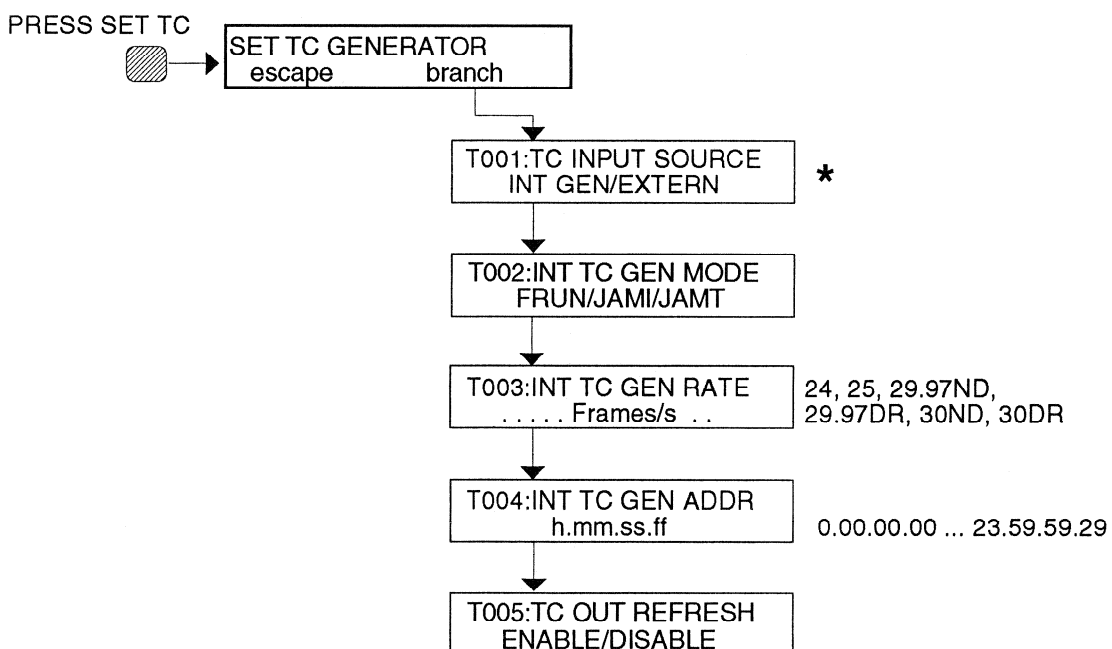


Note: The current (or stored) value/mode is displayed *statically* in the LCD.

## 2.2 Reference Track (RT) Set-up Tree

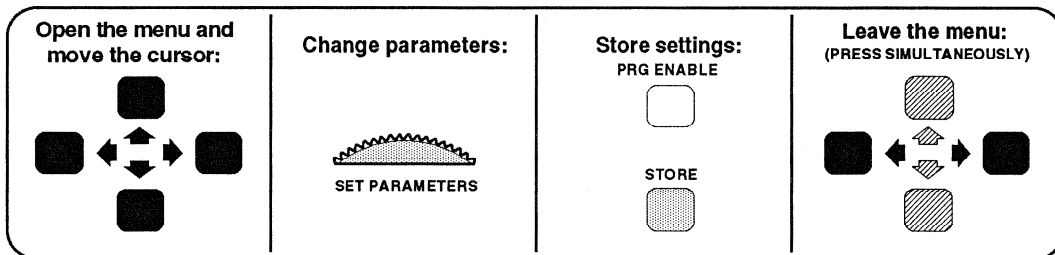


## 2.3 Time Code (TC) Generator Set-up Tree

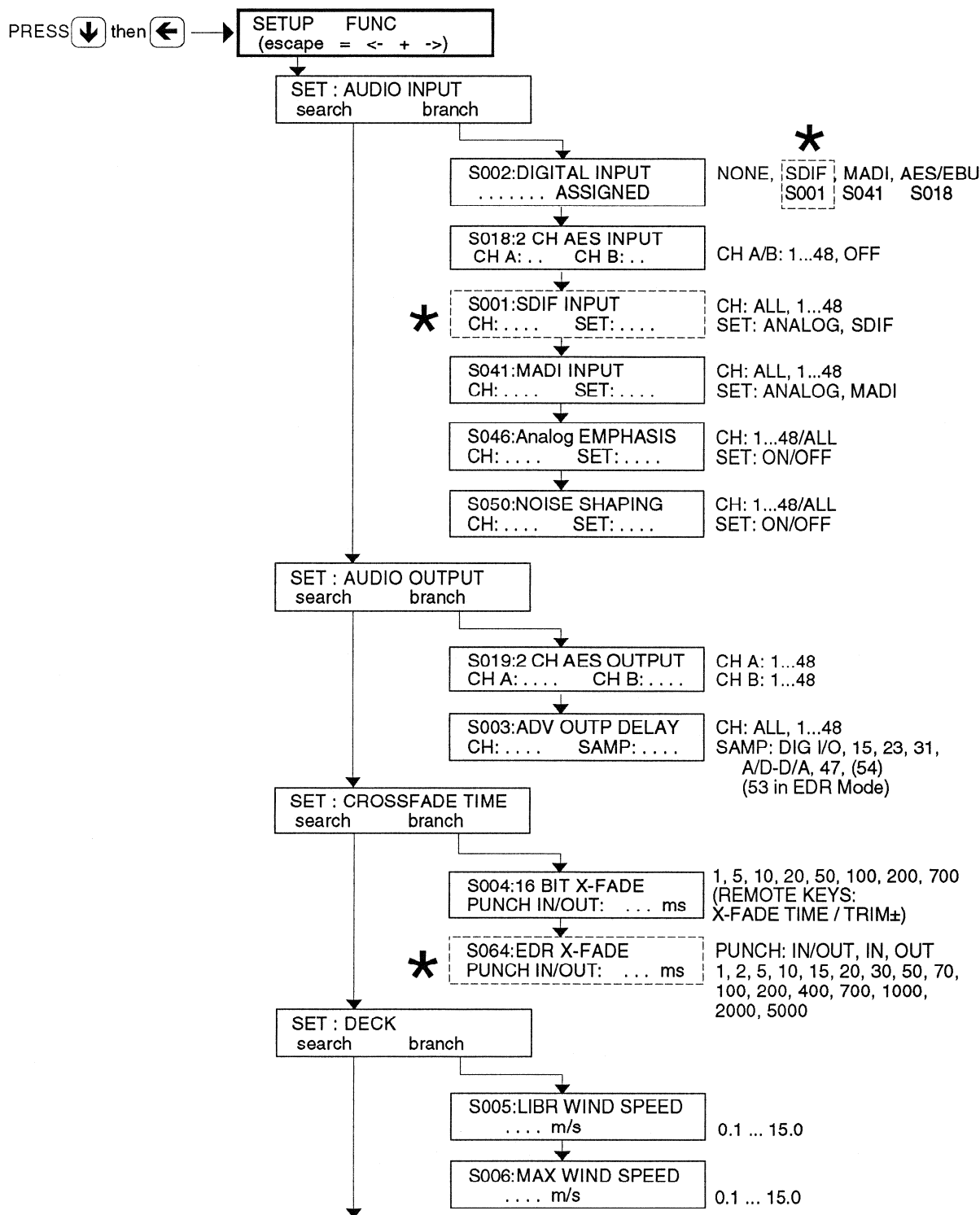


\* see also 3.1.1 B (page 12)

2.4 General Set-up Tree



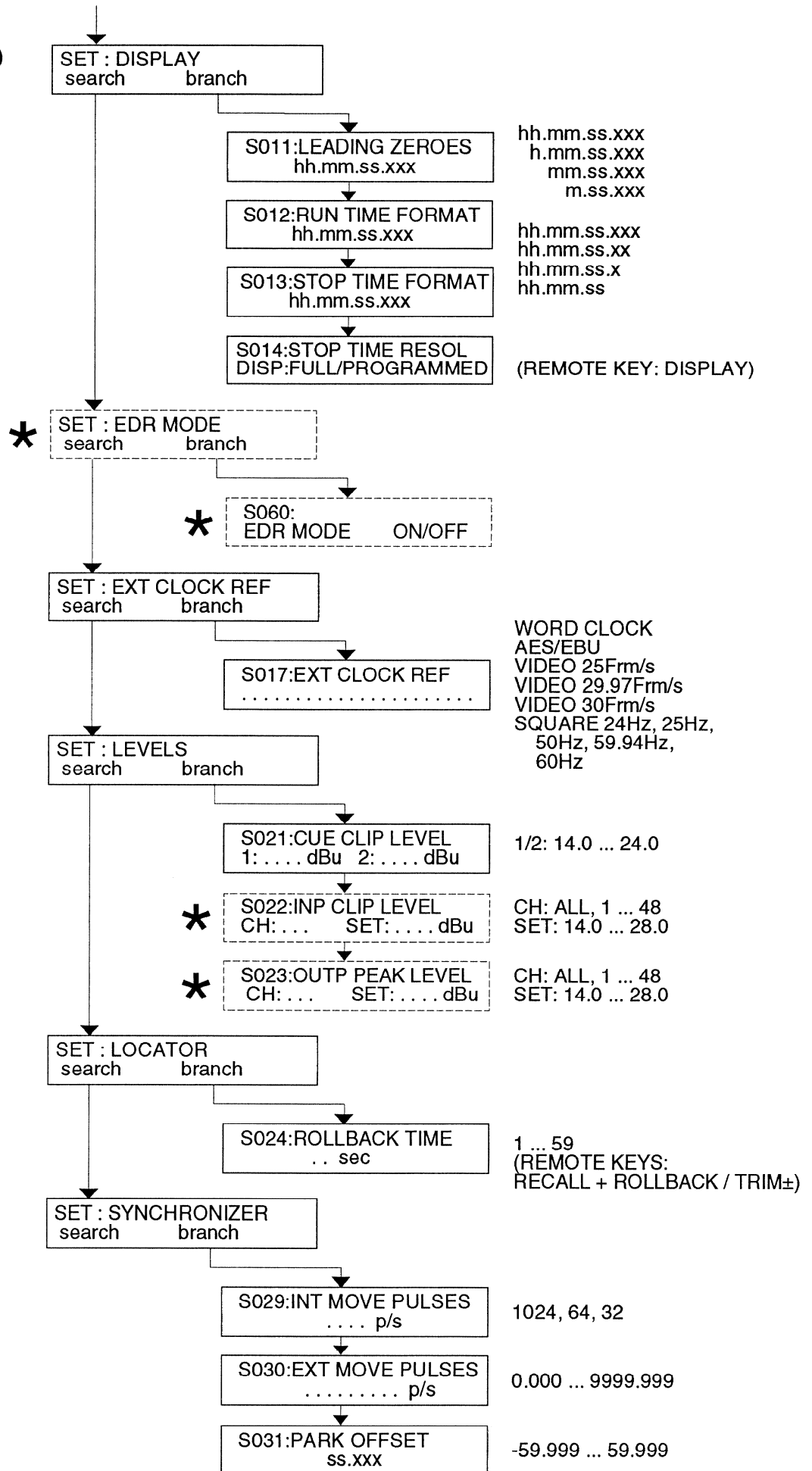
Note: The current (or stored) value/mode is displayed *statically* in the LCD.



\* Option required

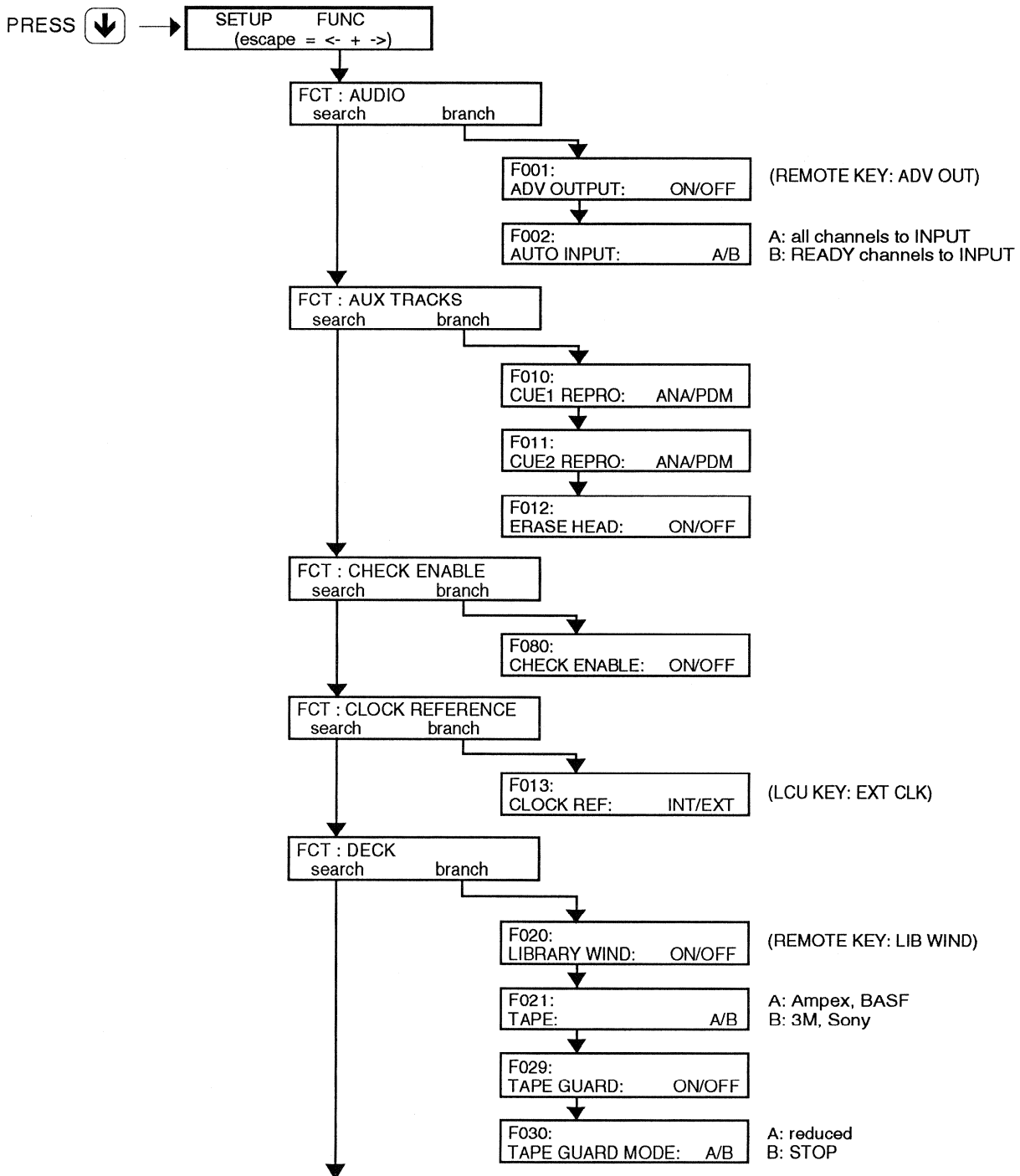
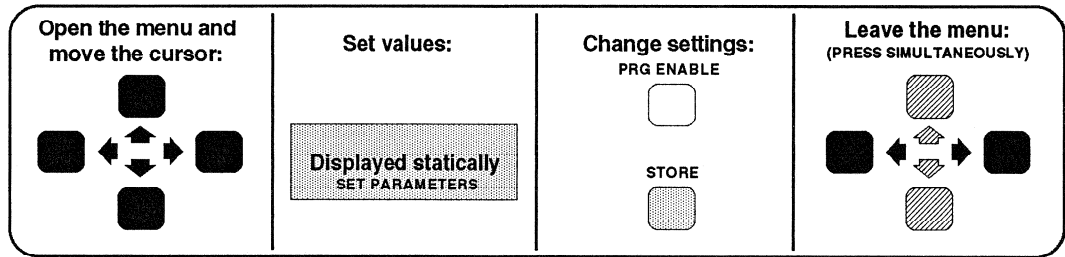
(continued on next page)

Set-up Tree (cont.)



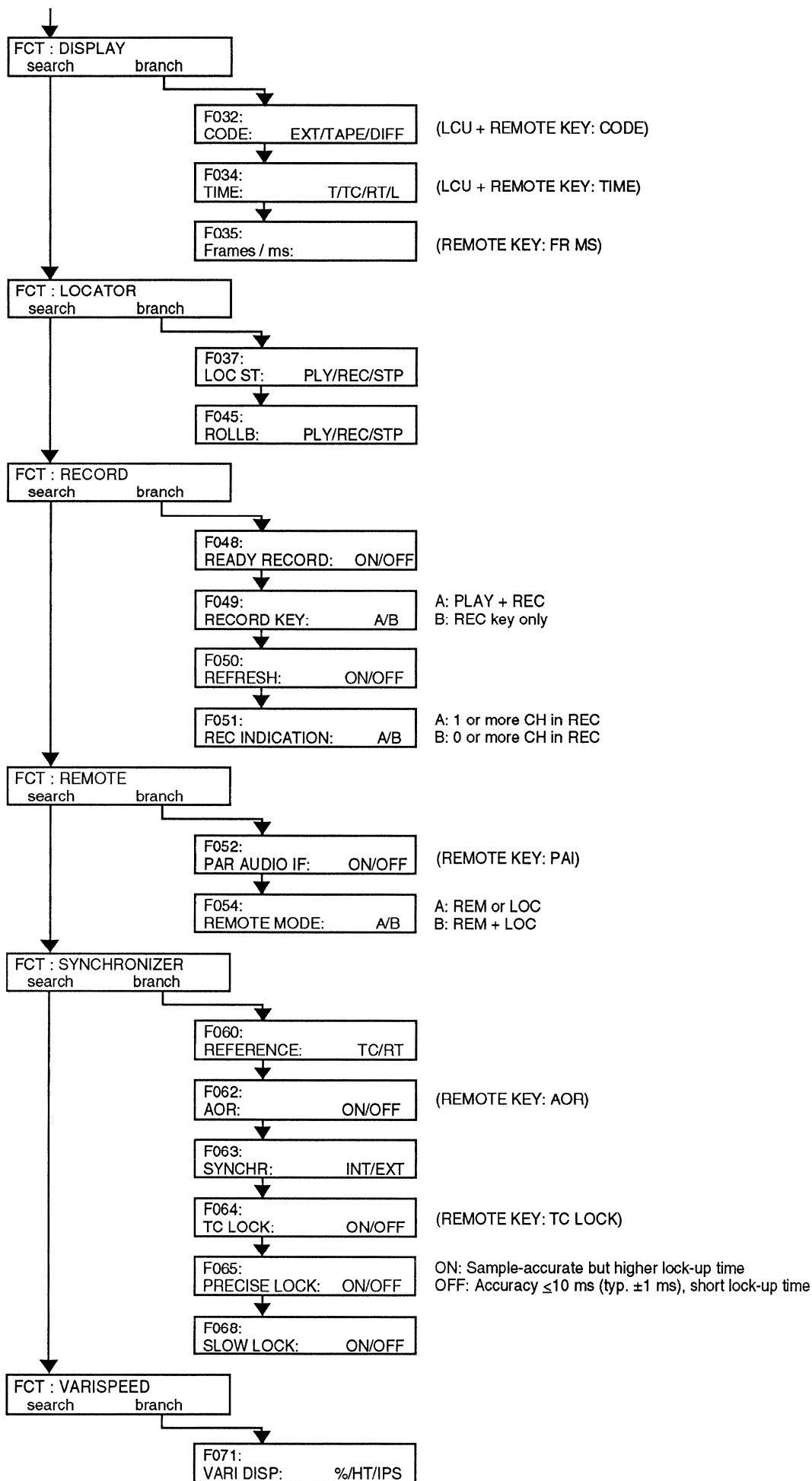
\* Option required

2.5 Function Tree



(continued on next page)

Function Tree  
(cont.)





### 3 Recordings

#### 3.1 Recording Modes

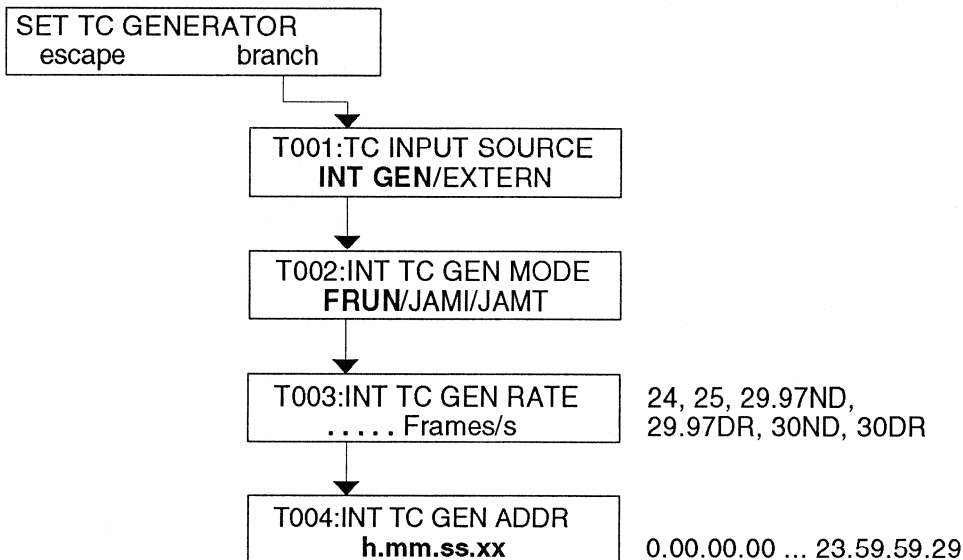
##### 3.1.1 NEW Record

New tapes must first be formatted, i.e. the REFERENCE TRACK (RT) must be recorded. It is recommended to format the whole tape in one continuous pass. This mode can also be used during a live recording session, if no formatted tape is available. In case of an interruption continue with ASSEMBLE Record (3.1.2).

- ❶ Thread the tape and press STOP.
- ❷ Select NEW RECORD mode by holding down the ENABLE key and pressing the REC MODE key on the LCU (Local Control Unit) until the NEW lamp is on.
- ❸ Settings (2 different possibilities):

**A: Using internal TC generator (most common case):**

- ❹ Select and set the time code generator:  
Press SET TC (refer to section 2.3)

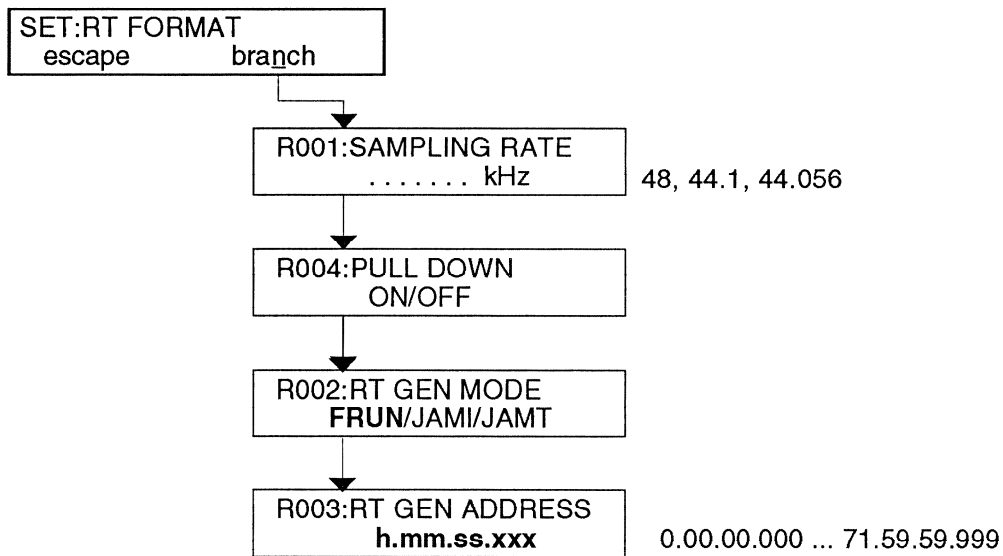


- ❺ Set sampling rate:

Recommended sampling and frame rates:

|                                 |                      |
|---------------------------------|----------------------|
| 48 kHz .....                    | 25 or 30 ND frames/s |
| 44.1 kHz .....                  | 25 or 30 ND frames/s |
| 44.056 kHz .....                | 29.97 DR frames/s    |
| 48 Pull Down (47.952 kHz) ..... | 29.97 DR frames/s    |

Press SET RT (refer to section 2.2):



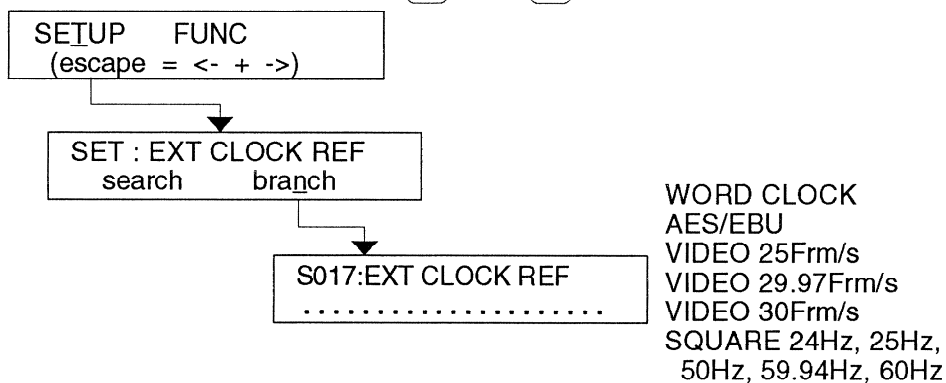
**6** Set clock reference - 2 possible settings:

**a: With internal clock:**

- Switch to **internal clock** by pressing EXT CLOCK on the LCU (Local Control Unit) until the EXT CLOCK lamp is **off**.
- Proceed to **7** .

**b: With external clock:**

- Select the external clock source (refer to section 2.3):  
Press **↓** then **←**



- Switch to **external clock** by pressing EXT CLK on the LCU (Local Control Unit) until the EXT CLK lamp is **on**. (A flashing EXT CLK lamp indicates an invalid external clock source).

**7** Set all audio channels and the time code track to READY; the reference track (RT) is automatically switched to READY.

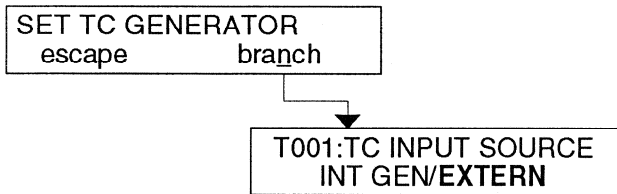
**8** Start recording by pressing REC and PLAY; continue without interruption until the end of the tape is reached. With the "New Record Head" (2nd record head) option, off-tape monitoring is possible in "Read

after Write" recording mode. If the "New Record Head" option is not installed, the CHECK function does not check the ongoing recording. For formatting the tape with recording "digital zero" (silence), select RECORD MUTE for all channels (refer to section 3.2.1). The CHECK function cannot be used together with REC MUTE.

**B: Using external TC generator:**

*Formatting tapes with synchronous ext. TC generator, locked to ext. video reference: Make sure the external TC generator is locked to the same external video reference as the recorder!*

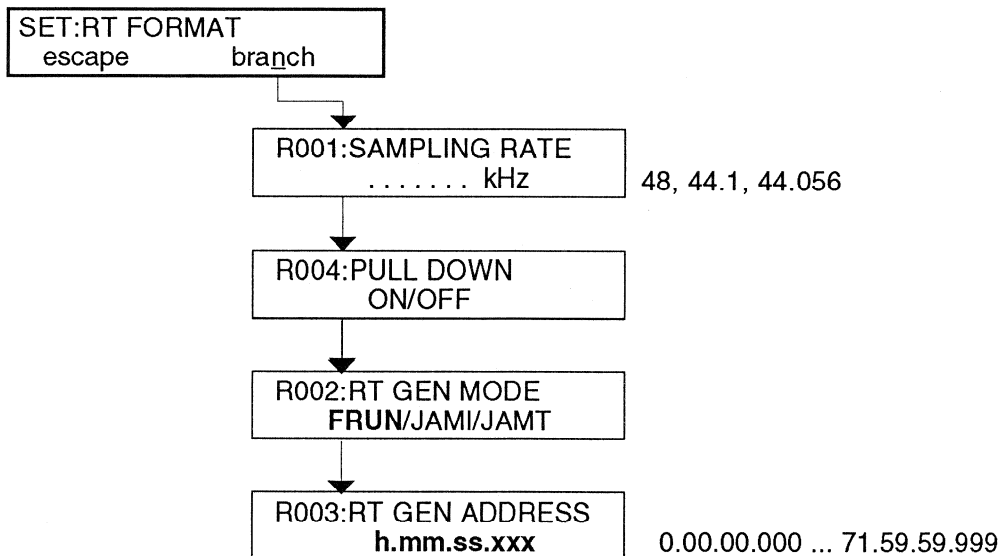
- 4 Select the external time code generator:  
Press SET TC (refer to section 2.3):



- 5 Set the desired frame rate on the external TC generator and lock it to the to the same video reference as the recorder; on the recorder, select the appropriate sampling rate.

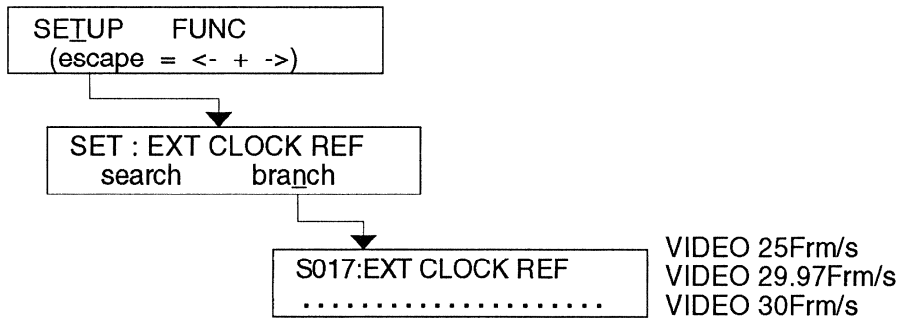
Recommended sampling and frame rates:  
 48 kHz ..... 25 or 30 ND frames/s  
 44.1 kHz ..... 25 or 30 ND frames/s  
 44.056 kHz ..... 29.97 DR frames/s  
 48 Pull Down (47.952 kHz) ..... 29.97 DR frames/s

Press SET RT (refer to section 2.2):



### ⑥ Set clock reference:

- Press  then 



- Switch to **external clock** by pressing EXT CLK on the LCU (Local Control Unit) until the EXT CLK lamp is **on**. (A flashing EXT CLK lamp indicates an invalid external clock source).

### ⑦ Set all audio channels and the time code track to READY; the reference track (RT) is automatically switched to READY.

- ⑧ Start recording by pressing REC and PLAY; continue without interruption until the end of the tape. With the "New Record Head" (2nd record head) option, off-tape monitoring is possible in "Read after Write" recording mode. If the "New Record Head" option is not installed, the CHECK function does not check the ongoing recording. For formatting the tape with recording "digital zero" (silence), select RECORD MUTE for all channels (refer to section 3.2.1). The CHECK function cannot be used together with REC MUTE.

3.1.2 ASSEMBLE Record

This mode is used to append RT on a partially formatted tape.

- 1 Thread the tape, locate a few seconds before the end of the formatted part and press STOP.

**Important:** The recording has to start in an already recorded or formatted portion of the tape.

- 2 Select ASSEMBLE RECORD mode by holding down the ENABLE key and pressing the REC MODE key (on the Local Control Unit, LCU) until the ASSEMBLE lamp is on.

Note: The correct sampling rate is automatically selected by the recorder according to the already recorded portion of the tape.

The RT GEN MODE (R002) is automatically set to JAMT (JAM to Tape); therefore the RT counter jams to the RT present on the tape.

- 3 Select internal TC generator as described in section 3.1.1.



- 4 *Recommendations:*  
 Select the same frame rate as on the already recorded portion of the tape (indicated on the LC display). For continuous TC recording set INT TC GEN MODE (T002) to JAMT (JAM to Tape).  
 If working with an external TC generator make sure it is locked to the same external video reference as the recorder!

- 5 Set clock reference - 2 possible settings:

a: With **internal clock:**

- Switch to **internal clock** by pressing EXT CLOCK on the LCU (Local Control Unit) until the EXT CLOCK lamp is **off**.
- Proceed to 6 .

b: With **external clock:**

- Select the external clock source:  
 Press  then .

```

SETUP  FUNC
(escape = <- + ->)
    
```

```

SET : EXT CLOCK REF
search      branch
    
```

```

S017:EXT CLOCK REF
.....
    
```

```

WORD CLOCK
AES/EBU
VIDEO 25Frm/s
VIDEO 29.97Frm/s
VIDEO 30Frm/s
SQUARE 24Hz, 25Hz,
50Hz, 59.94Hz, 60Hz
    
```

- Switch to **external clock** by pressing EXT CLK on the LCU (Local Control Unit) until the EXT CLK lamp is **on**. (A flashing EXT CLK lamp indicates an invalid external clock source).
- 6** Set all audio channels and the time code track to READY; the reference track (RT) is automatically switched to READY.
- 7** Start recording in the already recorded portion of the tape. Recording mode is "write after read", i.e. monitoring from the input signal.

### 3.1.3 INSERT Record

---

This is the normal recording mode. The tape has to be entirely formatted. Recording is now possible at every track individually and at every tape position. In Insert Record mode RT is automatically set to SAFE.

- ❶ Thread the tape and press STOP (or, optionally wind for a few seconds to allow the D827 MCH to learn about the reel ballistics. Then press STOP).
- ❷ Select INSERT RECORD mode by holding down the ENABLE key and pressing the REC MODE key on the Local Control Unit (LCU) until the INSERT lamp is on.
- ❸ **Settings for recording applications:**  
See the following sections 3.3 to 3.9.
- ❹ Set desired channels to READY.
- ❺ Start recording.

## 3.2 Special Recording Functions

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The special recording functions described below are made possible thanks to advanced internal routing of the D827 MCH. For some of them the optional Channel Remote and/or the optional Sound Memory are required.

### 3.2.1 REC MUTE

---

This mode is used for recording "digital zero" on the desired channels. It can be selected on the Local Control Unit (LCU) as well as on the Channel Remote. REC MUTE can be selected in any of the recording modes described in section 3.1.

- 1** Set the desired channels to READY; the corresponding READY lamps flash.
- 2** Select REC MUTE programming mode by pressing REC MUTE on the LCU (Local Control Unit) or on the Channel Remote once; the REC MUTE lamp flashes.
- 3** Program the individual channels to mute with the INPUT/REPRO keys. The INPUT lamps indicate the preset mute channels. Should already channels be selected from a previous operation they can be cancelled by pressing the corresponding INPUT/REPRO keys.
- 4** Activate REC MUTE mode by holding down the ENABLE key and pressing REC MUTE again. The REC MUTE lamp is on continuously.
- 5** Start recording.

Notes: The active RECORD MUTE channels are indicated by a flashing INPUT lamp if INPUT mode is selected.

The CHECK function cannot be used together with REC MUTE.

To cancel the function: Switch the recorder to STOP, hold down the ENABLE key, and press REC MUTE. The REC MUTE lamp is off.



### 3.2.2 PING PONG Mode

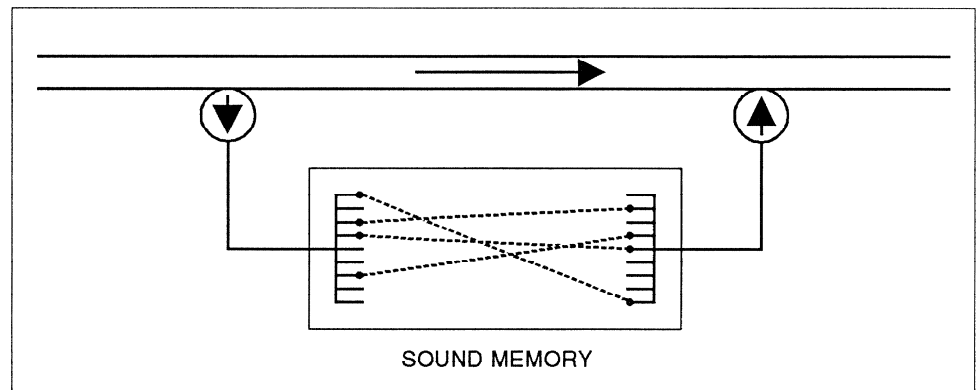
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This mode is used to make identical and sample-exact copies of one single track to any number of other tracks. **It can only be selected with the Channel Remote or with the Setup Handler Software, and only in INSERT recording mode.**

- ❶ Select PING PONG programming mode by pressing PING PONG on the Channel Remote once; the PING PONG lamp flashes. Should already channels be selected from a previous operation they can be cancelled by pressing the corresponding INPUT/REPRO keys once or twice.
- ❷ Select the source channel by pressing its INPUT/REPRO key; its REPRO lamp is on.
- ❸ Select the destination channels by pressing the corresponding INPUT /REPRO keys; the INPUT lamps are on.
- ❹ Activate PING PONG mode by pressing PING PONG again; the PING PONG lamp is on continuously, the destination channels are automatically switched to READY.
- ❺ Start recording.

To cancel the function: Switch the recorder to STOP and press PING PONG again. The PING PONG lamp is off.

### 3.2.3 TRACK BOUNCING via Autolocator



This mode allows to make sample-accurate and identical copies of several tracks into the same number of different tracks. It is only accessible via remote control (Autolocator) or with the Setup Handler software when working in INSERT recording mode.

By choosing from up to 12 track banks (pages) it is possible to bounce up to 48 pages at the same time.

#### 1 How to clear an existing configuration:

All previously programmed source and destination channels can be cleared while in the TRACK BOUNCING program mode (LED is flashing) with the key combination CLR and TRACK BOUNCING.

Programmed source and destination channels can be cleared individually by selecting the corresponding channel using the SET key while in the TRACK BOUNCING program mode (LED is flashing) and pressing CLR key.

#### Setting up a new configuration:

Select TRACK BOUNCING program mode by pressing TRACK BOUNCING on the Autolocator once; the LED starts to flash while SOURCE is selected automatically. The DELAY TIME/MEMORY LENGTH display indicates the four destination channels belonging to a specific TRACK BANK (page). The indication given looks as follows:

01 -- 04 (destination channels).

Press TRACK BANK key, 05 -- 08, etc.

It is possible to scroll up and down through the 12 TRACK BANKs with the TRIM± keys (the ones located to the right of the LOOP END display) while holding down the TRACK BANK key.

The SOURCE/DESTINATION LED indicates that a source channel could be entered to the corresponding destination channel of the TRACK BANK.

**2** *There are two ways to initialize the channel configuration:***A: By paging through the TRACK BANK:**

Example: Copy signal to destination channel 33 from source channel 29.

- Press the TRACK BANK key until you see the group with your required destination channel (indicated in the "DELAY TIME/MEMORY LENGTH" display; 33 -- 36 in this case). You may use TRACK BANK and TRIM.
- Select with the appropriate SET key the desired destination channel (in this case "A" for channel 33). Channel 33 is now set as destination, the INPUT LED of CH 33 on the Channel Remote is now **on**.
- Select the desired source channel via INPUT/REPRO key (or type in the channel number using the numerical keypad; "29" in this case). The REPRO LED of CH 29 on the Channel Remote is **on**.
- Repeat the steps above for additional tracks.

**B: With direct access to the destination channel - the quick way:**

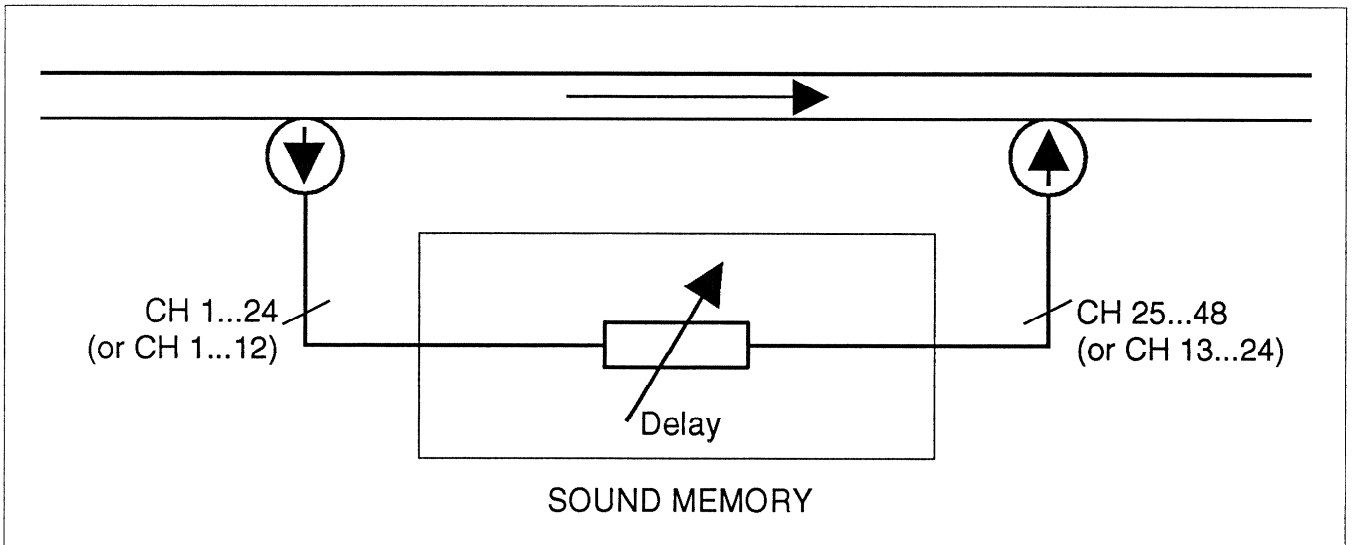
Example: Copy signal to destination channel 33 from source channel 29.

- Press the SOURCE/DESTINATION key once (destination is now active).
- Select the destination channel via INPUT/REPRO key (or type in the channel number using the numerical keypad; "33" in this case). TRACK BANK 33 -- 36 is now being shown, the INPUT LED of CH 33 on the Channel Remote is **on**.
- Select the source channel via INPUT/REPRO key (or type in the channel number using the numerical keypad; "29" in this case). The REPRO LED of CH 29 on the Channel Remote is **on**.
- Repeat the steps above for additional tracks.

**3** Activate TRACK BOUNCING mode by pressing TRACK BOUNCING again; the TRACK BOUNCING lamp is on continuously; the destination channels are automatically switched to READY.**4** Start recording.

To cancel the function: Switch the recorder to STOP and press TRACK BOUNCING again. The TRACK BOUNCING lamp is off.

## 3.2.4 TRACK SLIPPING via Autolocator

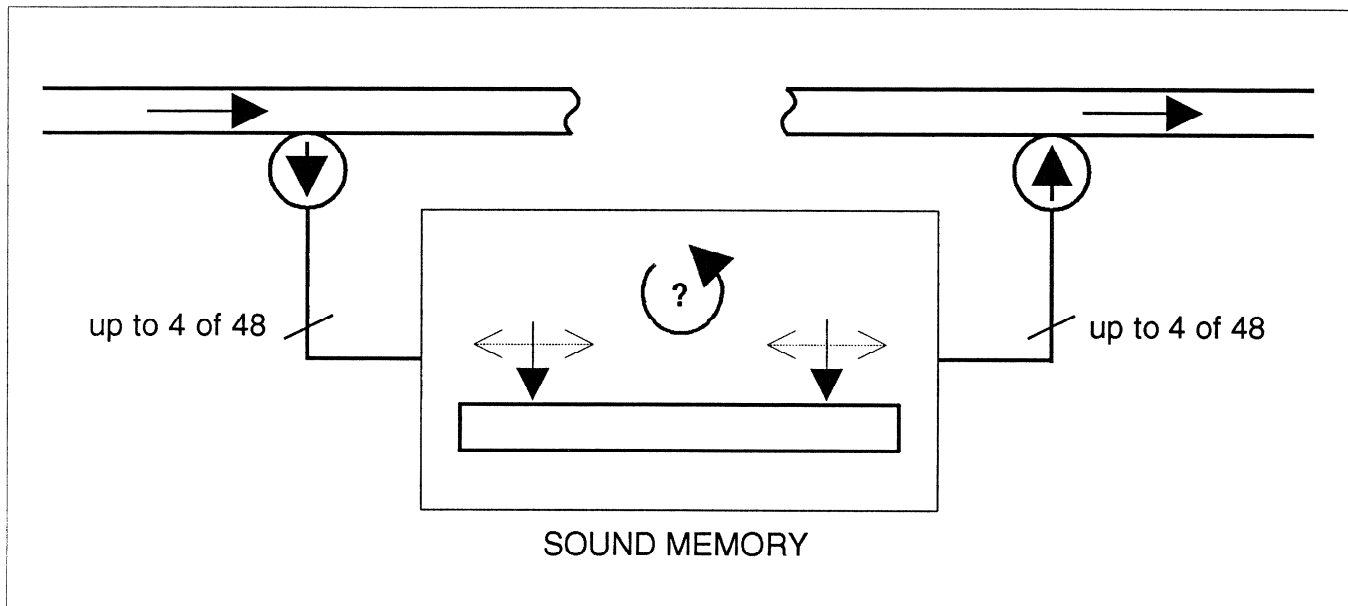


This mode is used to produce simultaneously delayed copies of up to 24 tracks on a 48-track recorder and of up to 8 tracks on a 24-track recorder. Track 1 is copied to track 25 (13, resp.), track 2 to track 26 (14, resp.), and so on. **It can be selected only with the Remote Control (Autolocator) and only if the Sound Memory option is installed, and only in INSERT recording mode.** The delay time is adjustable (in ms) and identical for all selected channels. The maximum delay time is displayed during programming mode; it depends on the number of selected channels, on the selected sampling frequency and on the size of the Sound Memory RAM.

- ❶ Select TRACK SLIPPING programming mode by pressing TRACK SLIPPING on the Autolocator once; the TRACK SLIPPING lamp flashes.
- ❷ Select the source channels by pressing the corresponding INPUT/REPRO keys on the Autolocator. The REPRO lamps of the source channels and the INPUT lamps of the destination channels are on. A channel can be de-selected by pressing its INPUT/REPRO key again.
- ❸ Activate TRACK SLIPPING mode by pressing TRACK SLIPPING again; the TRACK SLIPPING lamp is on continuously, the selected destination channels are automatically switched to READY.
- ❹ The delay time can be set with the TRIM± keys.
- ❺ Start recording or playback.

To cancel the function: Switch the recorder to STOP and press TRACK SLIPPING again. The TRACK BOUNCING lamp is off.

## 3.2.5 SOUND MEMORY (Sampler Mode) via Autolocator



The sound memory can be used for several applications - e.g. for moving a portion of up to four tracks to a different position on the tape or to different tracks. It can be used for taking samples directly from the input(s) as well. **It can be selected only with the Remote Control (Autolocator) and only if the Sound Memory option is installed, and only in INSERT recording mode.**

- ❶ Select SOUND MEMORY programming mode by pressing SOUND MEMORY on the Autolocator once; the SOUND MEMORY lamp flashes.
- ❷ Select the first source channel and insert it into register A:
  - Activate register A with the READY key below the numerical display "A"; the corresponding READY lamp is on, the numerical display flashes.
  - Select the desired channel either by typing in its number with the numerical keypad (2 digits) or by pressing its INPUT/REPRO key. The REPRO lamp of the selected channel is on, the number of the selected channel flashes in the numerical display.
- ❸ Select the first destination channel and insert it into register A:
  - Press the SOURCE/DESTIN key; the DESTIN lamp is on.
  - Select the desired channel either by typing in its number with the numerical keypad (2 digits) or by pressing its INPUT/REPRO key. The INPUT lamp of the selected channel is on, the number of the selected channel flashes in the numerical display.

- ④ Repeat ② and ③ until all required source and destination channels (up to 4 each) are defined in registers A...D. Unused registers can be cleared by pressing the CLEAR key on the numerical keypad while the numerical display of the corresponding register flashes.
- ⑤ Activate SOUND MEMORY mode by pressing SOUND MEMORY again; the SOUND MEMORY lamp is on continuously. Set your preferred MEM REC mode:

**MEMory RECOding modes:** (Select by pressing the MEMREC MODE key)

**INST** - After pressing MEM REC the sound memory is filled with audio data up to its current length if MEM STOP is not pressed before.

**CONT** - When a memory overflow occurs, the oldest data are overwritten, i.e. the newest data are always retained in the memory. The storage function is only terminated when the MEM STOP key is pressed.

**TRIG** - When you press the MEM REC key the Sound Memory is switched to standby mode. The recording function can be started ("triggered") by pressing the MEM STOP key. The memory is filled with audio data, starting from a point 500 ms before the triggering point. The Sound Memory is filled completely if the MEM STOP key is not pressed before.

- ⑥ Start tape playback; when the desired position is reached, start SOUND MEMORY recording by pressing MEM REC; the MEM REC lamp flashes  
or  
Select INPUT for the corresponding channels if you want to sample the input signal, then start SOUND MEMORY recording by pressing MEM REC; the MEM REC lamp flashes.
- ⑦ Stop MEM REC by pressing MEM STOP - otherwise the memory will be filled up to its maximum length.

**MEMory PLAY modes:** (Select by pressing the MEMPLAY MODE key)

**SINGLE** - The memory content is played once.

**LOOP** - The memory content is played continuously.

**REVERSE** - Pressing MEMORY PLAY MODE and SET buttons simultaneously will activate REVERSE PLAY mode in either SINGLE or LOOP modes. REVERSE PLAY mode is indicated by a flashing SINGLE or LOOP LED.

- ⑧ Start MEMory PLAY with the MEM PLAY key. Depending on the selected MEMPLAY mode the memory content is either repeated or reproduced once.

To stop, press the MEM STOP key.

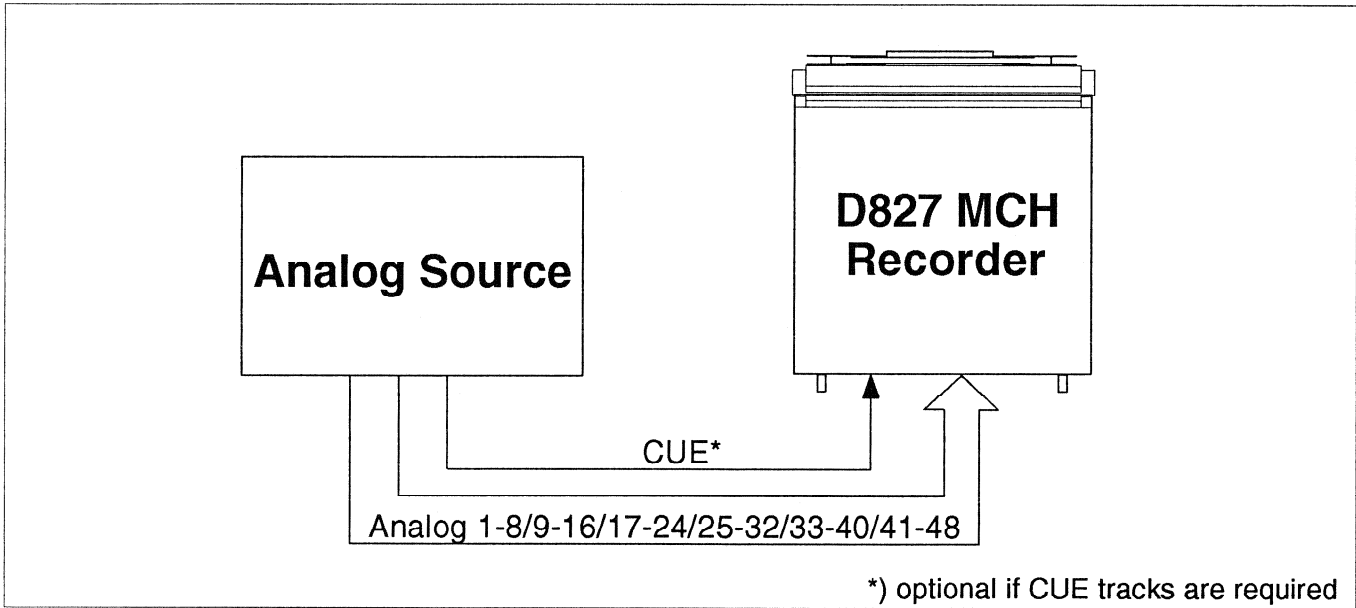
- ⑨ Edit the begin and end points of the Sound Memory recording if required:
- When pressing BEGIN a 3 seconds loop is played, starting from the current start mark. During playback the start mark can be shifted with the TRIM </> keys. TRIM speed can be selected between normal and fast. Fast mode is activated by pressing the second TRIM key while trimming in either direction. MEM STOP interrupts the loop; MEM PLAY plays the Sound Memory content from the new starting point.
  - When pressing END a 3 seconds loop is played which ends at the current end mark. During playback the end mark can be shifted with the TRIM </> keys. TRIM speed can be selected between normal and fast. Fast mode is activated by pressing the second TRIM key while trimming in either direction. MEM STOP interrupts the loop; MEM PLAY plays the Sound Memory content up to the new end point.
  - The start and end points can be defined "on the fly" during playback by holding down SET and pressing BEGIN or END at the desired points. Holding down RESET and pressing BEGIN or END resets the begin or end marks to the original start or end of the Sound Memory. The audio data are not erased.

- ⑩ Transfer the memory content to tape:  
Set the desired tracks to READY.  
Set the crossfade time according to your requirements.  
The REC command automatically starts MEM PLAY mode and the data in the audio memory are transferred to tape.
- If SINGLE is activated: The transfer is automatically stopped when the end of the memory content is reached.
  - If LOOP is activated: The transfer is stopped click-free when terminating the REC mode by pressing PLAY or STOP.

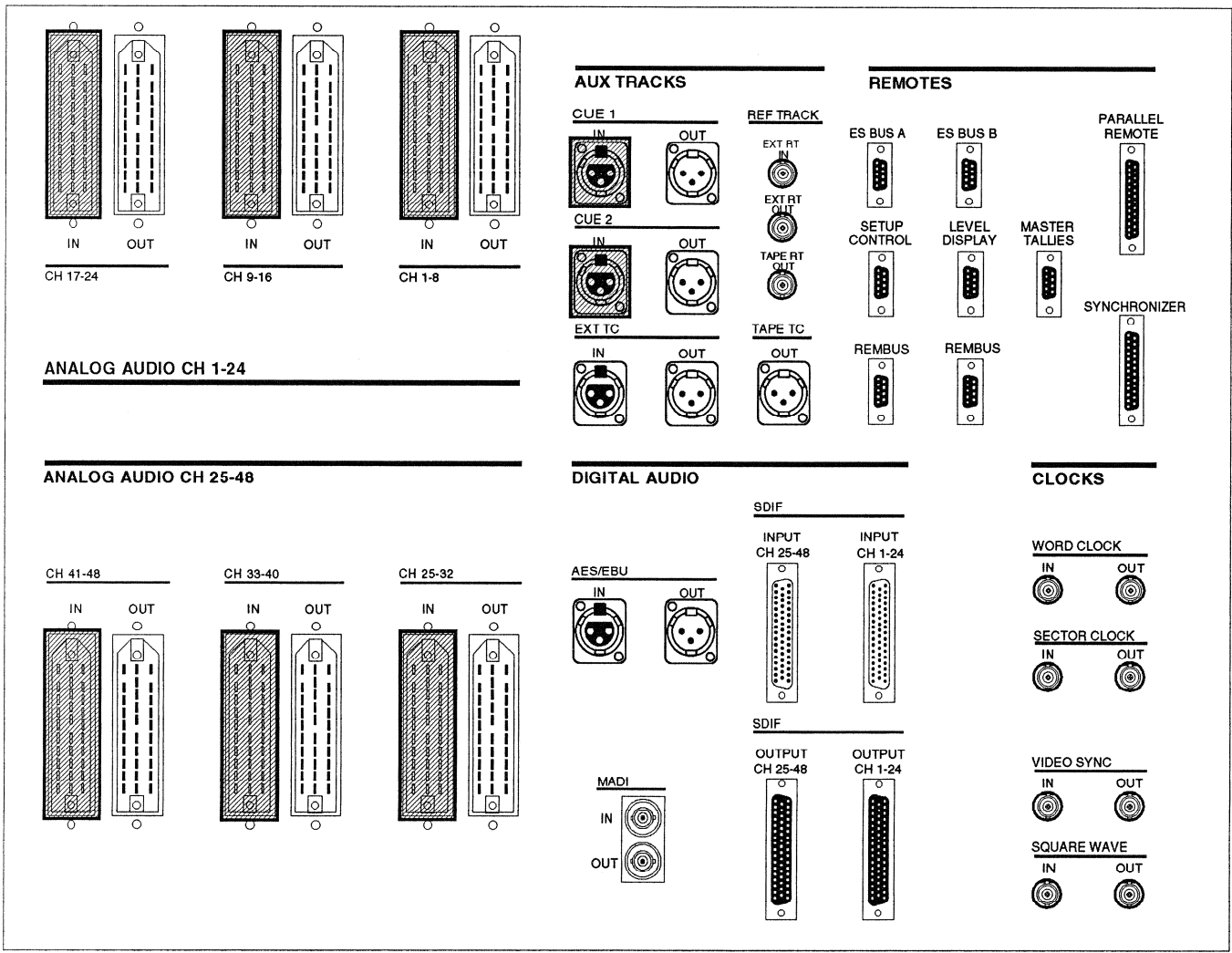
**Note:** Recording can be programmed via the punch-in/-out registers.

To cancel the function: Press SOUND MEMORY again. The SOUND MEMORY lamp and all lamps associated with the SOUND MEMORY are off.

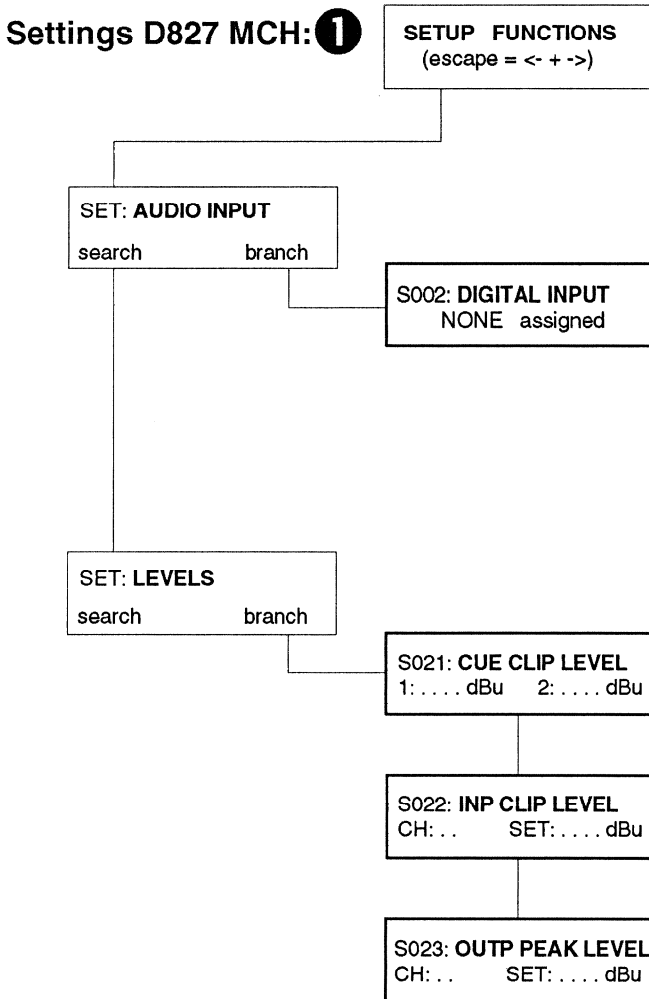
3.3 Recording from Analog Inputs



Connector panel D827 MCH:







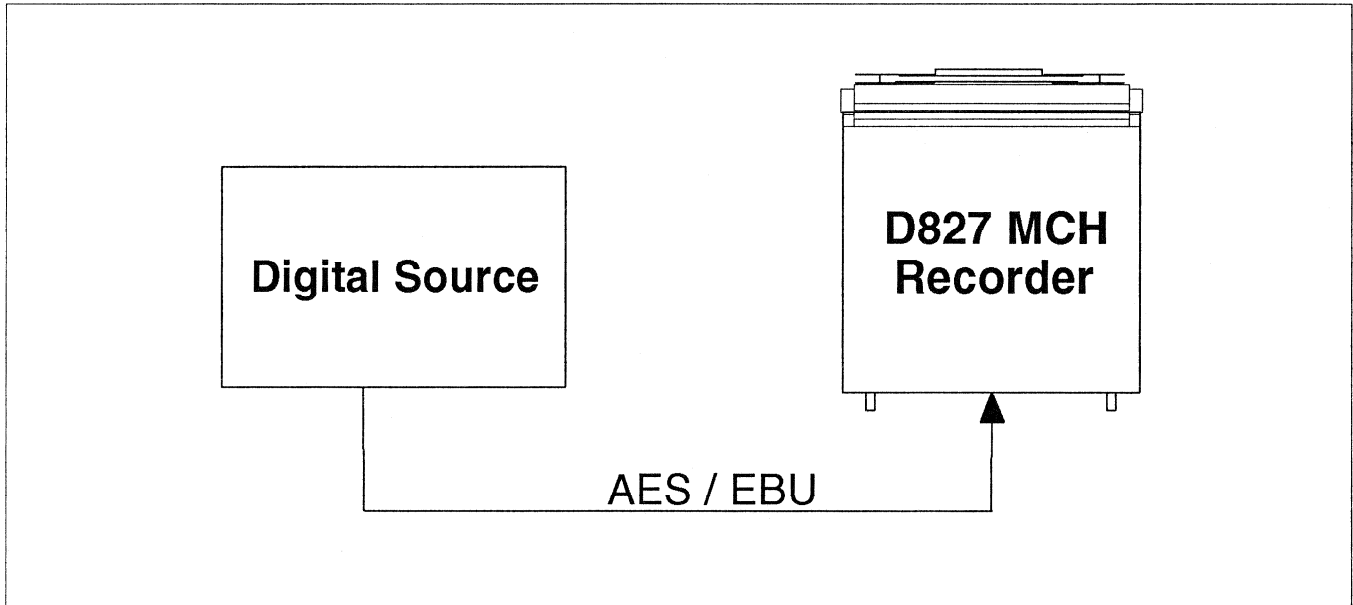
It is recommended that all levels are set to the same value, e.g. +14dBu. Depending on the desired headroom, the clip levels should be set approx. 10 dB higher than the studio line level.

**Example:** Desired headroom: 10 dB  
Studio line level: +4 dBu

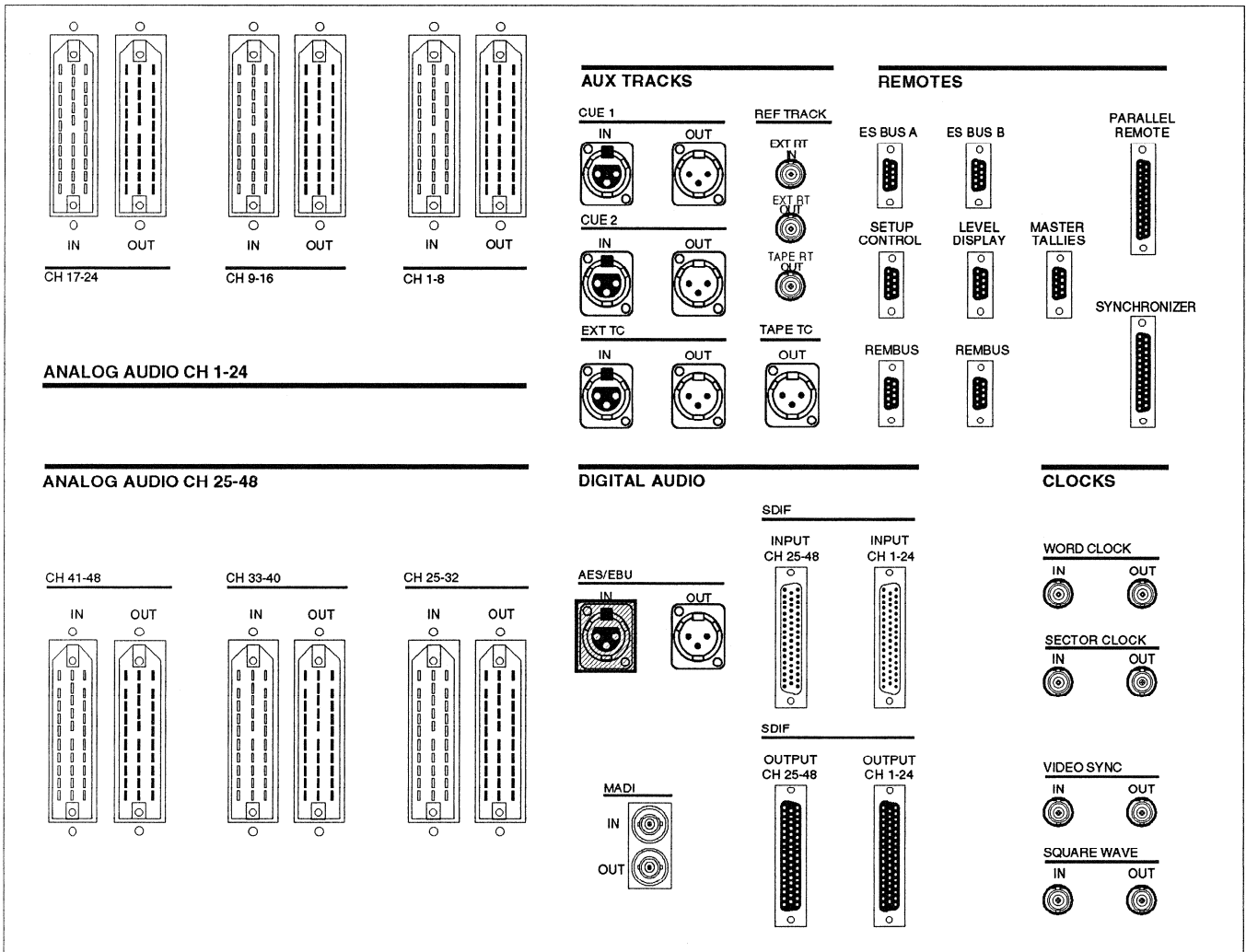
**Settings:** Input clip level: +14 dBu  
Output peak level: +14 dBu

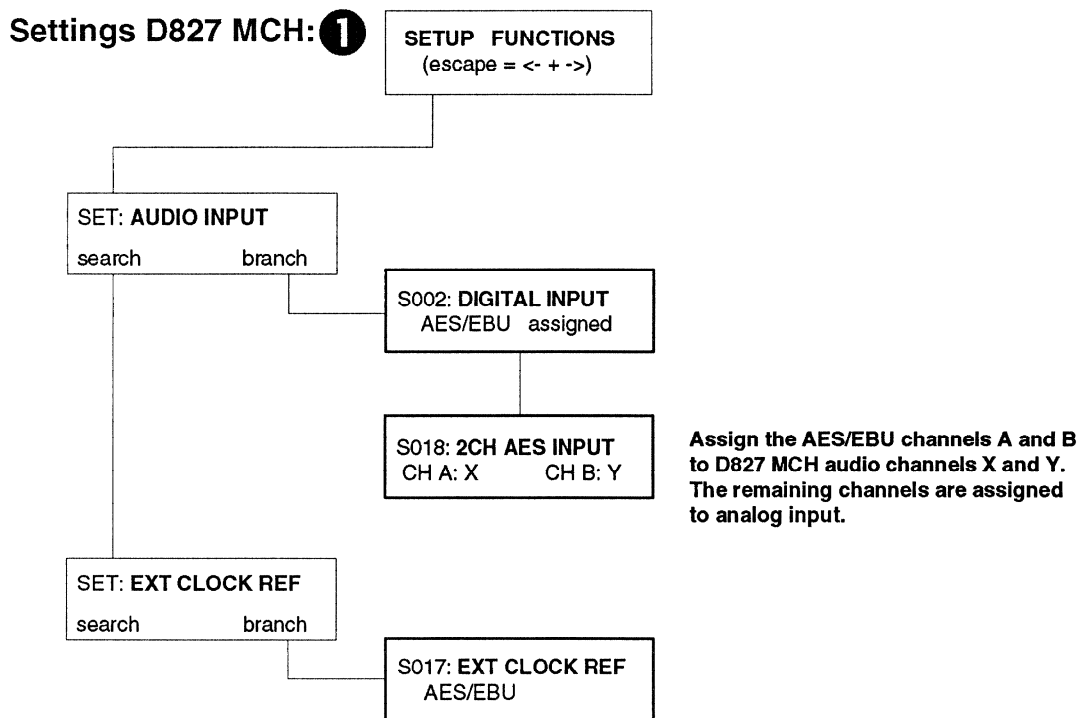
- ② Switch EXT CLK reference to **INT** (if the application doesn't require an external clock reference) by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **off**.

3.4 Recording from Digital Input AES/EBU



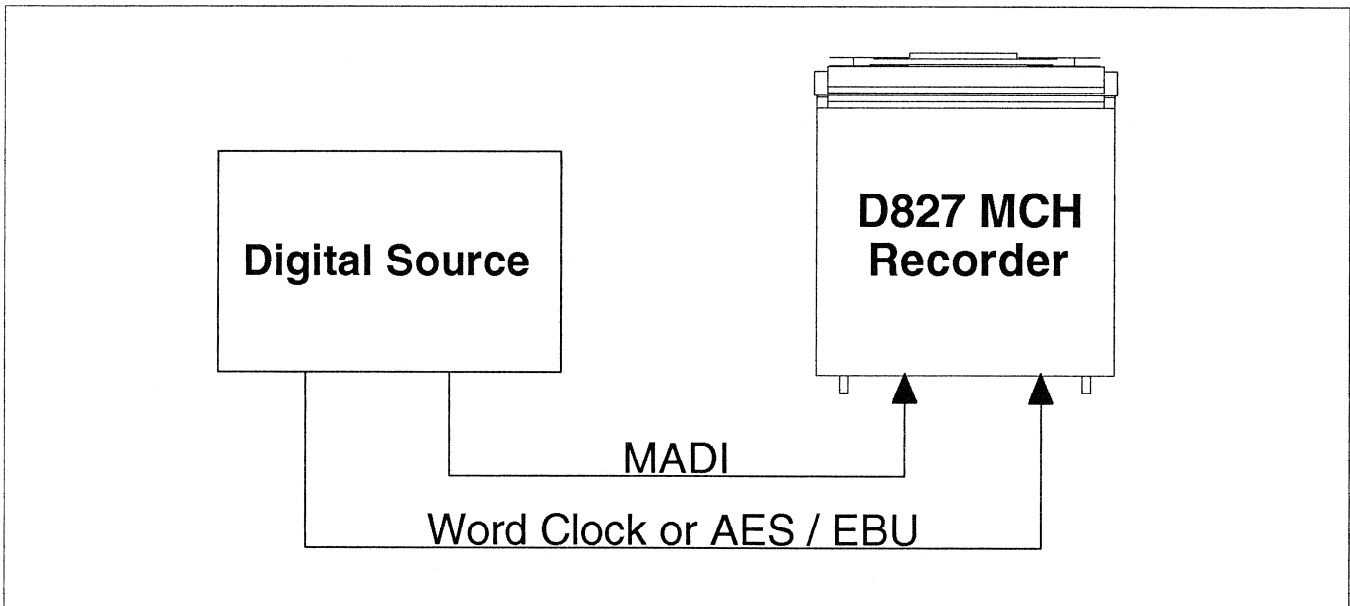
Connector panel D827 MCH:



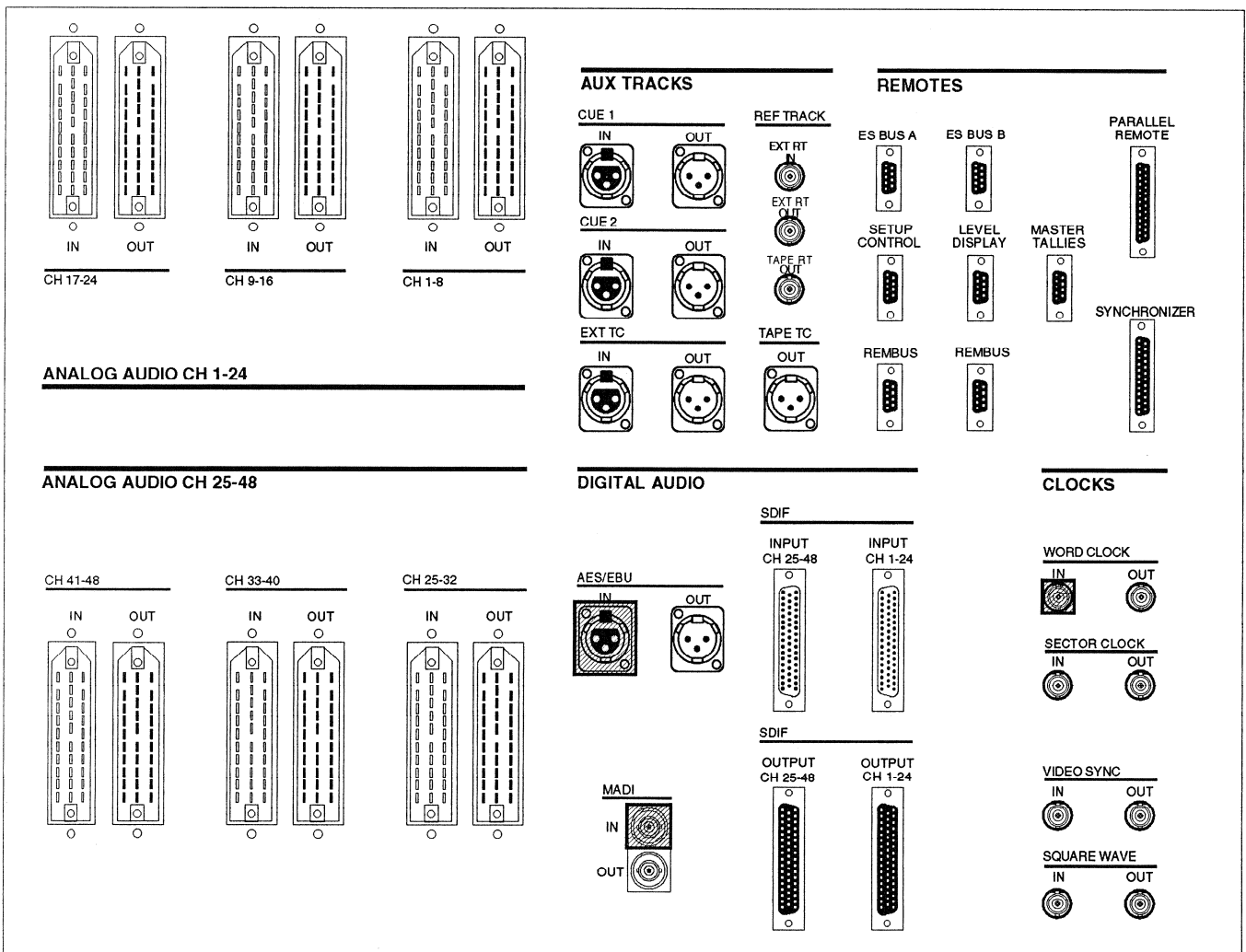


- ② Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**. The EXT CLK lamp must be continuously on for valid clock source.

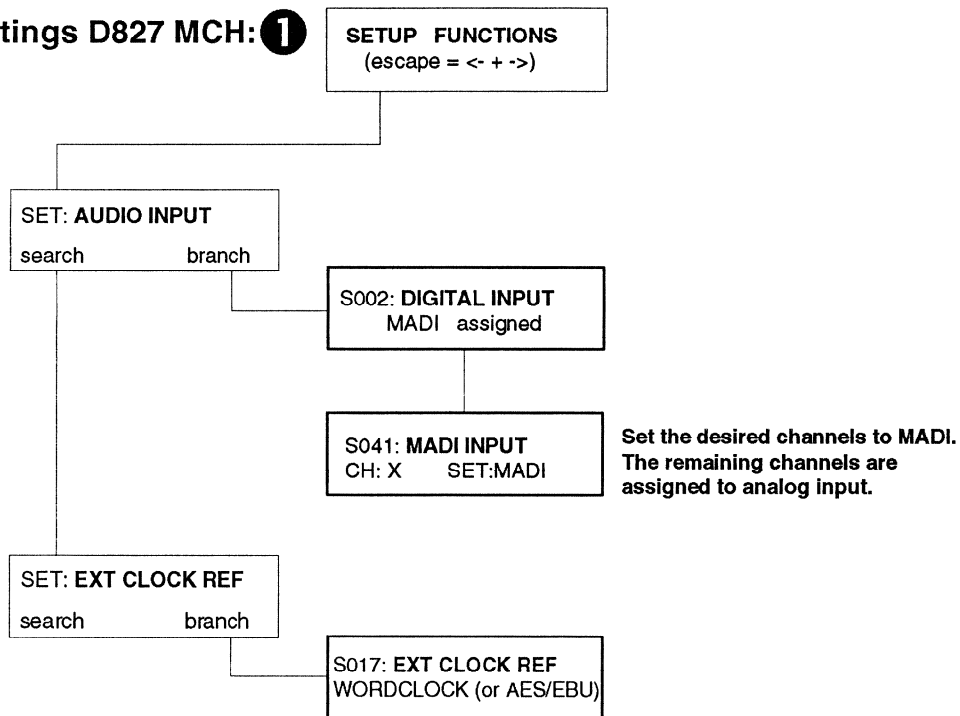
3.5 Recording from Digital Input MADI (e.g. for Audio Backup)



Connector panel D827 MCH:



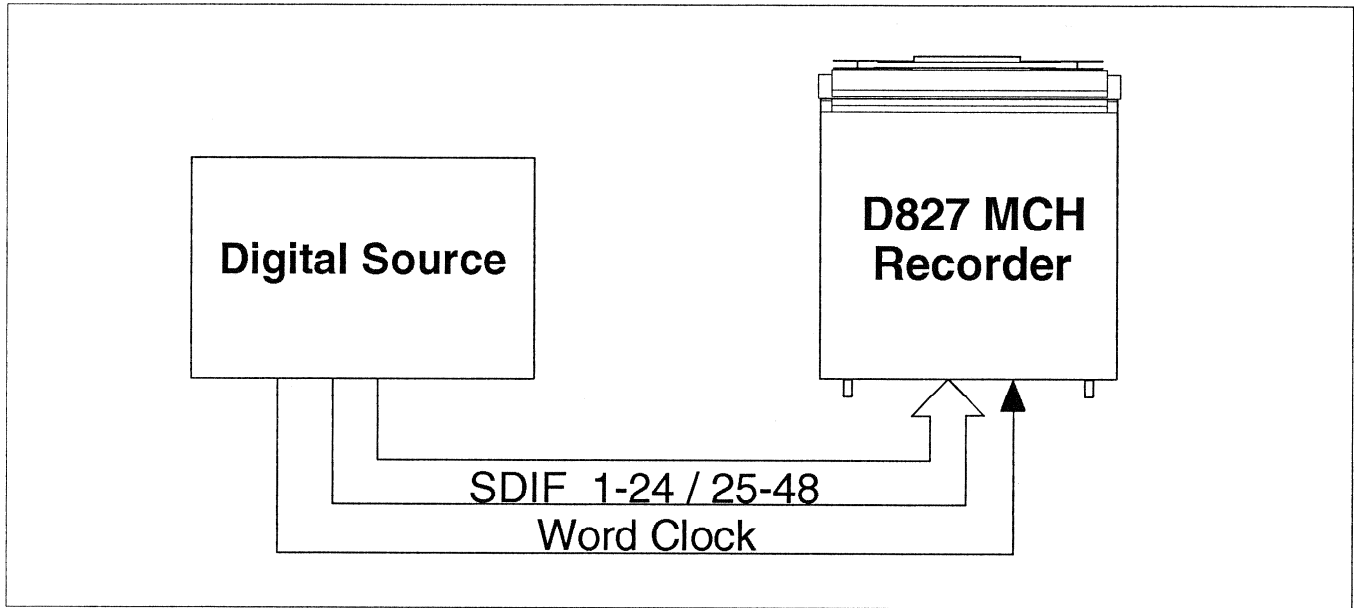
Settings D827 MCH: **1**



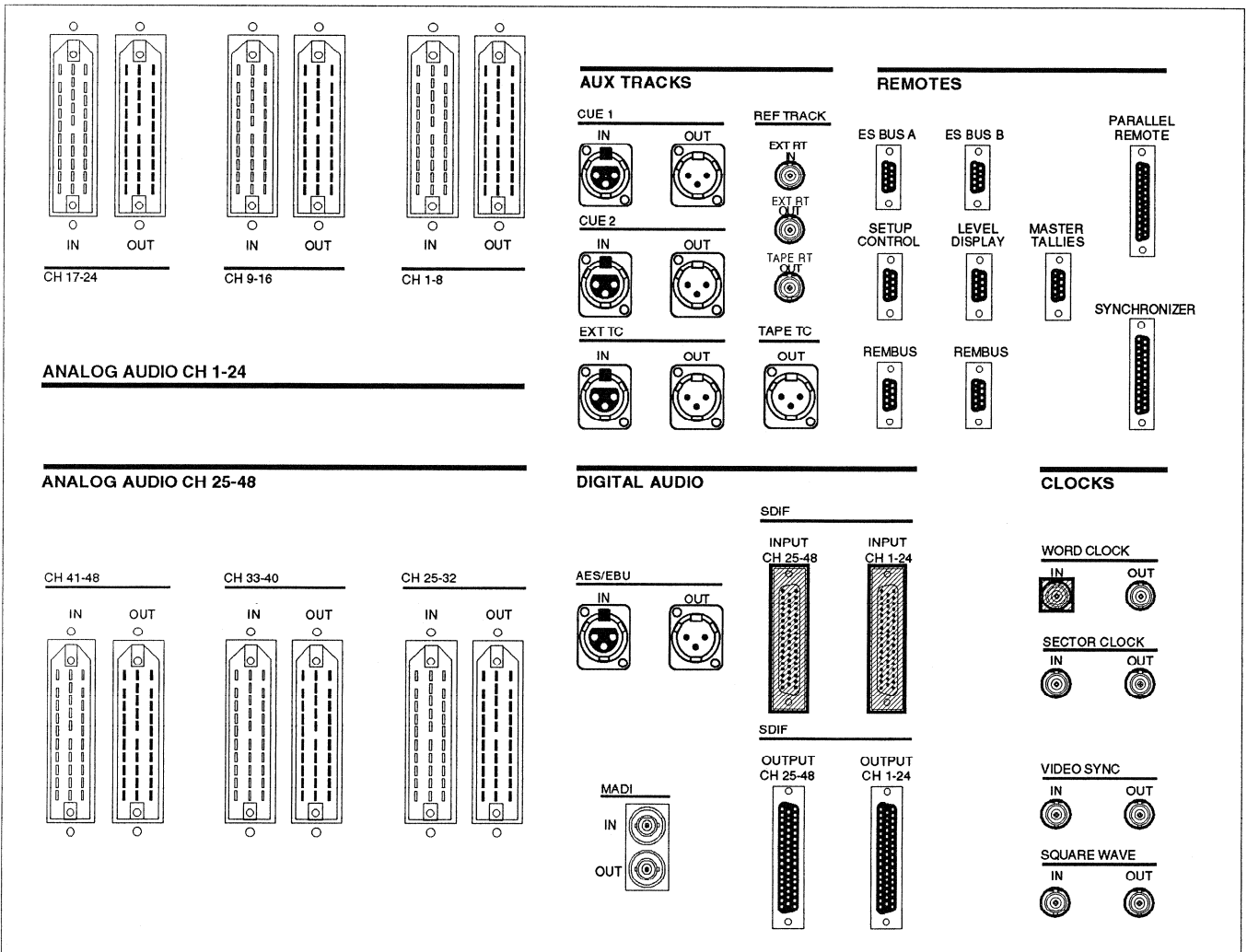
- 2** Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.

The EXT CLK lamp must be continuously on for a valid clock source.

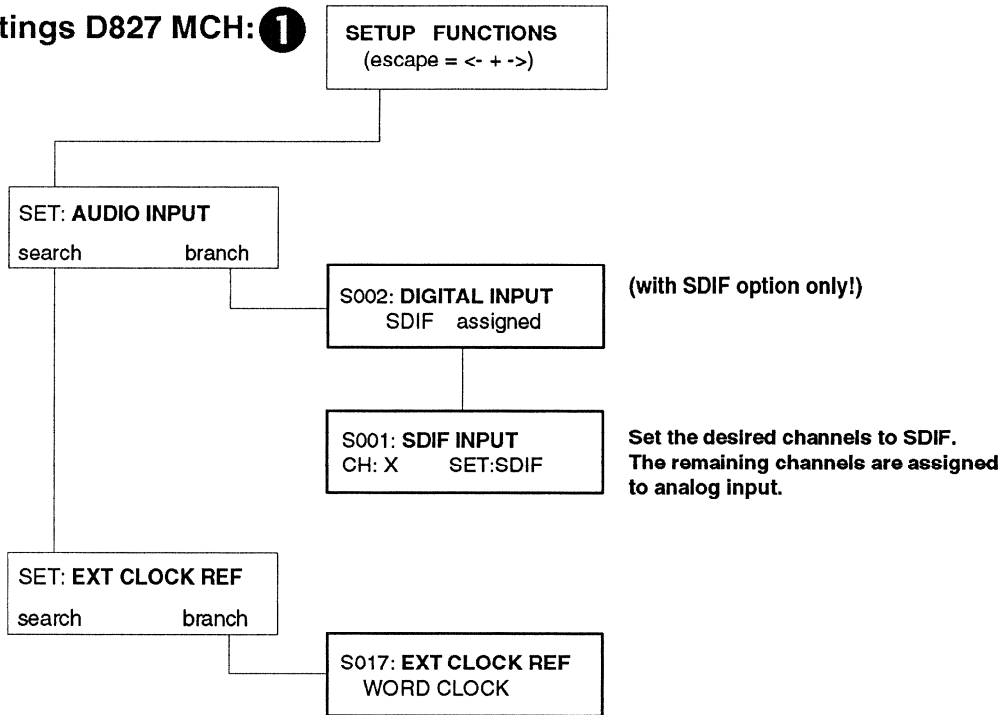
3.6 Recording from Digital Input SDIF (with Option)



Connector panel D827 MCH:

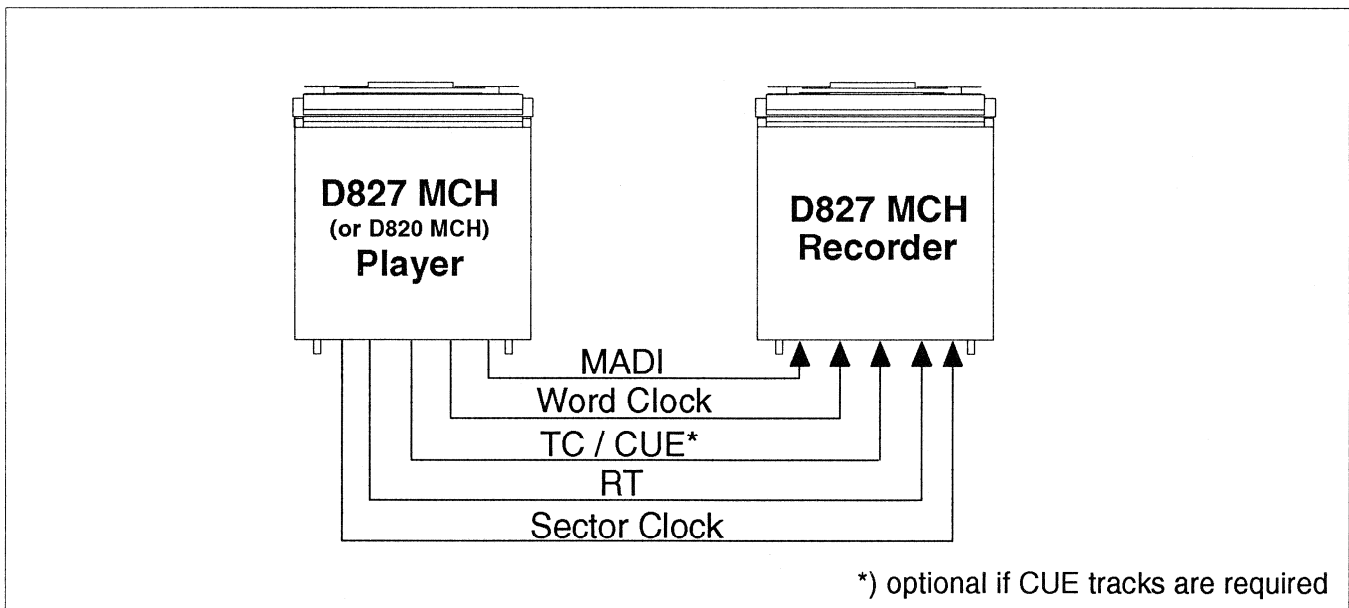


Settings D827 MCH: **1**



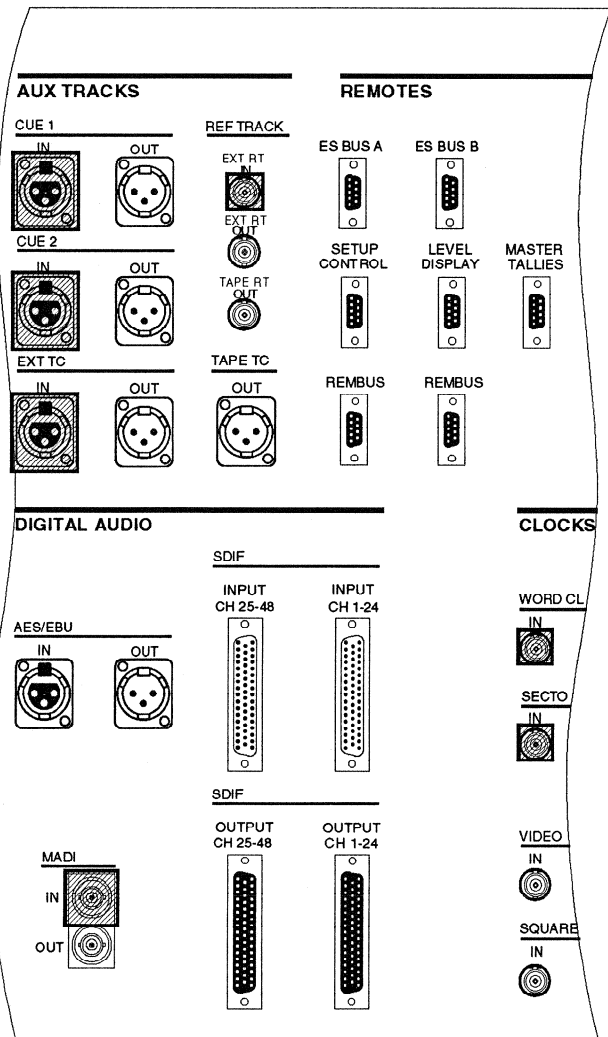
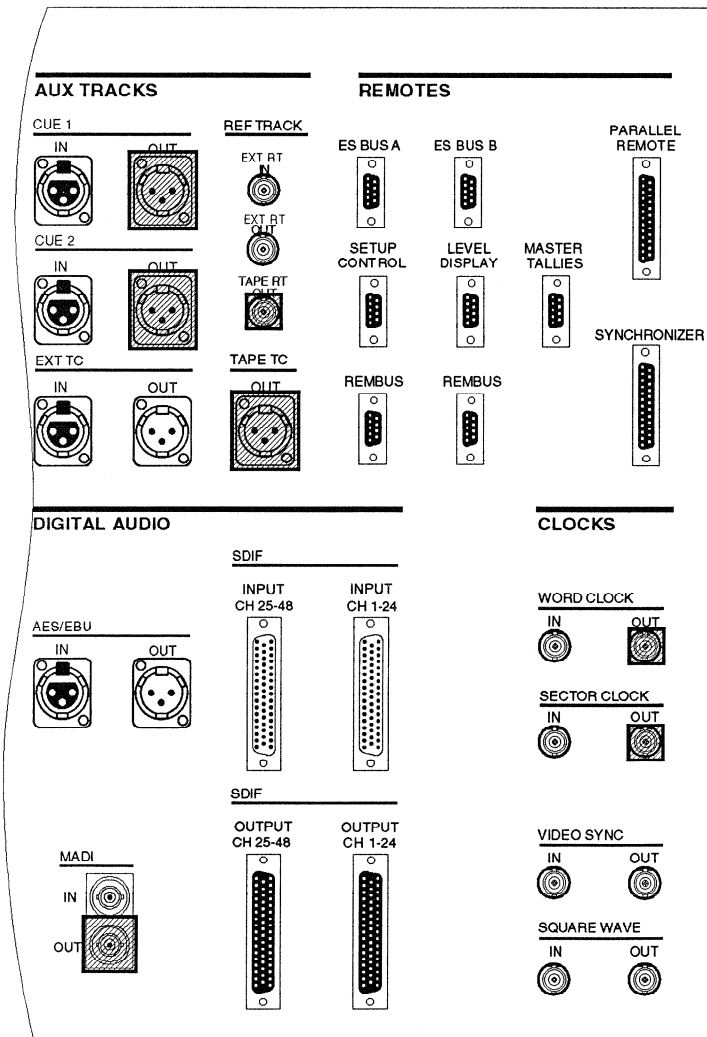
- 2** Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.

3.7 1:1 Backup Copy ("Clone") via MADI



Connector panel player:

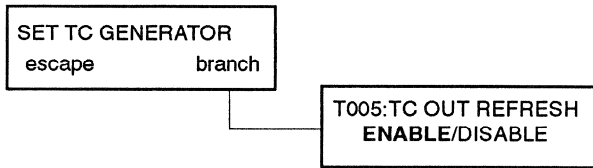
Connector panel recorder:



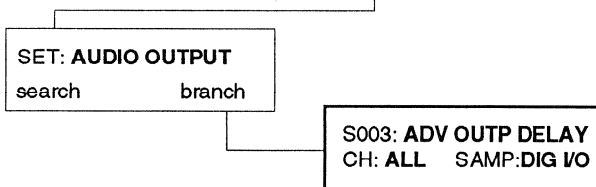


Settings player:

**1**  SET TC



**2** SETUP FUNCTIONS  
(escape = <- + ->)



**3** Set recording mode to **ASSEMBLE** by holding down ENABLE and pressing REC MODE on the Local Control Unit (LCU) until the ASSEMBLE lamp is on.

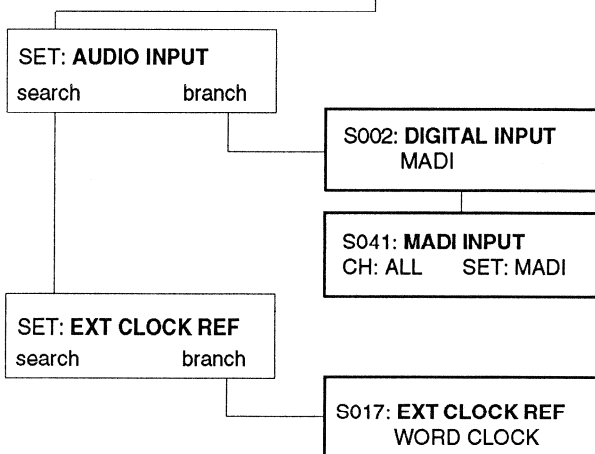
**4** Switch EXT CLK reference to **INT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **off**.

**5** Switch Advanced Output Delay **on** (key ADV OUT on Channel Remote or function setting F001) - the ADV OUT lamp is **on** (copy delay: 1 sample).

Settings recorder:

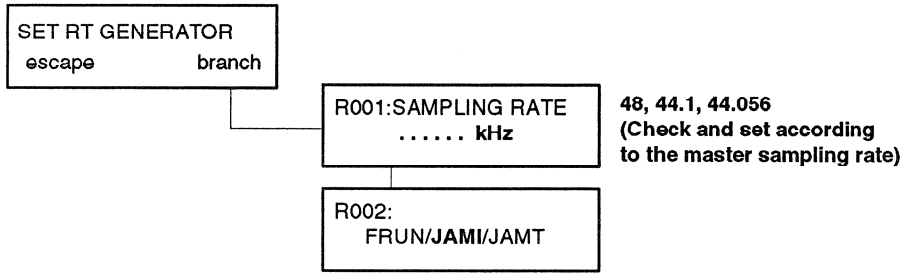
**6** Set recording mode to **NEW** by holding down ENABLE and pressing REC MODE on the Local Control Unit (LCU) until the NEW lamp is on.  
Set all audio and auxiliary tracks to **READY**.

**7** SETUP FUNCTIONS  
(escape = <- + ->)



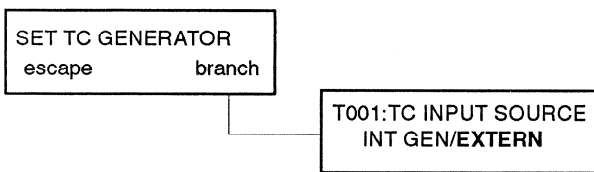
*(continued on next page)*

**8**  SET RT




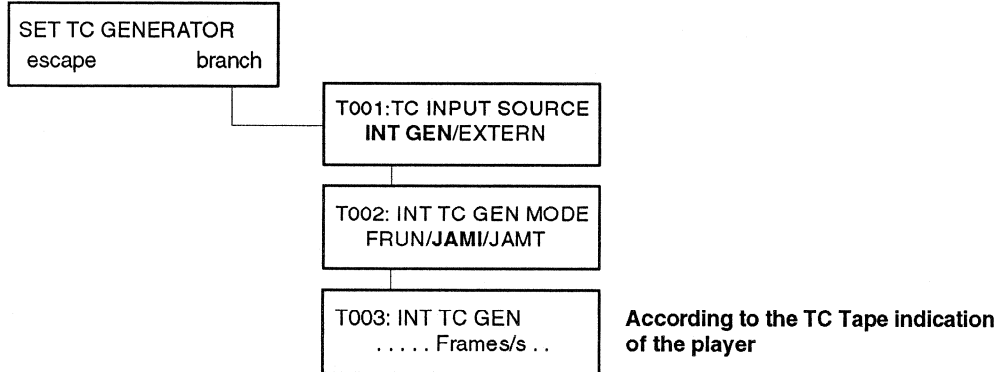
**9** If your master recorder is a D827 MCH, proceed as follows:

 SET TC



If your master recorder is a D820 MCH, or if the TC from the master is not regenerated, proceed as follows:

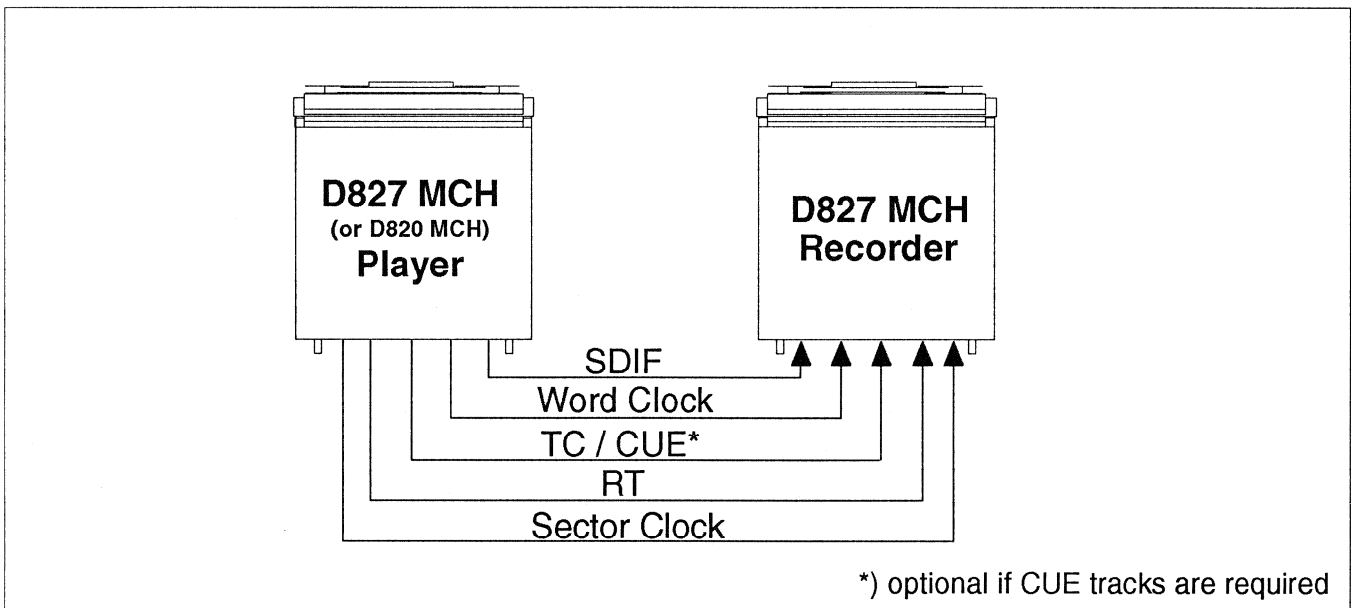
 SET TC



**10** Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.

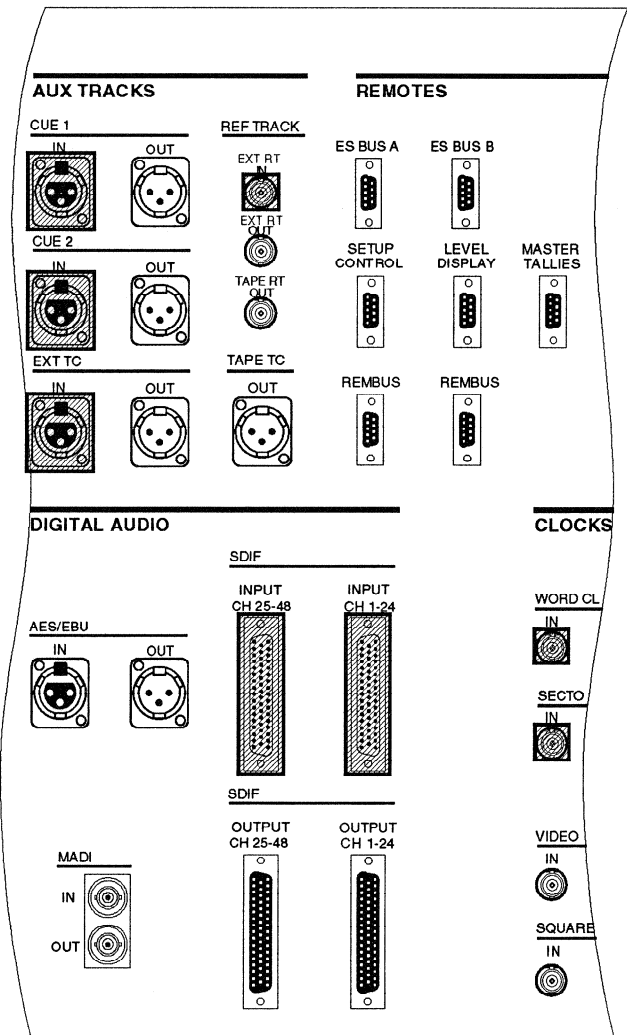
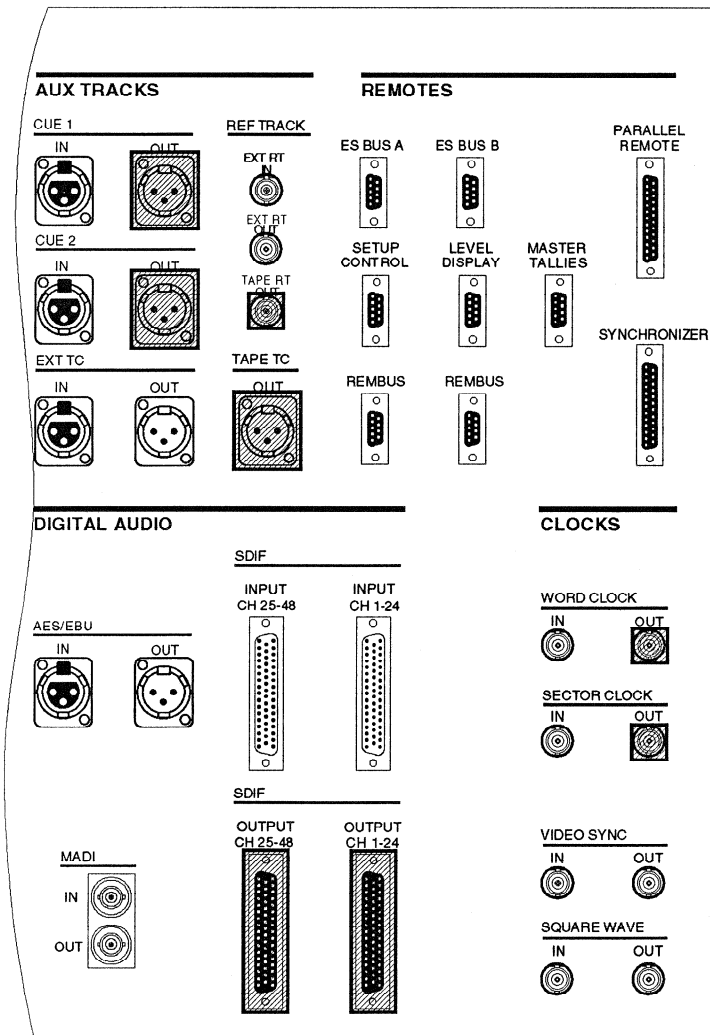
**11** Cloning:  
Start first the player (PLAY), then the recorder (RECORD).

3.8 1:1 Backup Copy ("Clone") via SDIF (with Option)



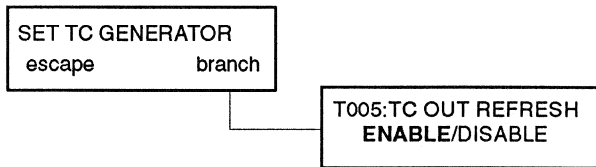
Connector panel player:

Connector panel recorder:

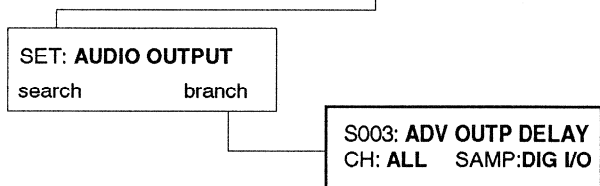


Settings player:

**1**  SET TC



**2** SETUP FUNCTIONS  
(escape = <- + ->)



**3** Set recording mode to **ASSEMBLE** by holding down ENABLE and pressing REC MODE on the Local Control Unit (LCU) until the ASSEMBLE lamp is on.

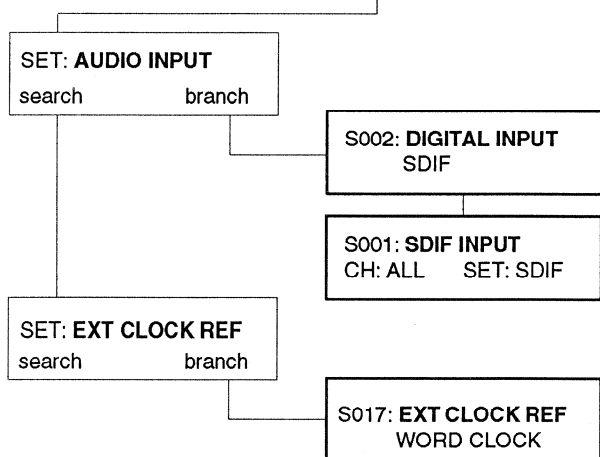
**4** Switch EXT CLK reference to **INT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **off**.

**5** Switch Advanced Output Delay **on** (key ADV OUT on Channel Remote or function setting F001) - the ADV OUT lamp is **on** (copy delay: 0 samples).

Settings recorder:

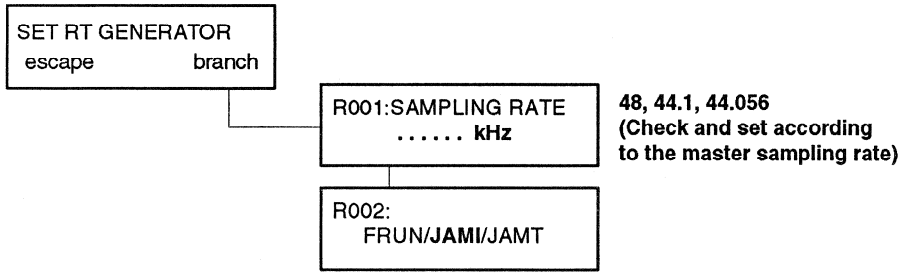
**6** Set recording mode to **NEW** by holding down ENABLE and pressing REC MODE on the Local Control Unit (LCU) until the NEW lamp is on.  
Set all audio and auxiliary tracks to **READY**.

**7** SETUP FUNCTIONS  
(escape = <- + ->)



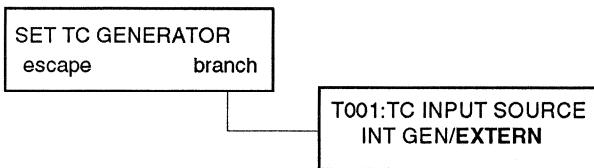
*(continued on next page)*

**8**  SET RT



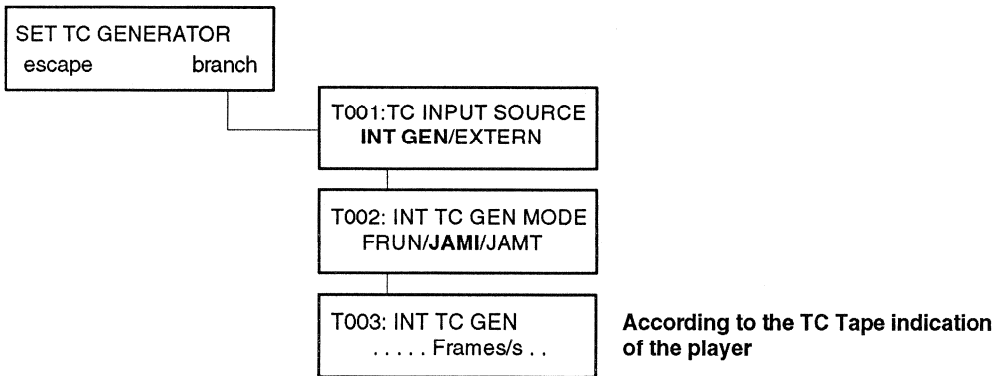
**9** If your master recorder is a D827 MCH, proceed as follows:

 SET TC



If your master recorder is a D820 MCH, or if the TC from the master is not regenerated, proceed as follows:

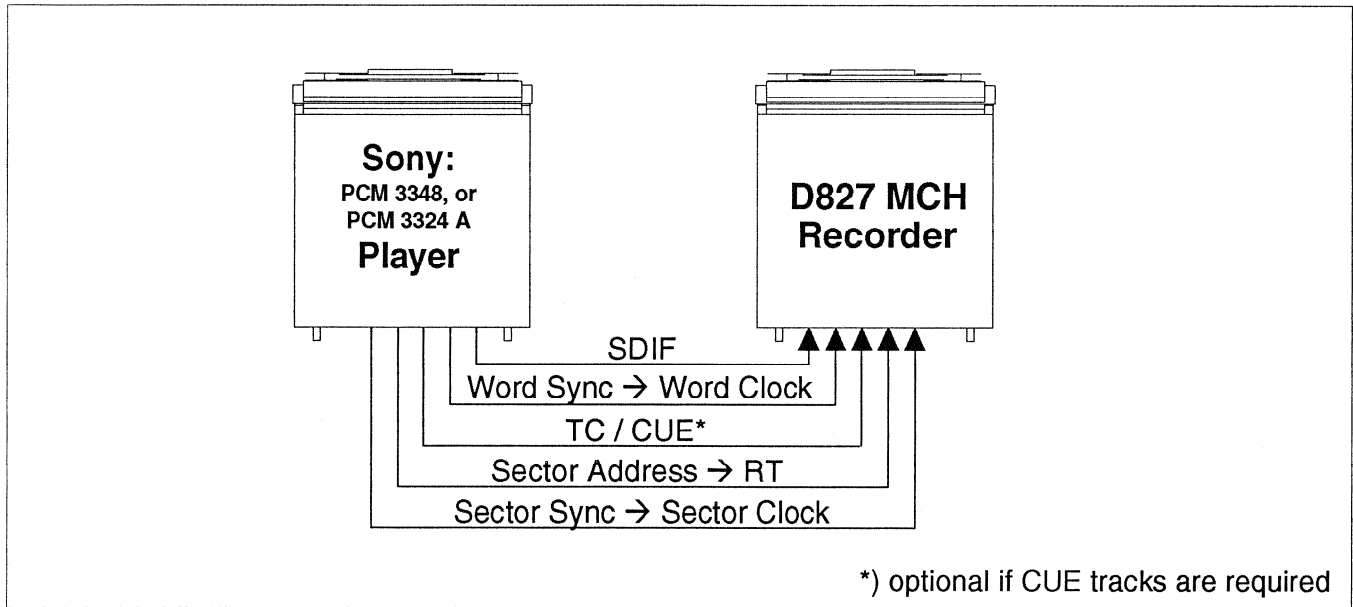
 SET TC



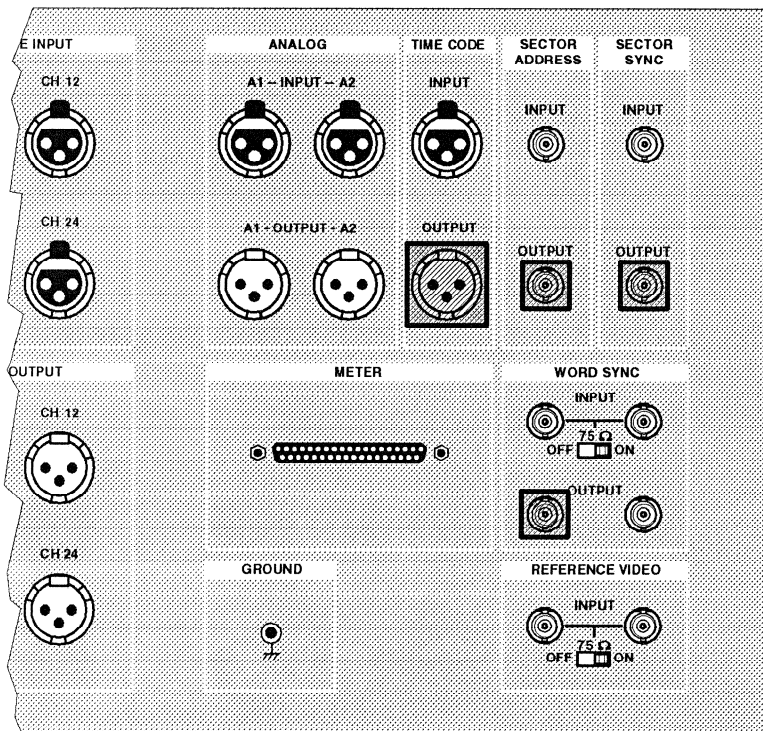
**10** Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.

**11** Cloning:  
Start first the player (PLAY), then the recorder (RECORD).

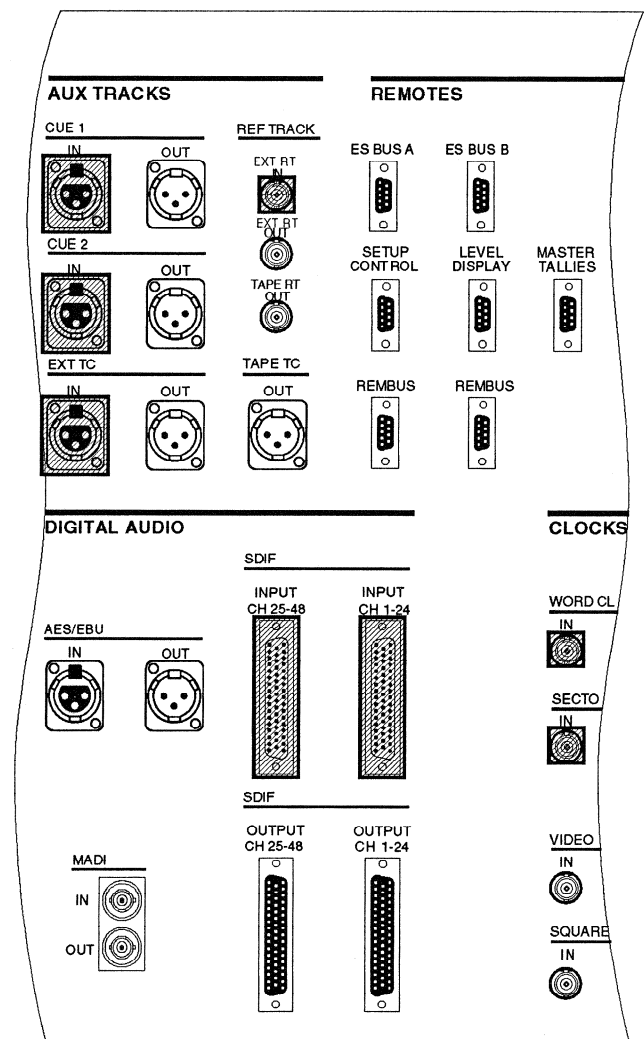
3.9 1:1 Backup Copy ("Clone") via SDIF (from Sony DTR to D827 MCH)



Connector panel player:



Connector panel recorder:



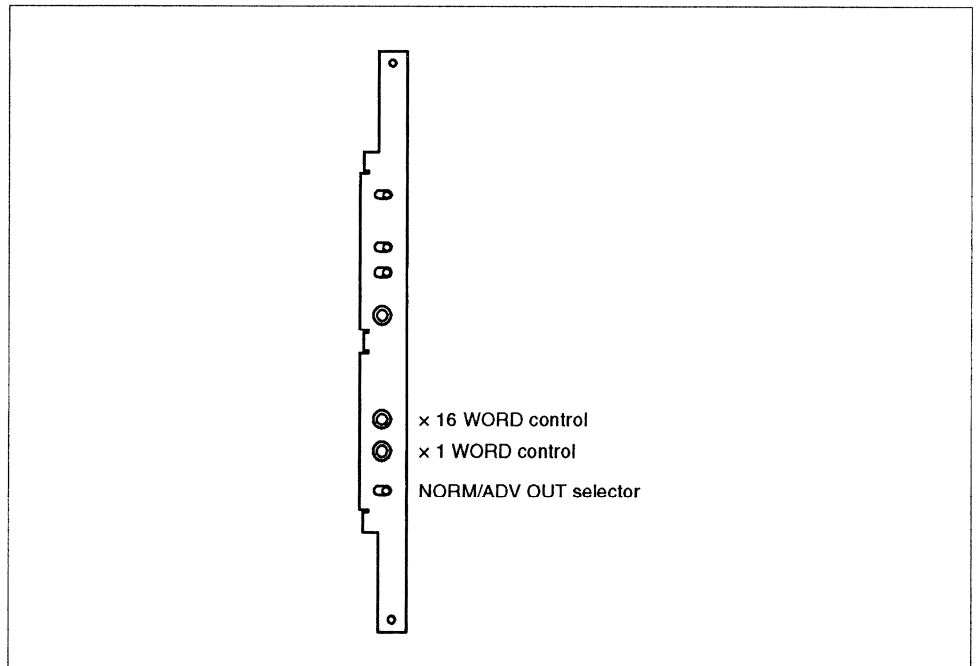
**Settings player:**

**PCM 3324 A** No special settings can be made if your master machine is a Sony PCM 3324 A, since it does not feature an advanced output.

**Note:** *There will always be a one sample delay when cloning from a PCM 3324 A!*

**PCM 3348** If your master is a Sony PCM 3348 the following settings must be performed:

- Switch the recorder off.
- Locate the ED-1 board.



- Set the NORM/ADV OUT selector on the front of the ED-1 board to the ADV OUT position.
- Set a delay of 47 samples (2F in hexadecimal notation) by means of the two rotary switches located at the front of the ED-1 board as follows:  
Upper rotary switch ("x 16 WORD control") to position **2**  
Lower rotary switch ("x 1 WORD control") to position **F**.
- Copy delay: 0 samples

**Settings recorder:** (2 different possibilities)

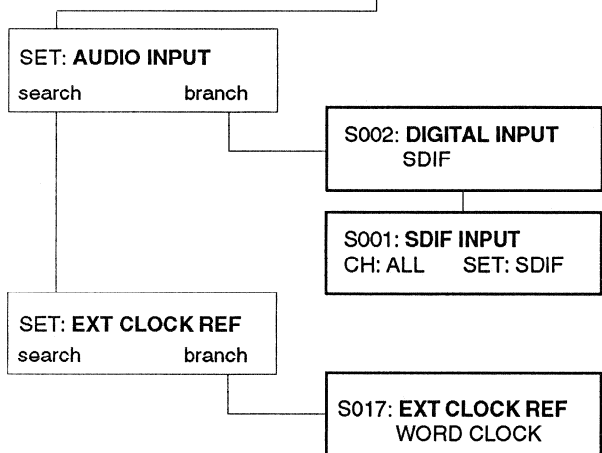
**A: Clone does not have to be sample-accurate**

*(used as a backup only):*

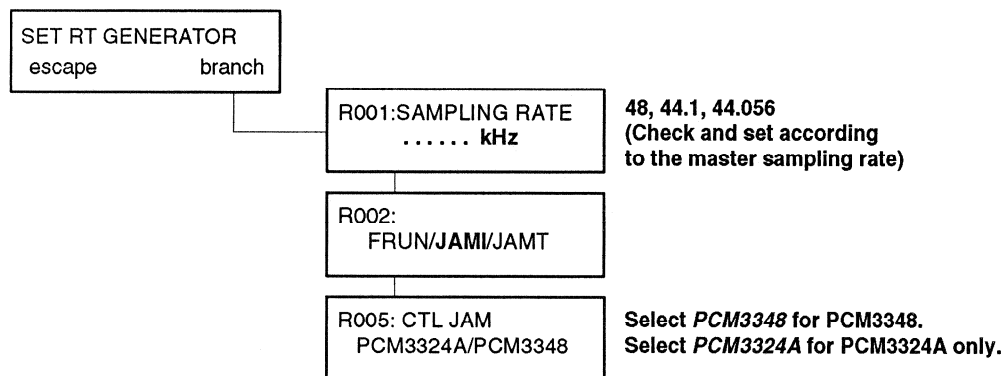
- 1** Set recording mode to NEW by holding down ENABLE and pressing REC MODE on the Local Control Unit (LCU) until the NEW lamp is on. Set all audio and auxiliary tracks to READY.
- 2** Make sure that the ADVANCED OUTPUT is switched OFF.

*(continued on next page)*

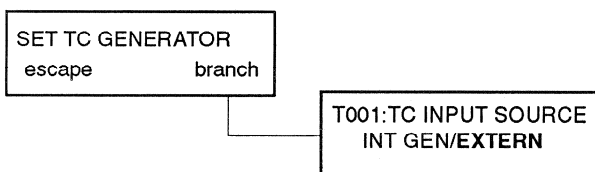
**3** SETUP FUNCTIONS  
(escape = < - + ->)



**4**  SET RT



**5**  SET TC



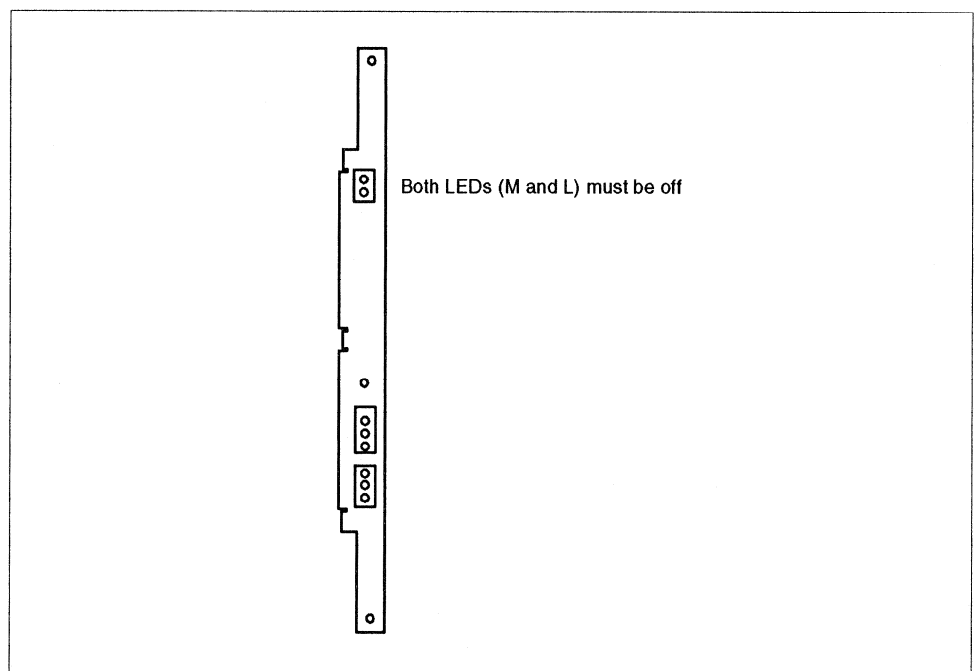
- 6** Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.
- 7** Cloning:  
Start first the player (PLAY), then the recorder (RECORD).



**B: Clone must be sample-accurate**

*(will be used for synchronization purposes in the future):*

- Prepare the recorder according to steps **1** to **6** above.
- 7** In stand-alone operation the Sony machine will lock itself to any of the four block phases within a sector (1 block phase  $\cong$  12 samples). This means that there can be a different phase relation between Sector Sync and audio every time the machine is put into PLAY from STOP. Since there is no way to force the master machine into a specific block phase via a control input, it must be accomplished manually. In order to be sample-accurate, the machine has to be forced to block phase 0/0 as follows:  
The block phase is indicated by means of two LEDs (M and L) on the CTL board in the Sony machines. The machine is locked to phase 0/0 when both LEDs are off. This can be achieved by repeated STOP-PLAY-STOP commands while watching the LED indicators on the CTL board.



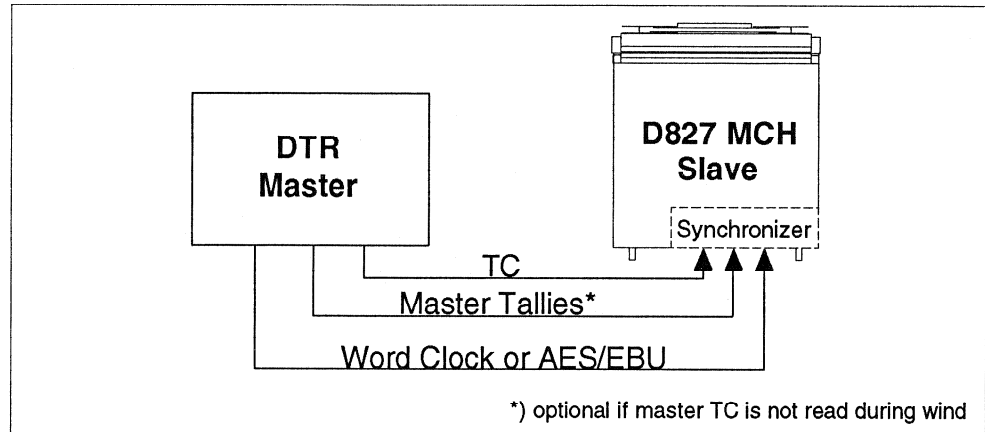
A faster way to force the machine to the desired block phase 0/0 is by briefly slowing down the machine by touching the search knob on the machine while paying attention to the LEDs mentioned above.

- 8** As in step **7** above, once the master machine is locked to block phase 0/0 the slave recorder can be started and switched to RECORD mode.

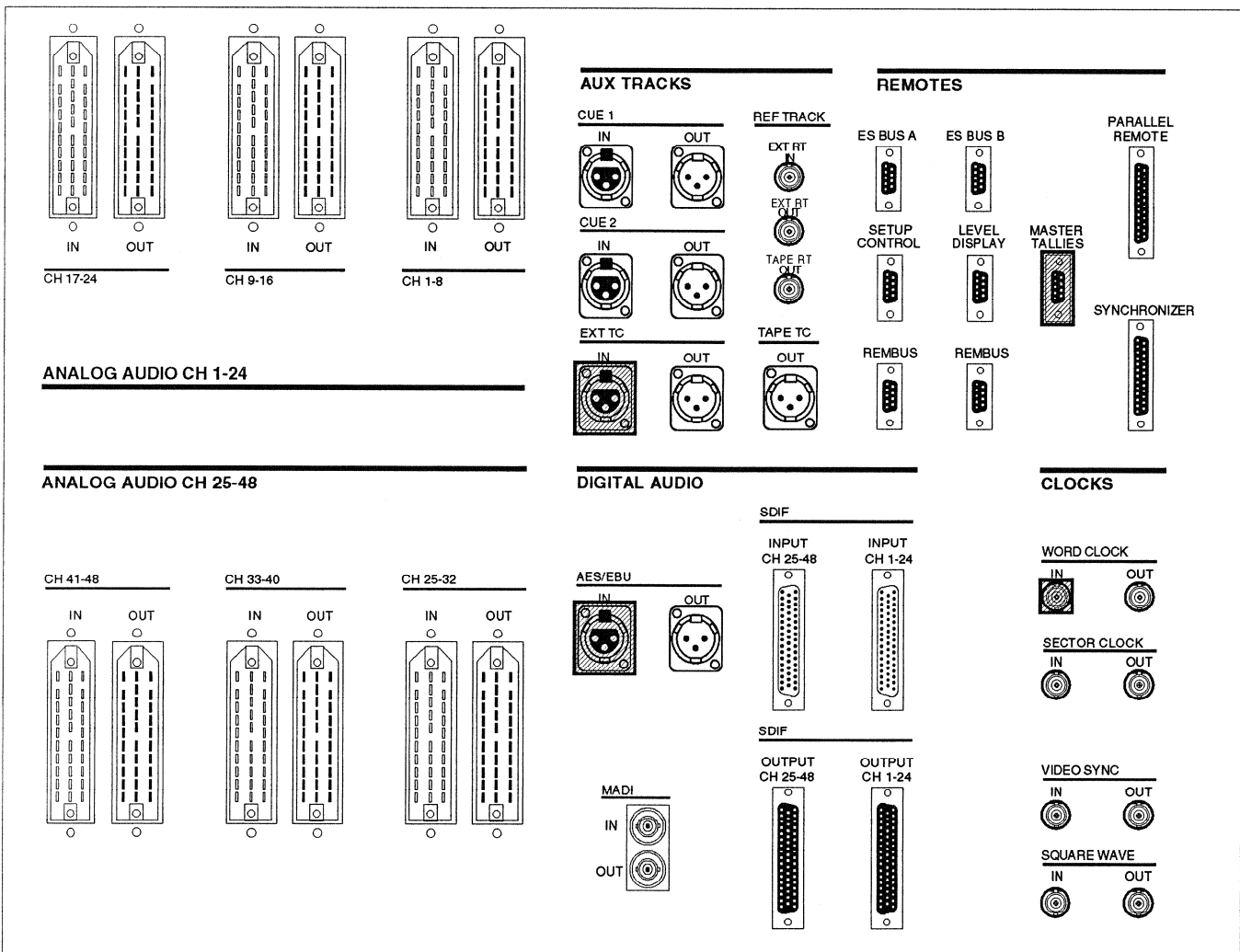
4 Synchronization Applications

4.1 DTR - DTR, Word Clock or AES/EBU Sync (with internal synchronizer)

Master: Any digital tape recorder (DTR)  
 Slave: D827 MCH  
 Sync source: Time code and word clock or AES/EBU

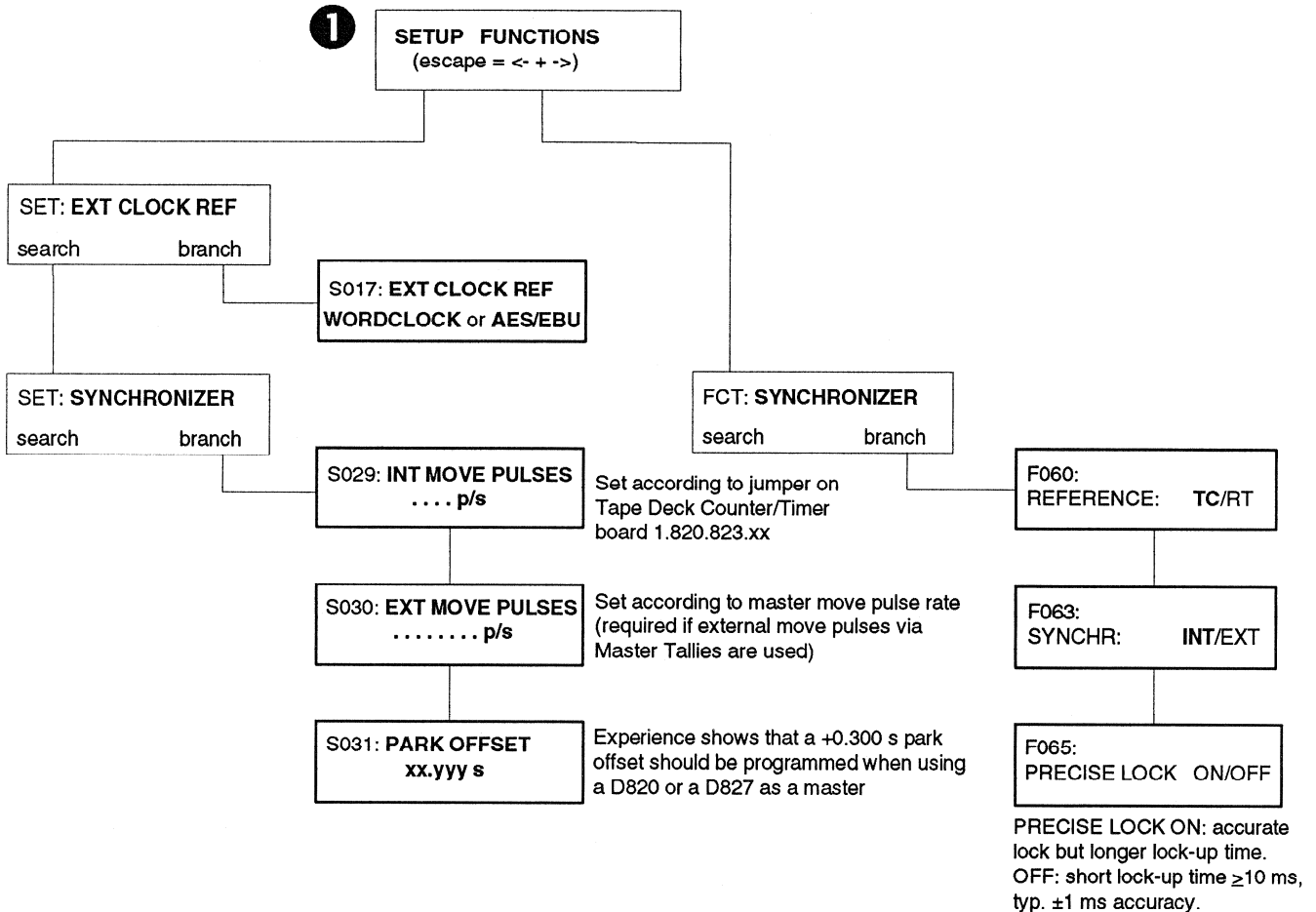


Connector panel D827 MCH:



**Note: To control the slave's internal synchronizer, the remote control (Autolocator) is required!**

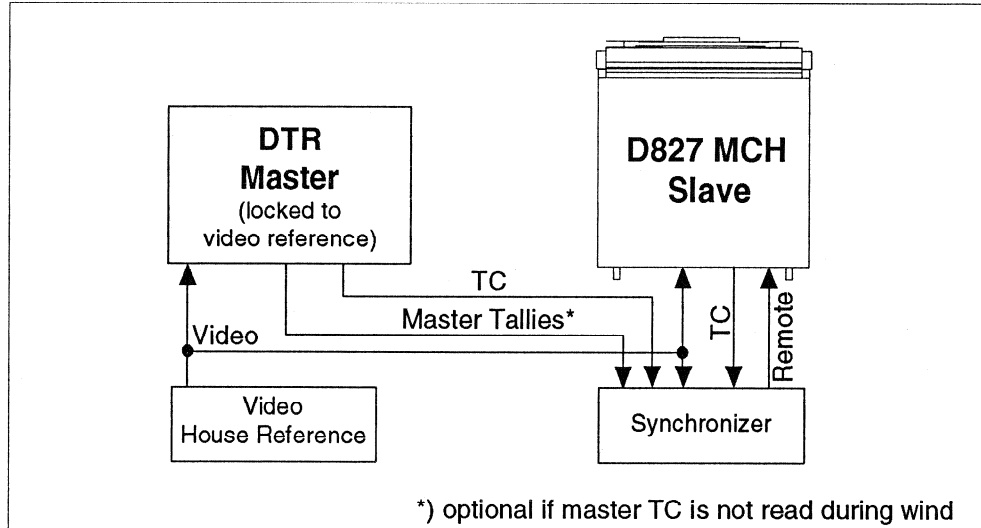
**Settings slave (D827 MCH):**



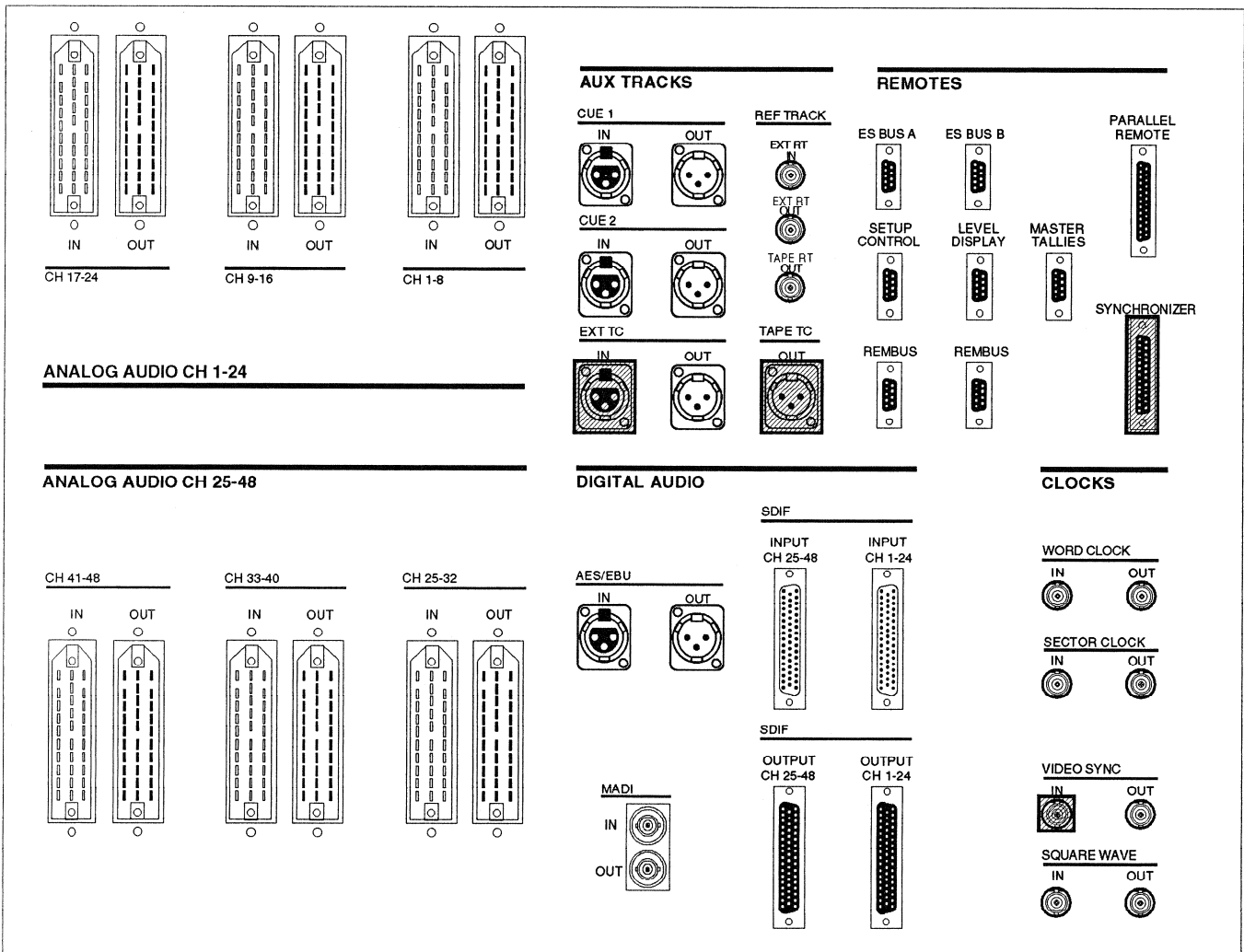
- 2** Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.
- 3** Switch TC LOCK **off** by pressing the TC LOCK key on the CHANNEL REMOTE or via the functions menu (FUNCTIONS: TC LOCK, F064) - the TC LOCK lamp is **off**.
- 4** Switch AOR (automatic offset retention) **off** by pressing the AOR key on the Autolocator, the AOR lamp is **off**. *If TC jumps must be rejected, the AOR function (and the AOR lamp) must be on in that case.*
- 5** Disable the Offset Register by pressing ENABLE (ENABLE LED **off**), if no offset is required.  
Else, store the offset if required, and enable the Offset Register by pressing ENABLE - the ENABLE lamp is **on**. Press the LOCK key on the Autolocator - the LOCK lamp is **on**,  
or  
Lock master and slave at the current position (offset) by pressing the INST LOCK key on the Autolocator - the INST LOCK lamp is **on**. The Offset Register will be set and enabled automatically.

4.2 DTR - DTR, with External Synchronizer (Video Sync)

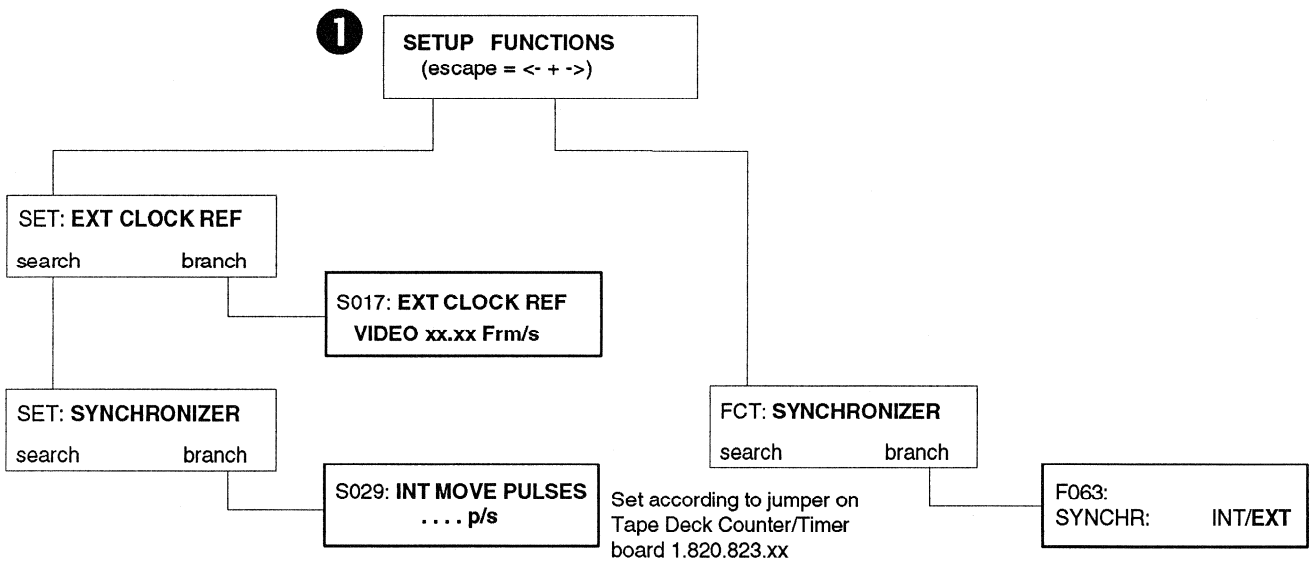
Master: Any digital tape recorder (DTR)  
 Slave: D827 MCH  
 Sync source: Time code, video sync



Connector panel D827 MCH:



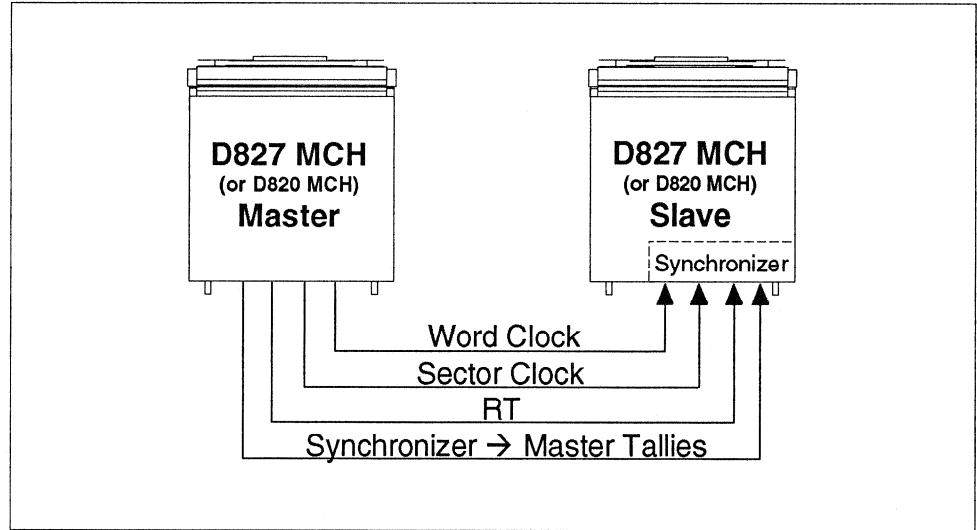
## Settings slave (D827 MCH):



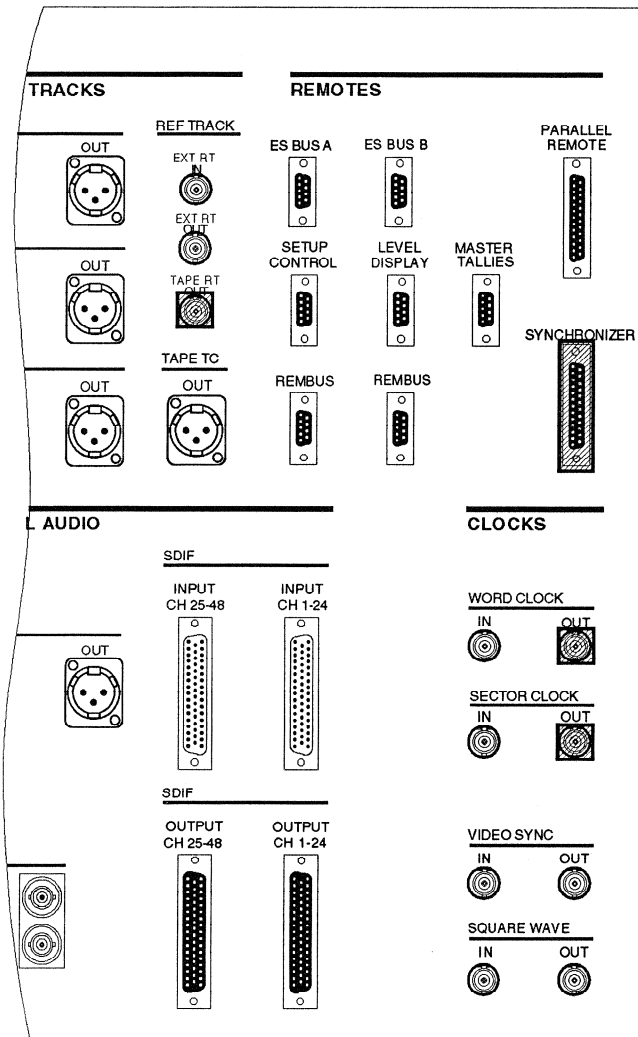
- 2** Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.
- 3** Set up external synchronizer for D827 MCH control. Press PLAY on both master and D827 MCH to allow the synchronizer to read code. Some synchronizers have an ATR as well as a DTR mode. ATR mode does not release the capstan reference after achieving synchronism, whereas DTR mode releases the external varispeed). For better audio performance use DTR mode.
- 4** Switch TC LOCK **off** by pressing the TC LOCK key on the CHANNEL REMOTE or via the functions menu (FUNCTIONS: TC LOCK, F064) - the TC LOCK lamp is **off**.  
TC LOCK off is the normal mode and the digital outputs can be used. TC LOCK on will vary the clock during the chase phase. The digital output is noisy during this period. The analog outputs, however, will demute earlier.
- 5** Press LOCK or ON LINE on the synchronizer.

4.3 DTR - DTR, DASH-Lock Between two Studer DTRs

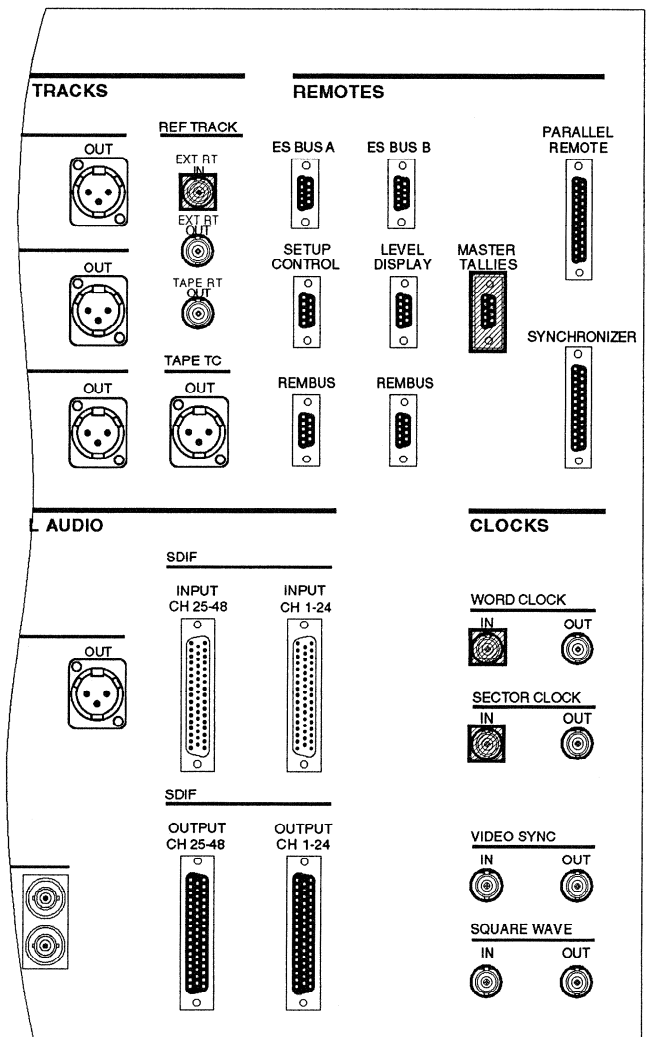
**Master:** Any Studer DASH recorder (D820 MCH, D827 MCH)  
**Slave:** D827 MCH (or D820 MCH)  
**Sync source:** DASH lock (RT and Word Clock)



Connector panel master (D827 MCH):

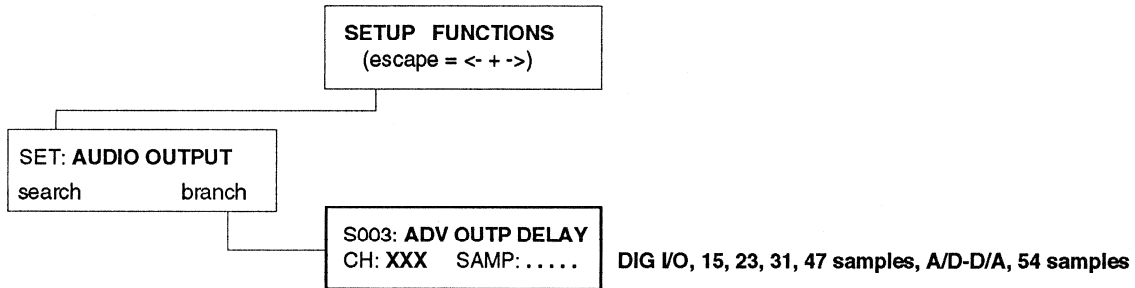


Connector panel slave (D827 MCH):



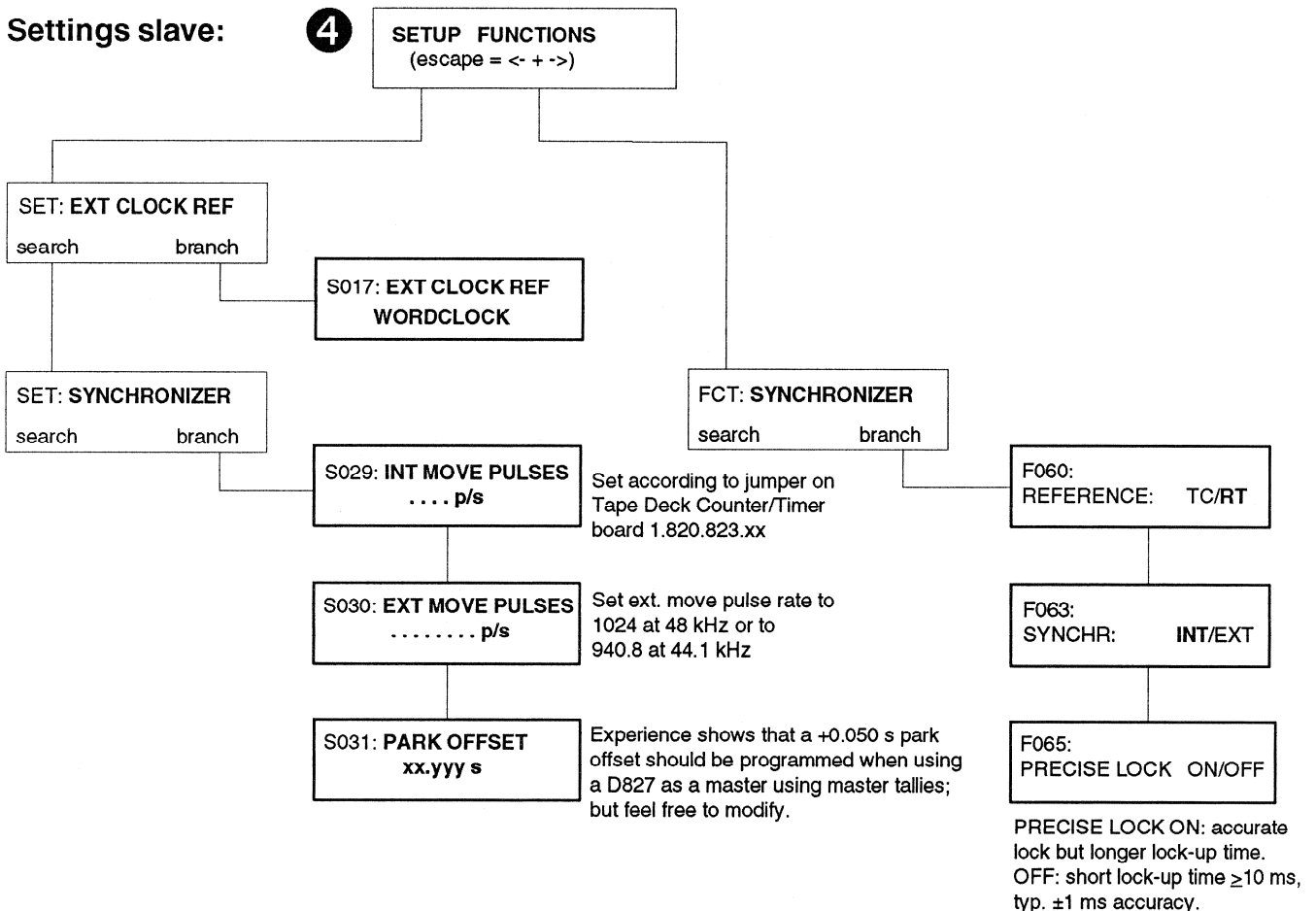
**Note:** To control the slave's internal synchronizer, the remote control (Autolocator) is required!

- Settings master:**
- 1 Switch advanced output delay **on** (key ADV OUT on Channel Remote or function setting F001) - the ADV OUT lamp is **on**.
  - 2 Select the appropriate "negative" delay time according to your application (e.g. for digital transfer only set it to "DIG I/O" as follows):



- 3 Switch EXT CLK reference to **INT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **off**.

**Settings slave:**



- 5 Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.

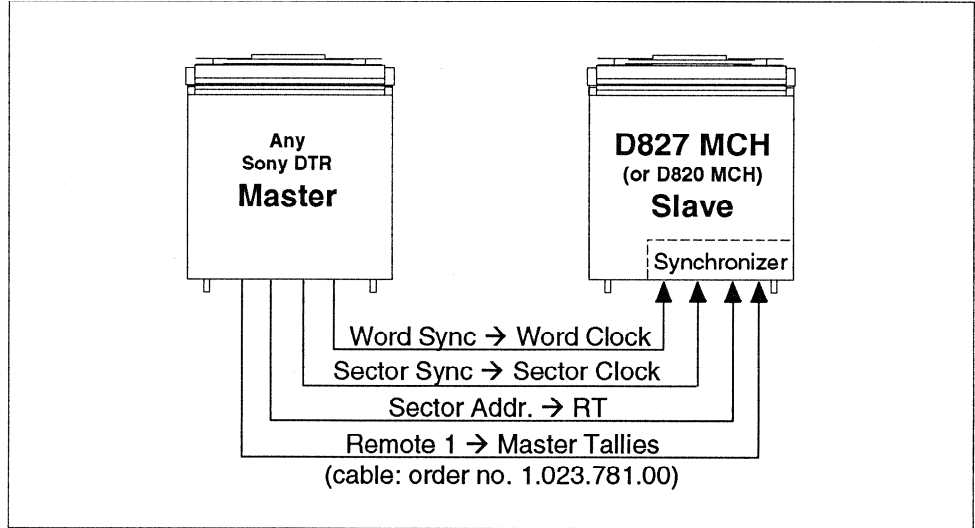
*(continued on next page)*

- ⑥ Switch AOR (automatic offset retention) **off** by pressing the AOR key on the Autolocator, the AOR lamp is **off**. *If RT jumps must be rejected, the AOR function (and the AOR lamp) must be on in that case.*
  
- ⑦ Store an offset at the Autolocator if required and enable the Offset Register by pressing ENABLE - the ENABLE lamp is **on**. Press the LOCK key on the Autolocator - the LOCK lamp is **on**,  
or  
Lock master and slave at the current position (offset) by pressing the INST LOCK key on the Autolocator - the INST LOCK lamp is **on**. The Offset Register will be set and enabled automatically.

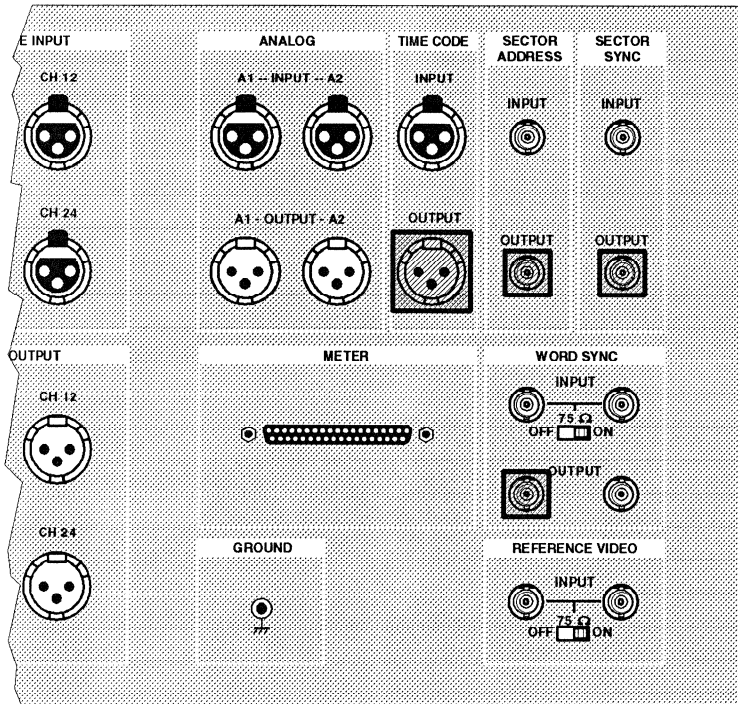


4.4 DASH-Lock Between Sony DTR and Studer D827 MCH

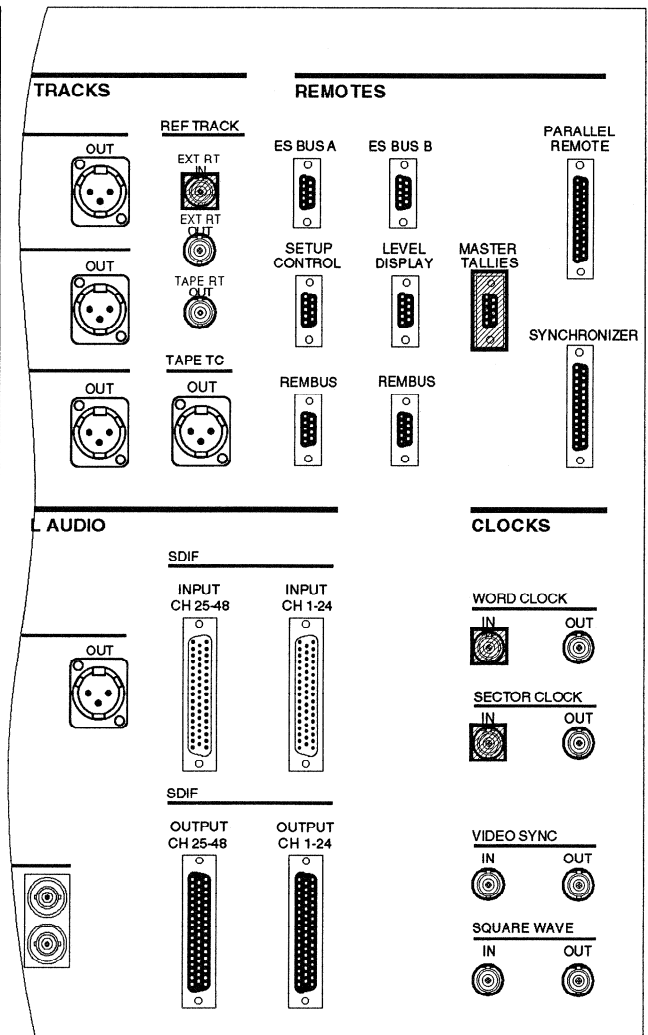
Master: Any Sony DASH recorder (PCM 3348, PCM 3324 S, or PCM 3324 A)  
 Slave: D827 MCH (or D820 MCH)  
 Sync source: DASH lock (RT and Word Clock)



Connector panel master (Sony):



Connector panel slave (D827 MCH):



**Note: To control the slave's internal synchronizer, the remote control (Autolocator) is required!**

**Settings master** (refer to the illustrations in section 3.9):

**PCM 3324 A** No special settings can be made if your master machine is a *Sony PCM 3324 A*, since it does not feature an advanced output.

**Note:** There will be a one sample delay of the *PCM 3324 A* digital output when DASH-locking from a *PCM 3324 A*! (1 sample  $\approx 22 \mu\text{s}$   $\approx$  sound travel by air approx. 7 mm)

**PCM 3324 S** If your master is a *Sony PCM 3324 S* the following settings must be performed:

- Switch the recorder off.
- Locate the ED Board and remove it from the recorder.
- Set the NORM/ADV OUT selector on the front of the ED board to the ADV OUT position.
- Set the DIP switches of S4 on the ED board to the following position for a delay of 14 samples (0E in hexadecimal notation):

| DIP Switch | Setting | Result |
|------------|---------|--------|
| 1          | OFF     | E      |
| 2          | ON      |        |
| 3          | ON      |        |
| 4          | ON      |        |
| 5          | OFF     | 0      |
| 6          | OFF     |        |
| 7          | OFF     |        |
| 8          | OFF     |        |

- Reinsert the ED board and switch the recorder on.

**Note:** The digital outputs are time-aligned; 0 samples delay.

**PCM 3348** If your master is a *Sony PCM 3348* the following settings must be performed:

- Switch the recorder off.
- Locate the ED-1 board.
- Set the NORM/ADV OUT selector on the front of the ED-1 board to the ADV OUT position.
- Set a delay of 14 samples (0E in hexadecimal notation) by means of the two rotary switches located at the front of the ED-1 board as follows:

Upper rotary switch ("x 16 WORD control") to position **0**.

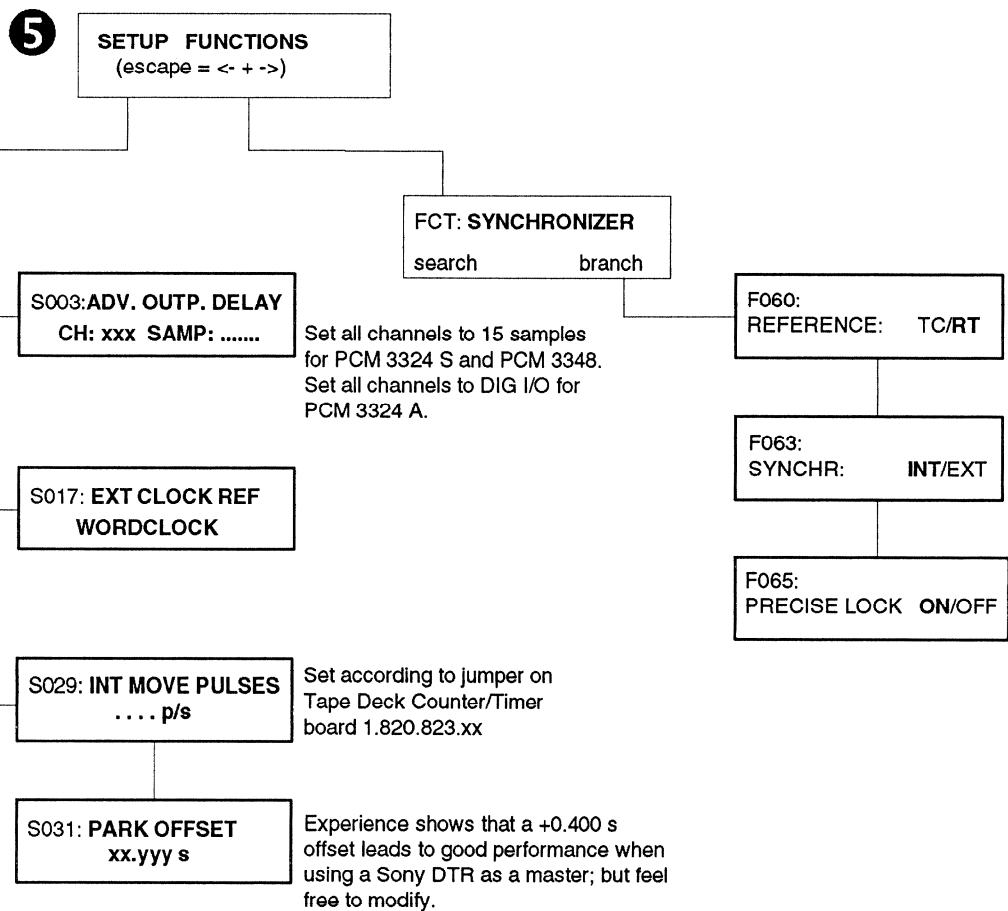
Lower rotary switch ("x 1 WORD control") to position **E**.

**Note:** The digital outputs are time-aligned; 0 samples delay.

(continued on next page)

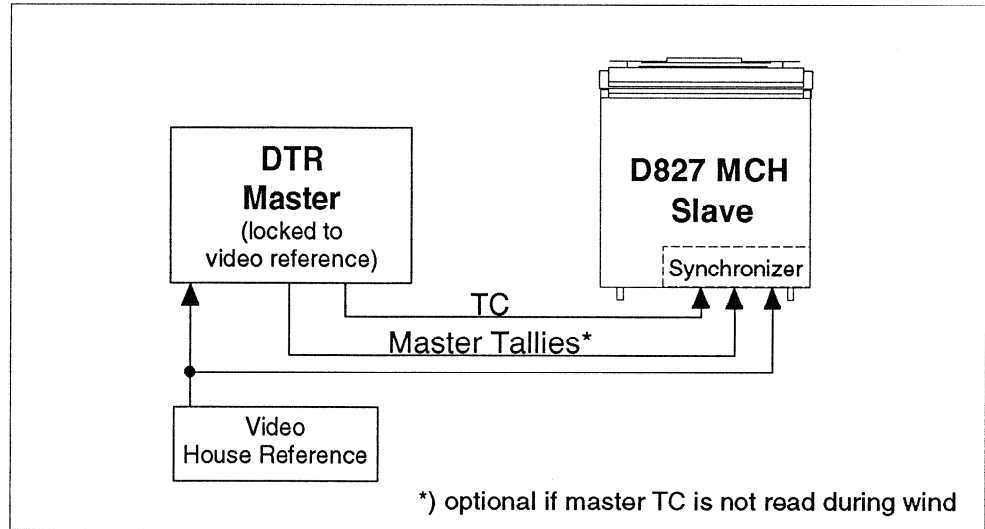
Settings slave:

- 1 Switch on advanced output delay (ADV OUT key on Channel Remote or function setting F001) - the ADV OUT lamp is **on**.
- 2 Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.
- 3 Switch AOR (automatic offset retention) **off** by pressing the AOR key on the Autolocator, the AOR lamp is **off**.
- 4 Store an offset at the Autolocator if required and enable the Offset Register by pressing ENABLE - the ENABLE lamp is **on**. Press the LOCK key on the Autolocator - the LOCK lamp is **on**.

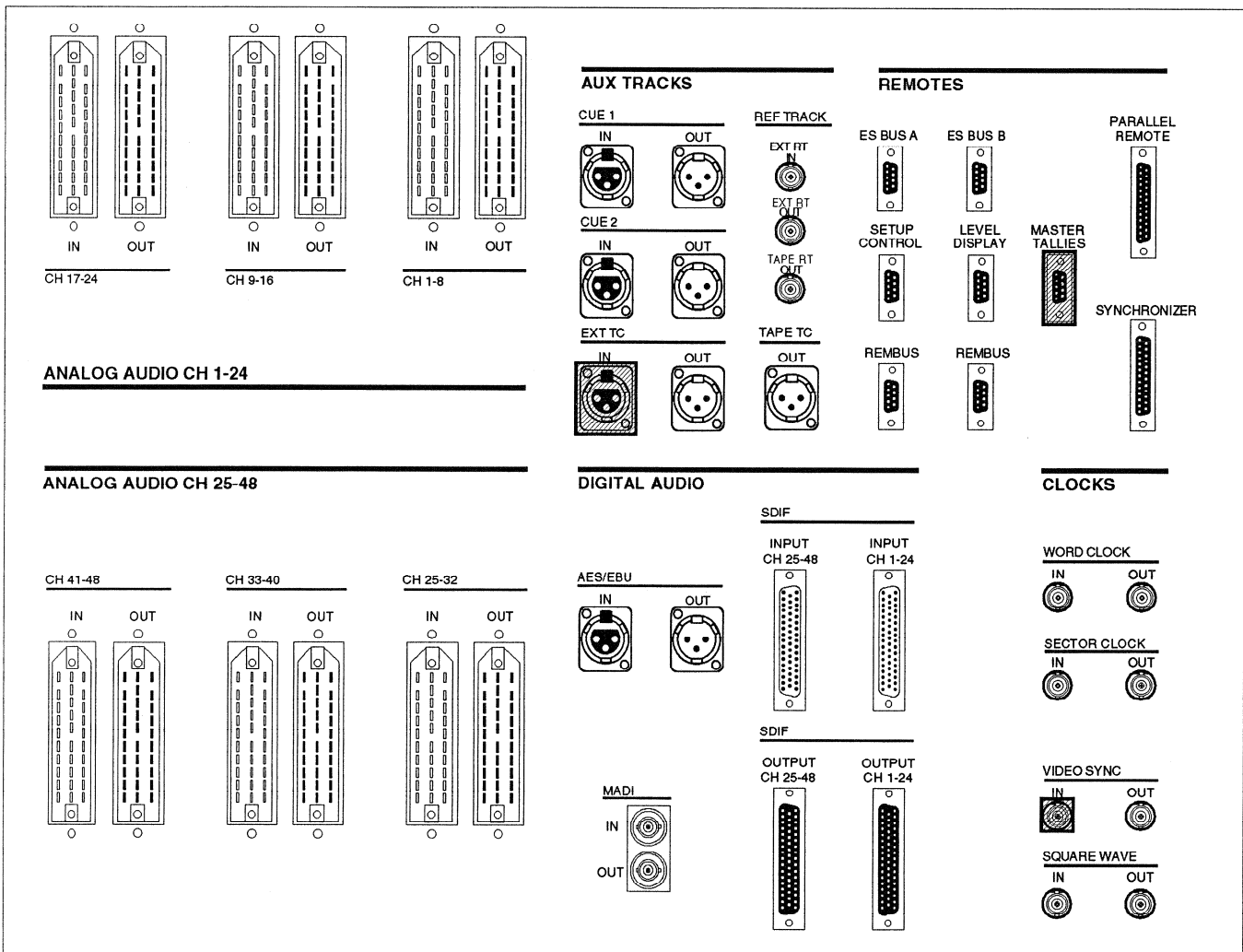


4.5 DTR - DTR, Video Sync

Master: Any digital tape recorder (DTR)  
 Slave: D827 MCH  
 Sync source: TC and video house reference

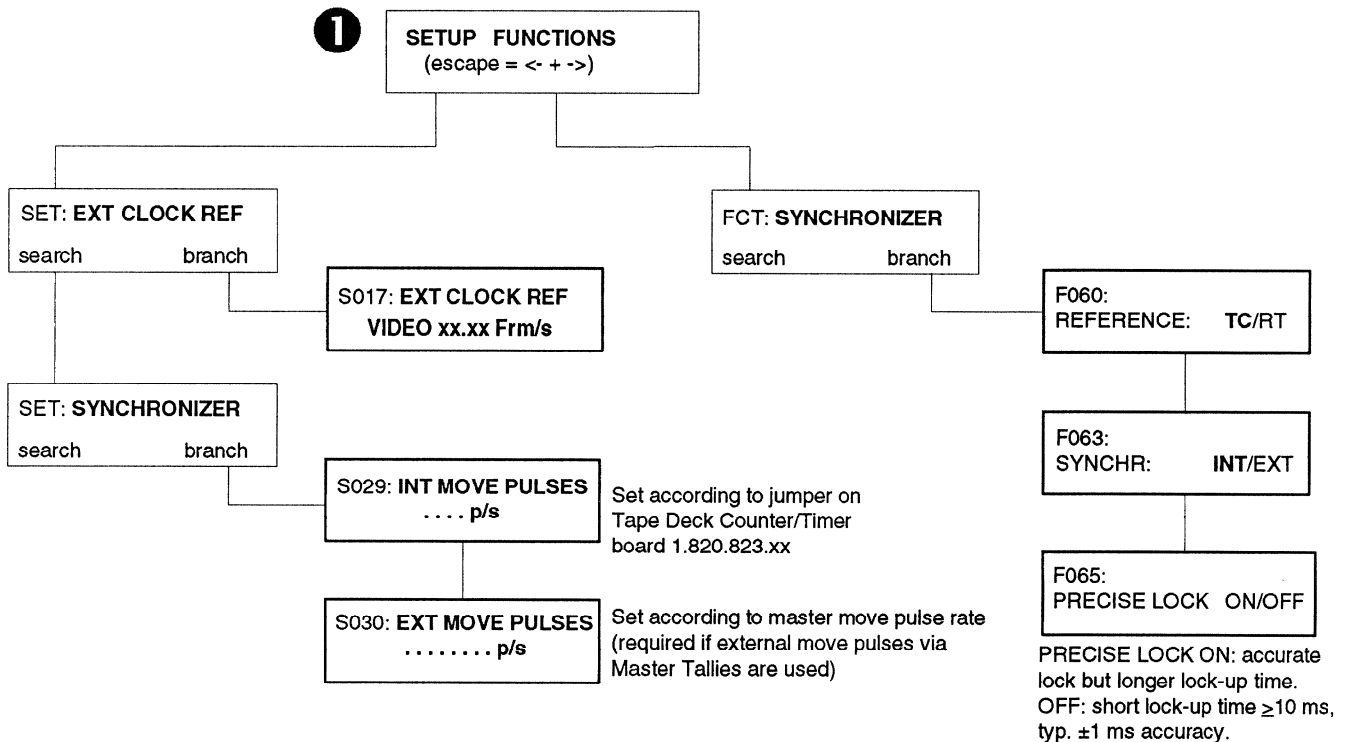


Connector panel D827 MCH:



**Note: To control the slave's internal synchronizer, the remote control (Autolocator) is required!**

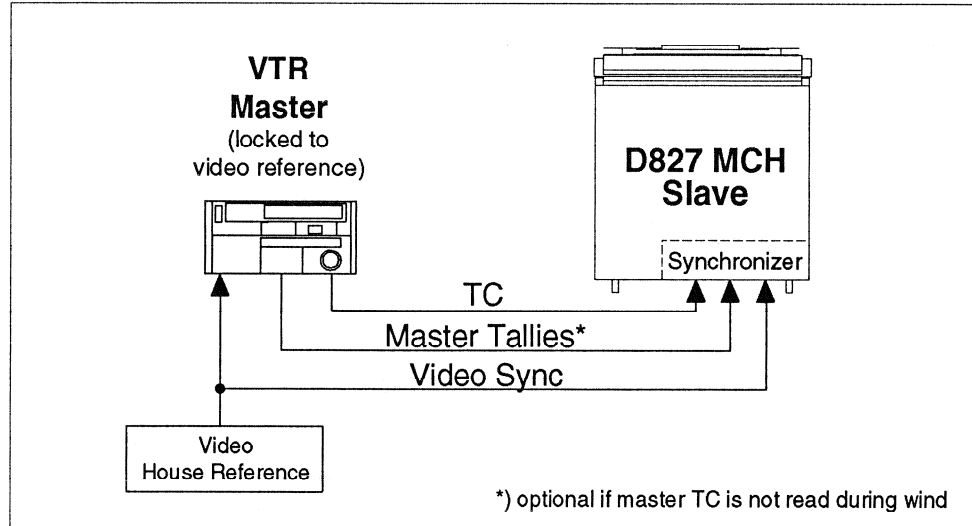
Settings slave (D827 MCH):



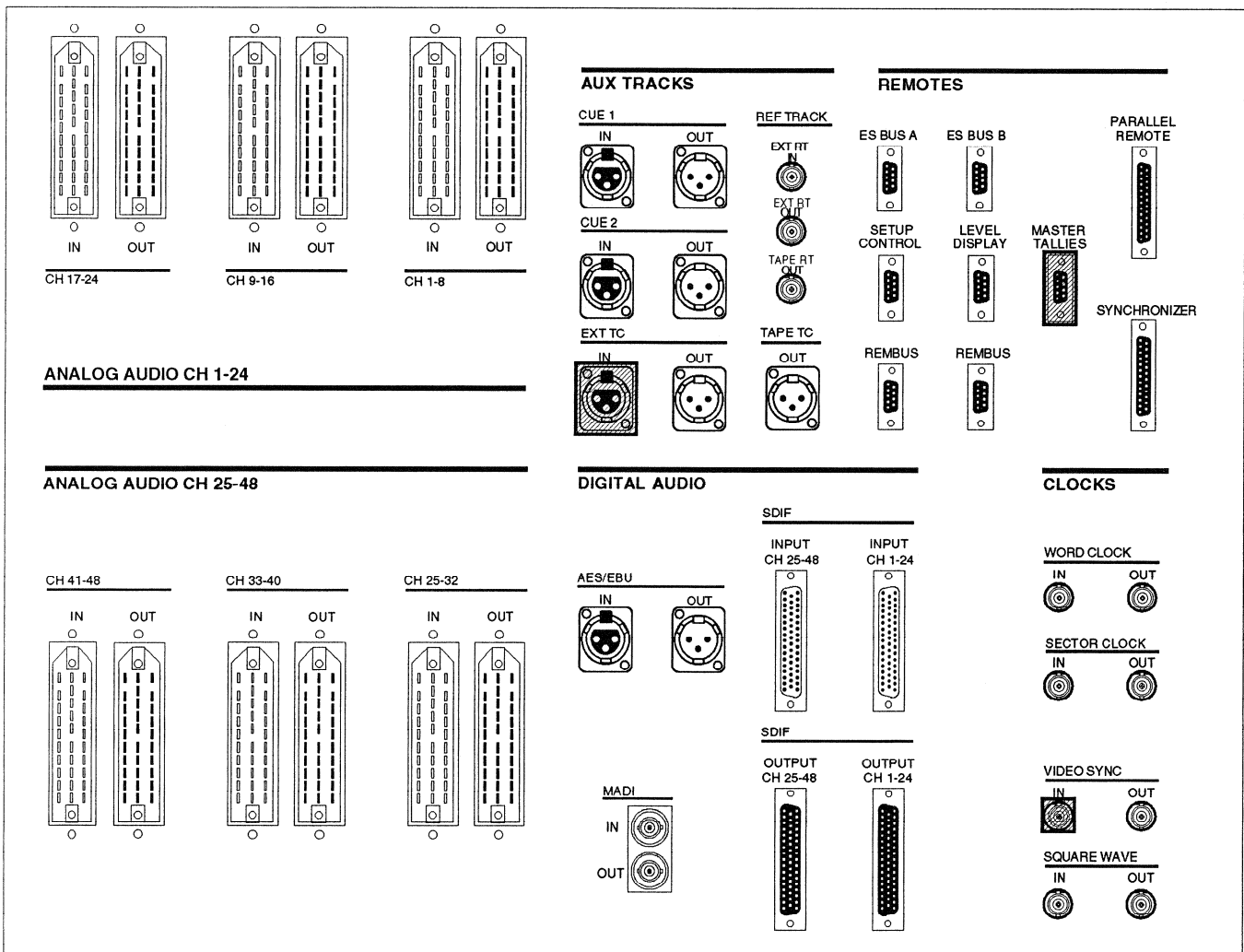
- 2** Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on** or **flashing**.
- 3** Switch TC LOCK **off** by pressing the TC LOCK key on the CHANNEL REMOTE or via the functions menu (FUNCTIONS: TC LOCK, F064) - the TC LOCK lamp is **off**.
- 4** Switch AOR (automatic offset retention) **off** by pressing the AOR key on the Autolocator, the AOR lamp is **off**. *If TC jumps must be rejected, the AOR function (and the AOR lamp) must be on in that case.*
- 5** Store the offset, if required, at the Autolocator and enable the Offset Register by pressing ENABLE - the ENABLE lamp is **on**. Press the LOCK key on the Autolocator - the LOCK lamp is **on**,  
or  
Lock master and slave at the current position (offset) by pressing the INST LOCK key on the Autolocator - the INST LOCK lamp is **on**. The Offset Register will be set and enabled automatically.

4.6 VTR - DTR, Video Sync

Master: Video tape recorder (VTR)  
 Slave: D827 MCH  
 Sync source: TC and video house reference

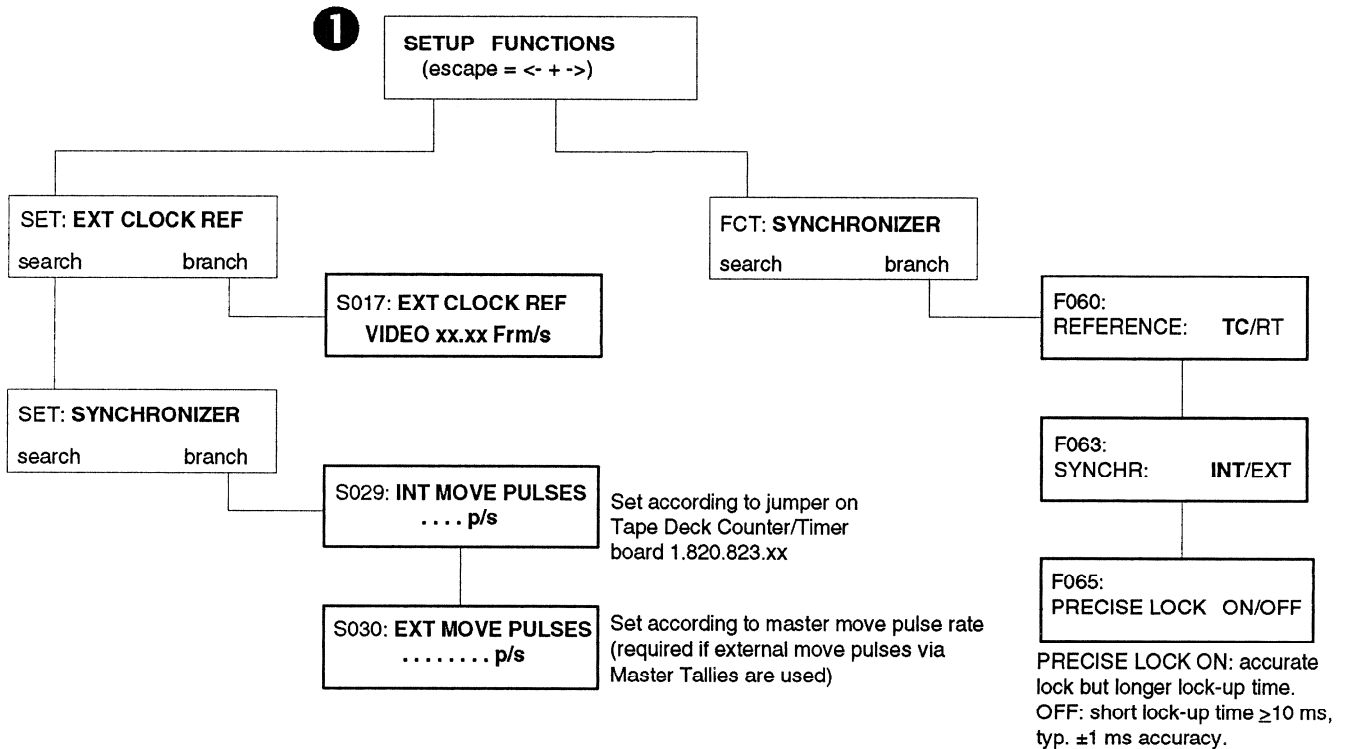


Connector panel D827 MCH:



**Note: To control the slave's internal synchronizer, the remote control (Autolocator) is required!**

Settings slave (D827 MCH):

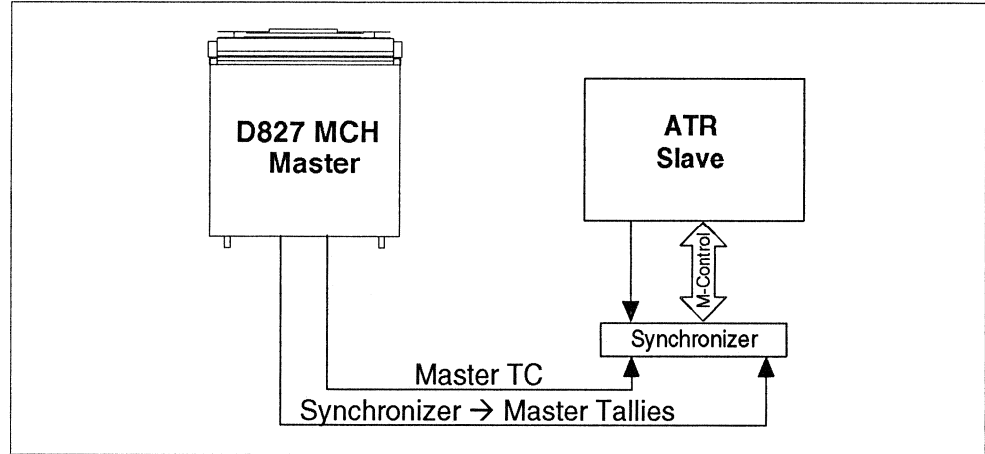


- 2 Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.
- 3 Switch TC LOCK **off** by pressing the TC LOCK key on the CHANNEL REMOTE or via the functions menu (FUNCTIONS: TC LOCK, F064) - the TC LOCK lamp is **off**.
- 4 Switch AOR (automatic offset retention) **off** by pressing the AOR key on the Autolocator, the AOR lamp is **off**. *If TC jumps must be rejected, the AOR function (and the AOR lamp) must be **on** in that case.*
- 5 Store the offset, if required, at the Autolocator and enable the Offset Register by pressing ENABLE - the ENABLE lamp is **on**. Press the LOCK key on the Autolocator - the LOCK lamp is **on**,  
or  
Lock master and slave at the current position (offset) by pressing the INST LOCK key on the Autolocator - the INST LOCK lamp is **on**. The Offset Register will be set and enabled automatically.

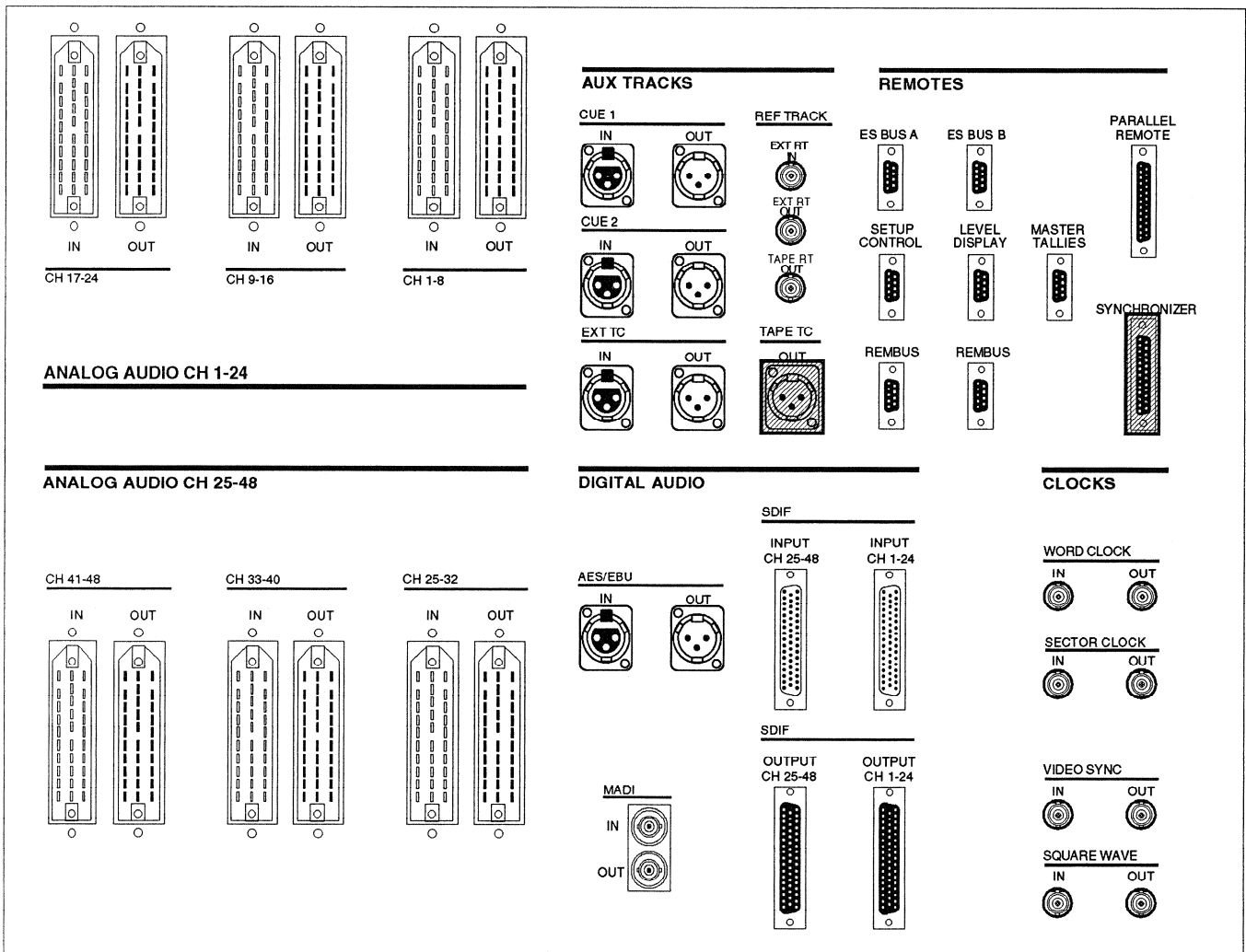
4.7 DTR - ATR, TC Sync

*It is recommended to use the DTR as master even if you copy from the ATR to the DTR (also refer to 4.9).*

Master: D827 MCH  
 Slave: Analog tape recorder (ATR)  
 Sync source: TC



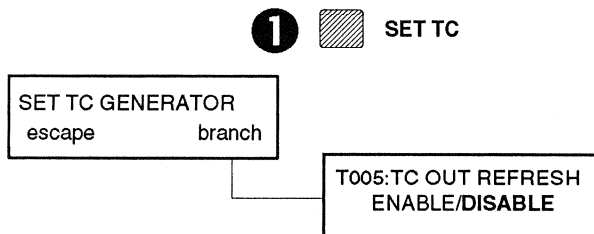
Connector panel D827 MCH:





**Settings master (D827 MCH):**

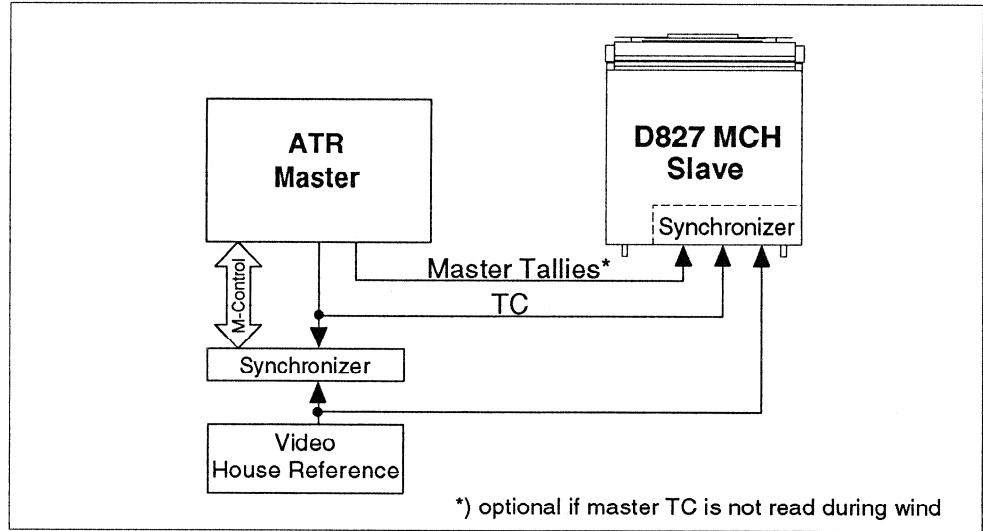
Some synchronizers may have difficulties with TC OUT REFRESH "enabled". Should this be the case it is recommended to use the Master Tallies instead, together with time code in TC OUT REFRESH "disabled" mode. Set as follows:



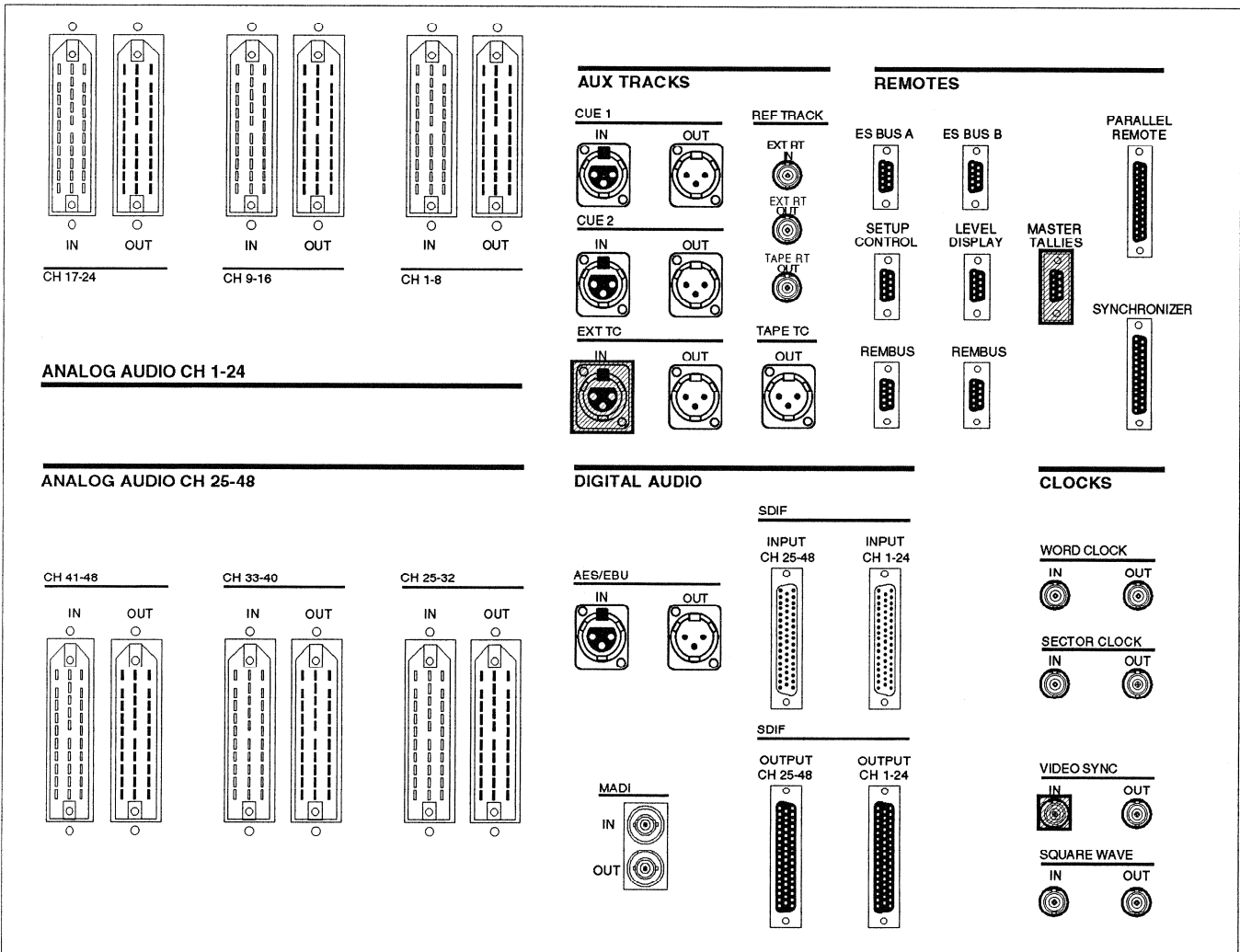
- 2** Switch EXT CLK reference to **INT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **off**.

4.8 ATR - DTR, Video Sync

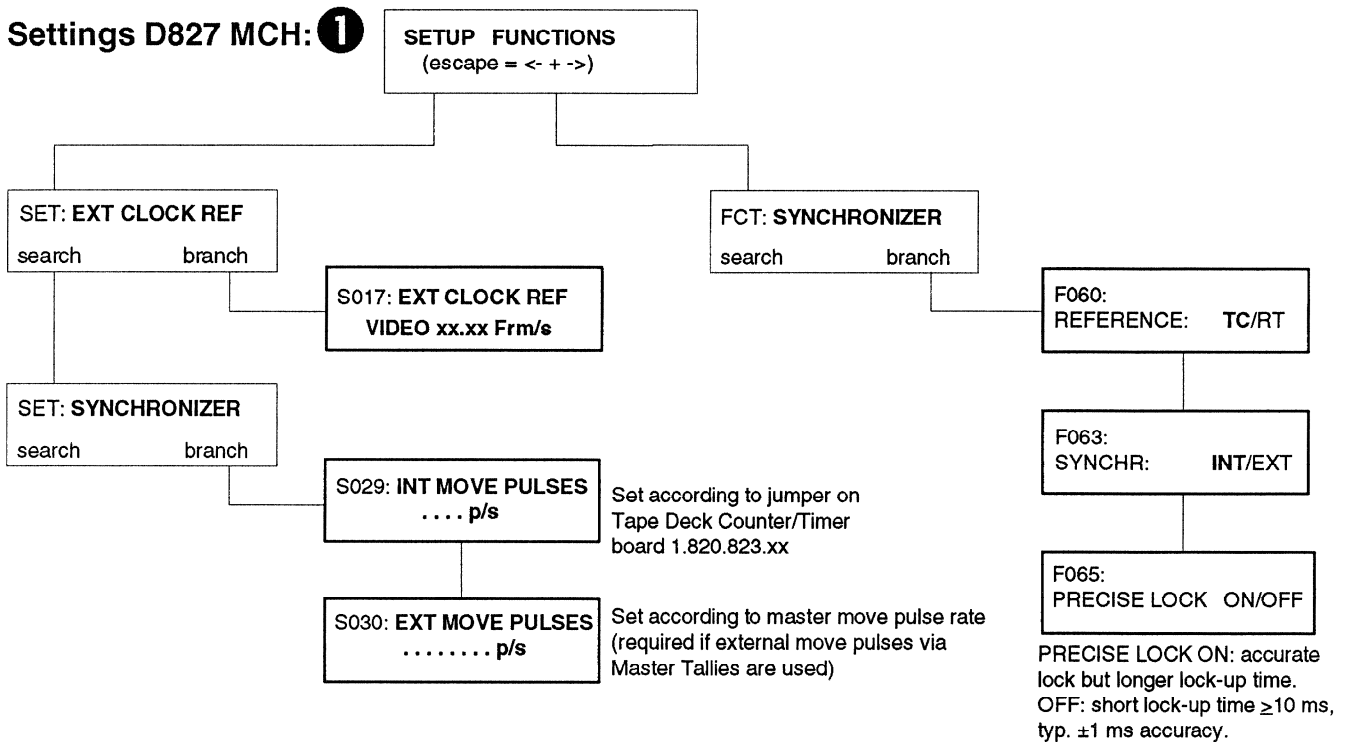
Master: Analog tape recorder (ATR) resolved to video clock  
 Slave: D827 MCH  
 Sync source: Video house reference



Connector panel D827 MCH:



Note: To control the slave's internal synchronizer, the remote control (Autolocator) is required!



- ② Switch EXT CLK reference to **EXT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **on**.
- ③ Switch TC LOCK **off** by pressing the TC LOCK key on the CHANNEL REMOTE or via the functions menu (FUNCTIONS: TC LOCK, F064) - the TC LOCK lamp is **off**.
- ④ Switch AOR (automatic offset retention) **off** by pressing the AOR key on the Autolocator, the AOR lamp is **off**. *If TC jumps must be rejected, the AOR function (and the AOR lamp) must be on in that case.*
- ⑤ Store the offset, if required, at the Autolocator and enable the Offset Register by pressing ENABLE - the ENABLE lamp is **on**. Press the LOCK key on the Autolocator - the LOCK lamp is **on**,  
or  
Lock master and slave at the current position (offset) by pressing the INST LOCK key on the Autolocator - the INST LOCK lamp is **on**. The Offset Register will be set and enabled automatically.

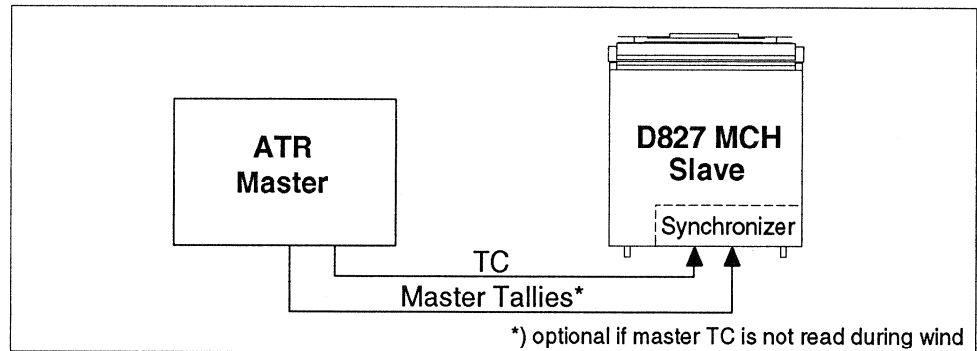
4.9 ATR - DTR, TC Sync

**Master:** Analog tape recorder (ATR); *not recommended (see below)*

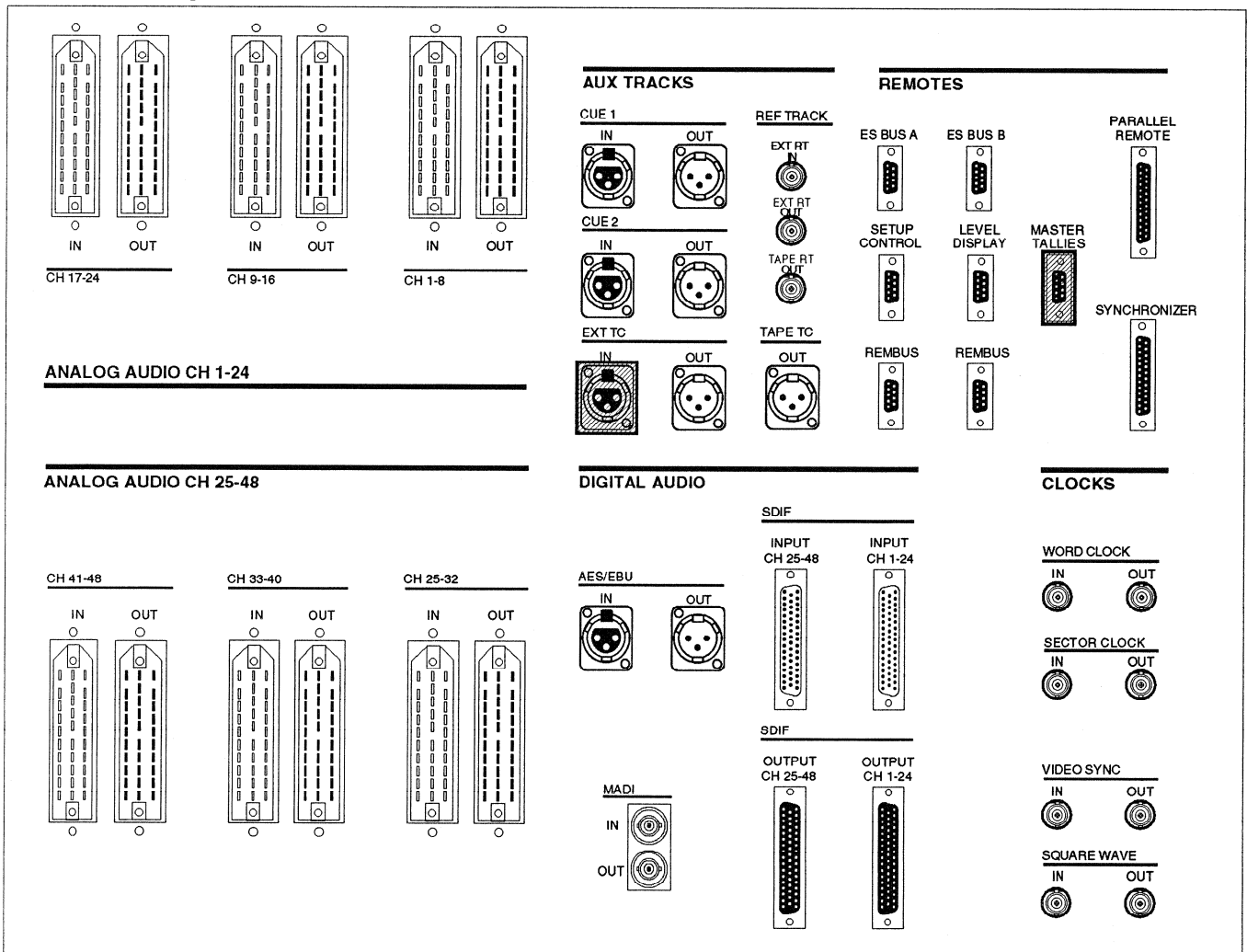
**Slave:** D827 MCH

**Sync source:** TC only

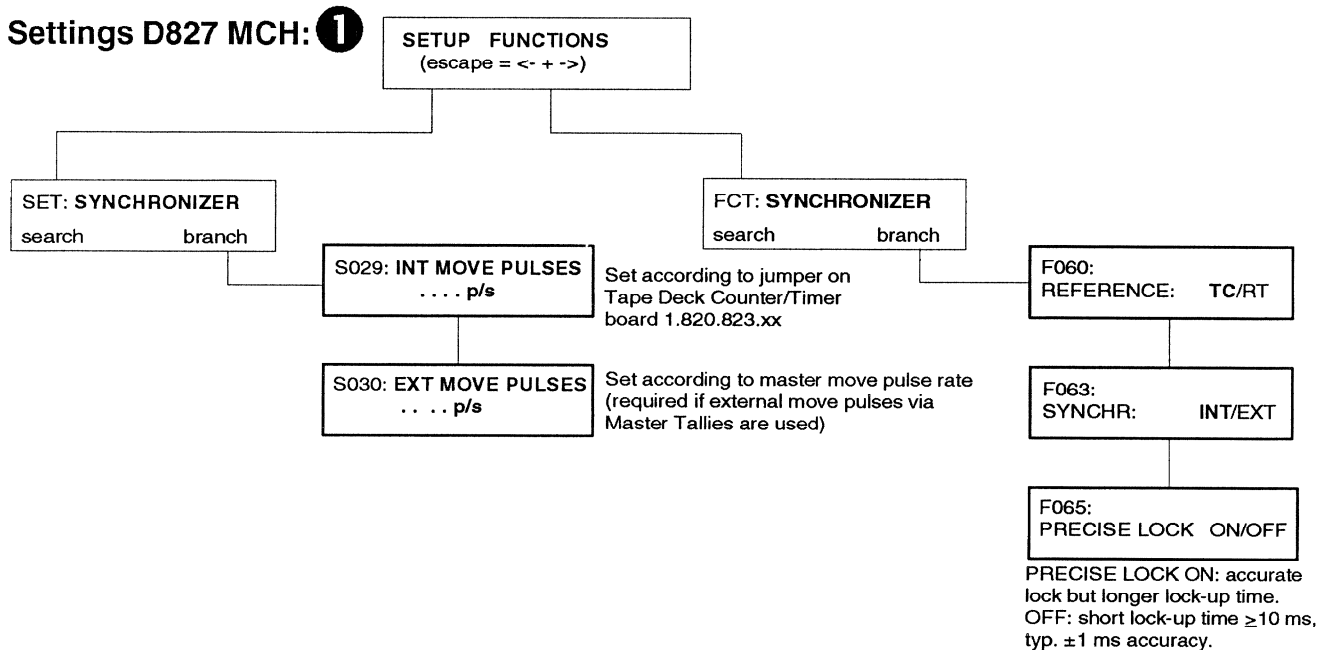
**Comment:** *Simple and possible but not recommended if there are alternatives. In the described application the clock of the DTR slave is controlled by the TC from the ATR master. Jitter of this TC will cause reduced audio quality of the DTR. It is recommended to use the DTR as master (refer to 4.7) or to control the speed of the ATR (refer to 4.8).*



Connector panel D827 MCH:



**Note: To control the slave's internal synchronizer, the remote control (Autolocator) is required!**



- 2** Switch EXT CLK reference to **INT** by pressing EXT CLK on the Local Control Unit (LCU) - the EXT CLK lamp is **off**.
- 3** Switch TC LOCK **on** by pressing the TC LOCK key on the CHANNEL REMOTE or via the functions menu (FUNCTIONS: TC LOCK, F064) - the TC LOCK lamp is **on**.
- 4** Switch AOR (automatic offset retention) **off** by pressing the AOR key on the Autolocator, the AOR lamp is **off**. *If TC jumps must be rejected, the AOR function (and the AOR lamp) must be on in that case.*
- 5** Store the offset, if required, at the Autolocator and enable the Offset Register by pressing ENABLE - the ENABLE lamp is **on**. Press the LOCK key on the Autolocator - the LOCK lamp is **on**,  
or  
Lock master and slave at the current position (offset) by pressing the INST LOCK key on the Autolocator - the INST LOCK lamp is **on**. The Offset Register will be set and enabled automatically.