



CB Electronics

# Video Streamer Modifications

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Loddonside, Lands End House, Beggars Hill Road, Charvil, Berks RG10 0UD, UK

Tel: +44 (0)118 9320345, Fax: +44 (0)118 9320346

URL: [www.colinbroad.com](http://www.colinbroad.com)

E-mail: [support@colinbroad.com](mailto:support@colinbroad.com)

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Loddonside, Lands End House, Beggars Hill Road, Charvil, Berks RG10 0UD, UK  
Tel: Reading(01734) 320345, Fax: Reading(01734) 320346

## VIDEO STREAMER MODIFICATIONS

Two Boards are now available for updating Video Streamers. These are the Beep Board (CB9609-1), and the Improved Video Inserter Board (CB9708-1). The method of fitting these is described below:-

### BEEP BOARD

This is designed as a direct replacement for the earlier "Click" Board (CB8703-3).

First remove all connections to the Unit, particularly the AC Supply and remove both upper and lower covers.

Unlock the PCB mounting XLR Connectors using a suitable screwdriver and turning the Locking Tabs in an anti-clockwise direction. Remove the two Rear Panel mounting screws adjacent to the BNC connectors so that by a small amount of flexing of the rear panel, the existing Board can now be slid out from its XLR Shells. Unplug the 10-Way IDC Connector from the Board and removed it from the Unit.

Take the replacement Beep Board and before fitting to the Unit, ensure that the Locking Tabs of its XLR's are in their anti-clockwise positions, and that the Red, Black, Yellow and Blue wires are soldered to their correct pins (See Diagram VS Frame 3). Fit this into the Unit, refit the Rear Panel screws and lock the XLR's into position by turning their Locking Tabs in a Clockwise direction. Reconnect the 10-Way IDC cable to the connector on the Beep-Board.

Connect the Power Connections of the Beep Board to the upper centre connector of the Motherboard in the following way:-

|               |          |            |          |
|---------------|----------|------------|----------|
| Yellow (+12v) | Pin 31ab | Red (+5V)  | Pin 25ab |
| Blue (-12V)   | Pin 30ab | Black (0V) | Pin 24ab |

For the Beep-Board to operate, it is necessary to modify the Reader/ Generator card, which is located beneath the Video Inserter card. These are located on the Left Hand side of the Unit with the front Panel facing you. Remove this card by unscrewing the appropriate mounting screws and pillars, and using a sharp edged knife, cut the track connecting to CN2 pin 8 to the via beneath CN2. Reconnect this to U27 pin 6. Refit the cards in with the now modified card in the lower position and the Video Inserter card in the upper position.

On later versions the Streamer is fitted with a newer Beep Board (CB9609-3) which uses an SSM2402 Analog switch rather than the JFET switch elements that were fitted previously. However for correct operation a 10K resistor has to be fitted between C6 and R16. This is fitted on the underside of the card. First, the track linking C6 to R16 has to be cut and then bridged with the 10K resistor. This resistor not only reduces Output level by 6dB, but more importantly prevents switching Transients from being heard.

## TESTING THE BEEP CARD

This will depend on whether there is any previous Cue Point information that is required to be kept within the Unit. If not then giving the Unit a Hard Reset by pressing the **Select** on the lower Left Hand side and the **9** button on the lower Right Hand side simultaneously.

Connect the Unit up to suitable Sync Pulse Generator or Video Source and Monitor. Use a Male to Female XLR cable and connect Timecode Out to Timecode In.

Set the Unit up so as to display the four Timecode Insertions, the Wipe and Data Lines, and by using the Cursor Buttons Select a Tempo of 80 BPM and a Beat Count of 5.

Start the Generator by pressing **GRST** and press the **TFR** button every 5 secs so as to "record" a number of definite Cue Points say up to about 30 - 40 Secs, then press **GRST** once more so as to replay these Cue Points. This can be verified by seeing the Video Wipe moving from Left to Right across the Screen.

The presence of Audio Beeps can either be checked by using an external amplifier /speaker plugged into the **AUX** socket, (the most obvious way) or by using an oscilloscope. If using a scope the ground pin of the Probe can be taken via a small length of wire to the GND pin on the PSU card (RH side of Unit). First check the presence of a Sine-wave both on pins 1 and 7 of U3 on the Beep-board (located behind **AUX** socket) which will be continuous, and on pins 1 and 7 of U4 (behind TC In) which is fed to the **AUX** Output and is therefore "Beep-Switched".

The Beep-board is checked before it leaves our Factory, however, if no Output appears on U4, and there is a Sine wave on pins 1 and 7 of U3, then check that the Unit is still playing "recorded" Cue Points, and that an output Pulse appears on U1 pin 6, whenever a Beep is due. If not, look at U1 pin 4 and see if U1 is being triggered by a small width "spike" which should be originating from pin 8 of the interconnecting 10-Way IDC cable. If not, then check that the Modifications to the Reader / Generator card are correct.

If there is no Sine wave even on pins 1 and 7 of U3, then check that both links are fitted to J6 (or both removed) and that +12V can be measured on U3 pin 8 and -12V on U3 pin 4. These voltages should also appear on U4 pins 8 and 4 respectively.

## VIDEO INPUT CARD

This card is designed so as to improve the quality of Video signal passing through the Streamer, TC-2, FC-2, or ED-2.

1. Disconnect the Red wire leading to the Upper Middle BNC connector. Disconnect its other end from the Motherboard (Pin 4 ) and remove it. Except for the EXT Input, remove all other wires from the BNC connectors on the rear panel, leaving their Motherboard ends still connected.

- 2 Make sure that the lower BNC connectors are free from large lumps of solder, before carefully sliding the Video Input card between their connections (component side of this board uppermost). Solder into position after making sure that the board is properly located and that the contacts are lying as close as possible to the solderable pads on the board.
- 3 Connect the Input connections of the board using the leads already connected to the Motherboard of the unit, and wire up as shown in the diagram (New Video). ~~Also~~ connect pin 6 of the Video Card to pin 5b of the Upper Din 41612 (Inserter) connector. If newer Inserter cards (Top LH Card) are to be used then the Yellow wire connecting Pin 5 of the Video Card to pin 4b of the Inserter Card must be fitted.
- 4 Connect the Power connections to the card (Black, Yellow and Blue) to pins 32a, 31a and 30a of the upper DIN 41612 connector on the mother card, and the 0V connection (pin 7 on Input card) to pin 24a.
- 5 Connect the Video Output connections of the Input card to the Upper BNC connectors, (Red to centre, Black to ground), and reconnect the Video Reference connections to the Right-Hand pair of pins on the Input card, such that the Black wire connects is to the RH side of these connections. (The track from this can be seen on the Component side of the card and connects to the outer connections of the two Ref Input BNC's.).

## MODIFICATIONS TO VIDEO INSERTER CARD

In order for the Video Input card to work, it is necessary to Diode-OR the various Inserter /Vitc /Free-Run Enable outputs so that the Input card can be "Gated" accordingly. These diodes have their Cathodes (marked end) connected to pin 5b on the edge connector, their Anode ends are connected in the Table set out below:-

The addition of a 47pF Capacitor across the output of the Mono-stable used in the Sync Oscillator of the Inserter card prevents random characters appearing on the Screen when Insertions are selected. This capacitor is fitted according to the Table below.

| Video Card Modifications for different video card types |                                 |                          |                 |                           |
|---|---------------------------------|--------------------------|-----------------|---------------------------|
| #   | Description                     | VITC<br>READER<br>CB8701 | RELAY<br>CB8702 | VITC<br>Rdr+Gen<br>CB9103 |
| 1   | Inserter Enable. Dmod1 Anode to | U21 pin 11               | U21 pin11       | U22 pin11                 |
| 2   | Vitc Enable. Dmod2 Anode to     | U21 pin 9                | U21 pin 9       | U22 pin 9                 |
| 3   | Free Run Enable Dmod3 Anode     | U21 pin 10               | U21 pin10       | U22 pin10                 |
| 4   | Cmod1 47pF Capacitor between    | U16<br>pins6,8           | U16 pin 6       | U15 pin7                  |
|   |                                 |                          |                 |                           |
|   |                                 |                          |                 |                           |

## FURTHER MODIFICATIONS

Later Units are built using a modified Video card, so as to make use of the DC Restore circuitry that is inbuilt into the Video I/O card now fitted to the rear of the Streamer Unit. This reduces considerably the number of components on the Video card itself, and allows for a cleaner signal path when Insertions are used.

This means that rather than switching between uninserted video, which runs only through the Video I/O card, and Inserted Video which has to run through the main Video card, the Video card need only to provide the Luminance and switching signals, whenever an Insertion is demanded.

The modifications required to bypass the Video card's DC Restore circuitry are fairly straight forward, being not much more complicated than the previous modifications to this card, however, we could only recommend them to those who feel confident in taking on this extra work. The modifications required are listed below:-

1. Remove U21 and U23 from their sockets, also remove R44, R45 and R46. These are adjacent to pins 1a and 1b of the edge connector with R46 alongside U21.
2. Remove D5 adjacent to U19 and R48 adjacent to Q9 (not fitted).
3. Temporarily remove U19 and cut the track linking U19 pin 1 to U19 pin 11, which can be accessed under its socket. Also on Component side cut track linking U19 pin 11 to U16 pin 3. Replace U19.
4. On Trackside, cut track linking edge connector pin 4b to U22 pin 9. Also cut track linking pins 2 and 3 of VR2 to emitter of Q8.
5. Relink VR2 pins 2 and 3 to base of Q8 (centre lead).
6. Fit link in position of R46 and a diode in position R48, cathode end towards board's edge.
7. Link U16 pin 3 to U19 pin 1 and U16 pin 11 to anode end of the diode fitted in R48's position.
8. Fit a 4K7 resistor from U18 pin 13 to edge connector pin 4b.
9. Link edge connector pins 2a and 2b to edge connector pin 5a. (This is best done by linking the other ends of these tracks).

If not already fitted, a wire leading from edge connector 4b on the Video card's mother board should be wired to pin 5 of the Video I/O card. This provides sync switching to the Video Graphics chip. See diagram VSFrame3.

## GERMAN MODIFICATIONS

Some Units require the Through Video to be blanked when VT machines are spooling. With the present design this can only be achieved by switching from the Video Through Input to the Video Ref Input, and feeding this to the Sync Input of the Video character generator chip on the Inserter card. The Video Ref input must be the same signal that provides the Ref Input to the VT Machine.

On Units fitted with the newer PSU card (CB9706-3), the Sync Separator Chip U3 can be used to provide the Composite Sync Signal that is derived from the Video Ref signal, and is fed at Logic Signal levels to the Inserter card.

This signal is then chosen on the Inserter card whenever the Off-Line Condition is set or when the Unit does not receive continuous Time-Code. (Selected by Menu Option 3. 7.)

### **Modifications To The Unit**

On the PSU card (CB9706-3), connect U3 pin 1 to edge Conn 23a.

On the TCR card (lower Lh card) cut track linking Edge Connector pin 23a to U23 pin 4.

On Mothercard, link pin 23a on TCR /Film position to pin 23a on Video Position.

### **Modifications to the Inserter Card (German Version)**

These are in addition to the modifications previously described, some of which will be minor alterations to existing mods.

If the card has the components on its LH side still fitted, i.e. Q2-Q7 etc. then the following modifications\* are additional:-

\*Remove R37 and R38, and cut tracks on underside connecting to U21 pin 15 and to U21 pin 13. Also cut track linking U21 pin 12 to R46, or alternatively remove link fitted in R46's position.

Cut track linking U21 pin 11 to U18 pin 8 (Underside), and remove Anode end of diode connecting to U21 pin 11.

Reconnect the diode to U18 pin 8, and reconnect the severed end of VR2 to U21 pin 8.

Connect the Cathode end of the diode connecting to U18 pin 8 to the cathode end of the diode whose Anode connects to U21 pin 10, and connect these to Edge Connector pin 5b.

Link U21 pin 10 to U21 pin 11.

Remove 4K7 which was connected to U18 pin 13 to Edge Connector pin 4b, and connect U18 pin 13 directly to U21 pin 3.

Connect U21 pin 13 to Edge Connector pin 4b, and connect U21 pins 12, 14 and 15 to Edge Connector pin 23a.

Cut track connecting to U16 pin 4 (trackside). Reconnect U16 pin 4 to U16 pin 8.

### **CHECKING THE INSERTER (GERMAN VERSION)**

Connect the Output of a Video Pattern Generator to both the Video Ref and Video In inputs. Set the Streamer so as to display a number of Time-Code Insertions, and

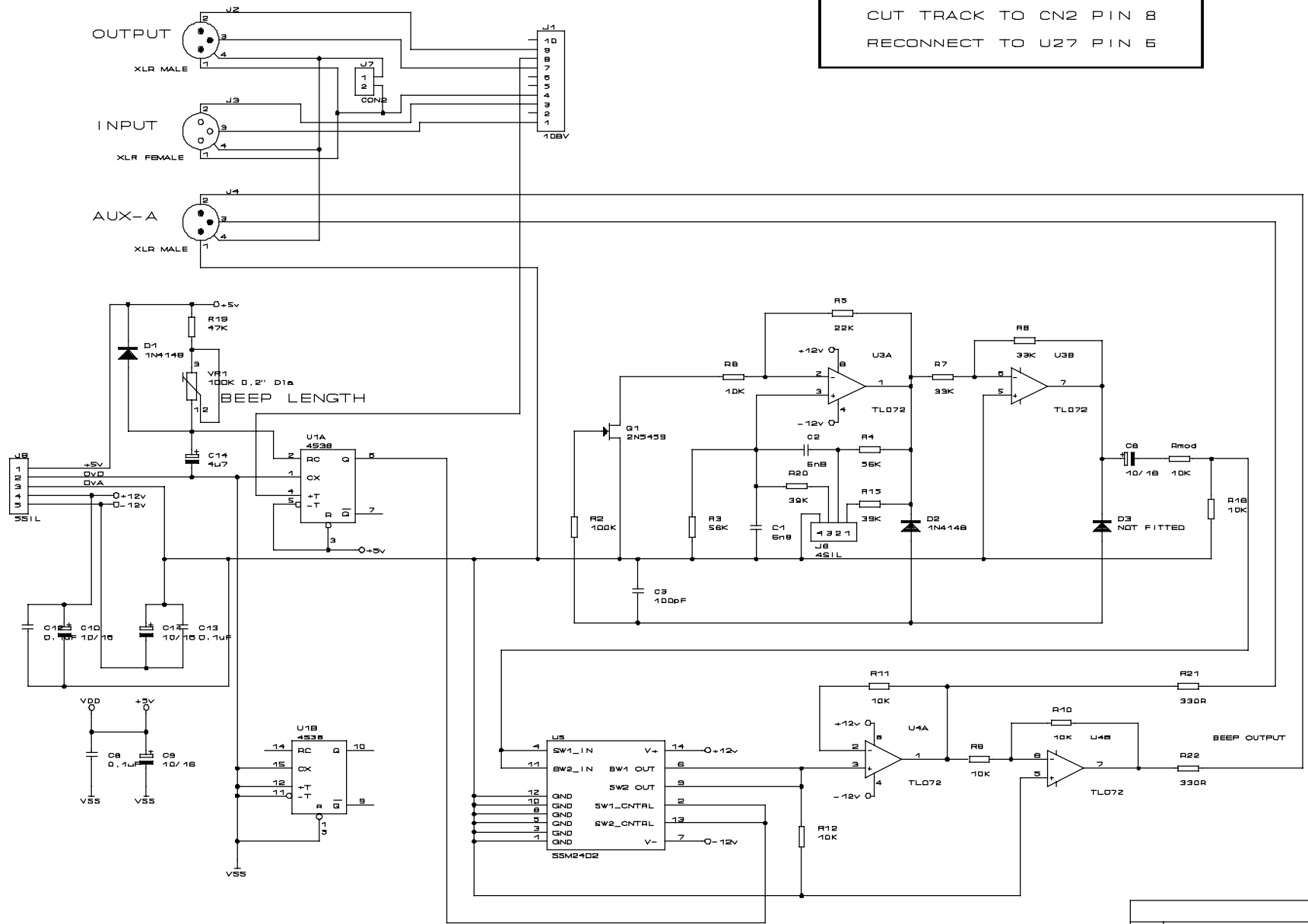
confirm that the Pattern plus Insertions appear on the Video Output.

Select Shift + Off-Line and confirm that the Insertions remain whilst the Pattern disappears. If the Unit is fitted with the correct Software, select from the Menu No 3 Option 7 (Blanking before Cue 1 and after Cue 2) and confirm that the Pattern disappears, when Play Speed Time-Code is disconnected from the Unit.

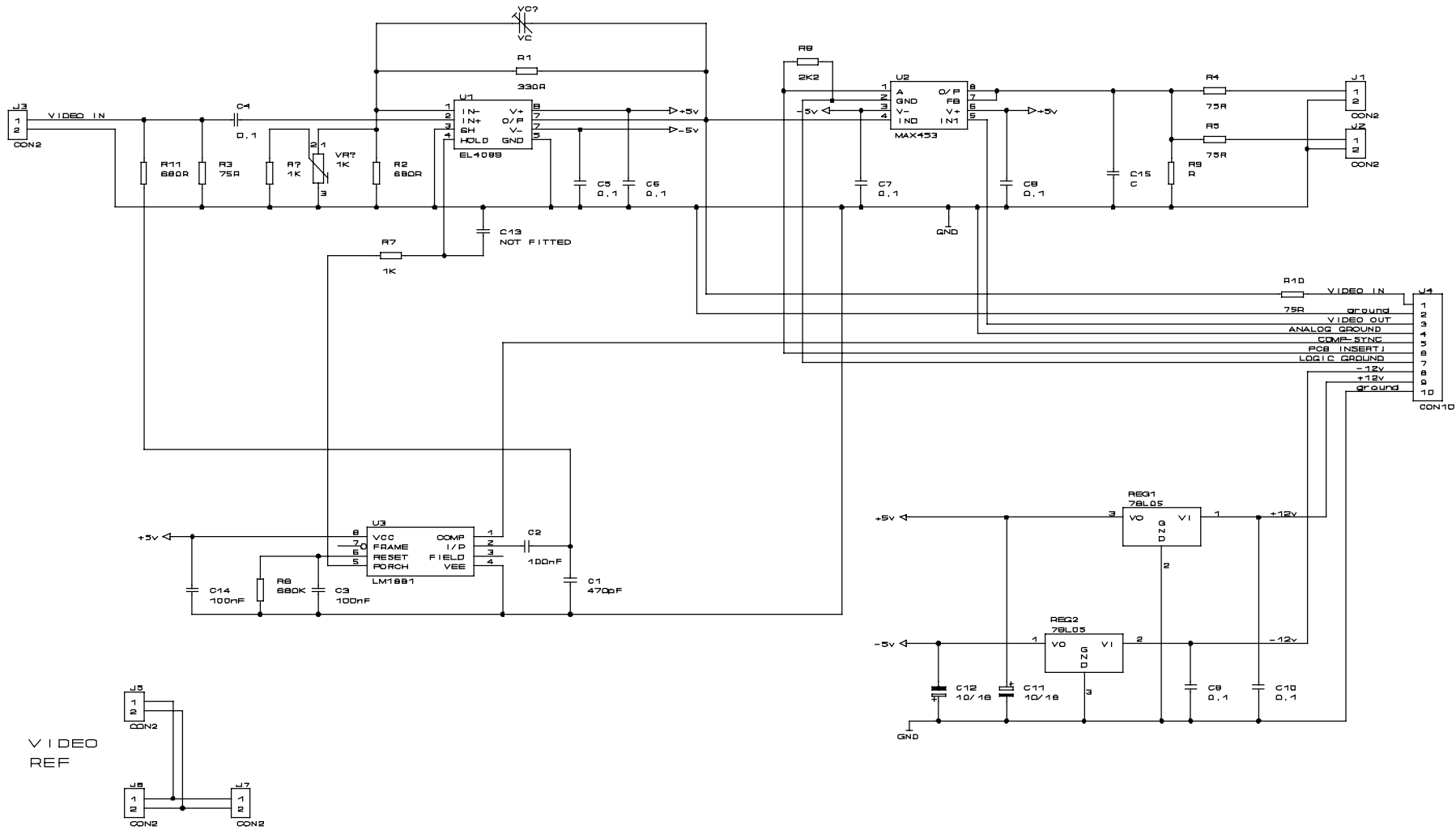
If problems are encountered, use an Oscilloscope and confirm that Video Sync Pulses appear on U21 pin13, (originating from Video I/O card via Edge Connector pin 4b) and again on U21 pin 14, which originates from Pin 1 of U13 on the PSU card. Check also that the appropriate Synch Pulse signal appears on U18 pin 21. This can be confirmed by removing one or the other of the Video Input Signals.

If these are not being switched, then check that the Input to U21 pins 10 & 11 changes State when Shift + Off-Line is either Selected or de-selected, or that Play Speed Time-Code is applied or removed.

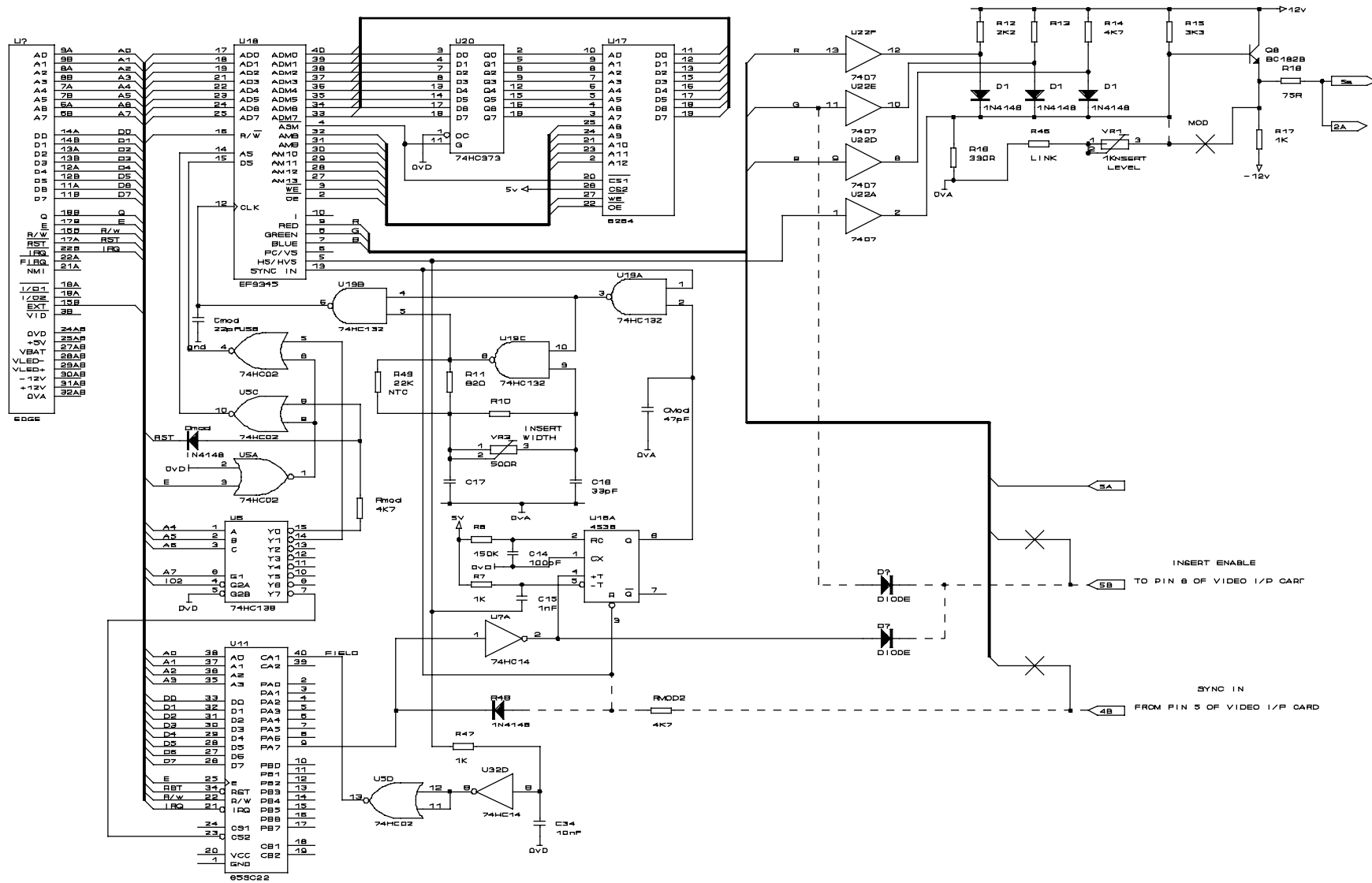
MOD TO RDR/GEN CARD:  
 CUT TRACK TO CN2 PIN 8  
 RECONNECT TO U27 PIN 6



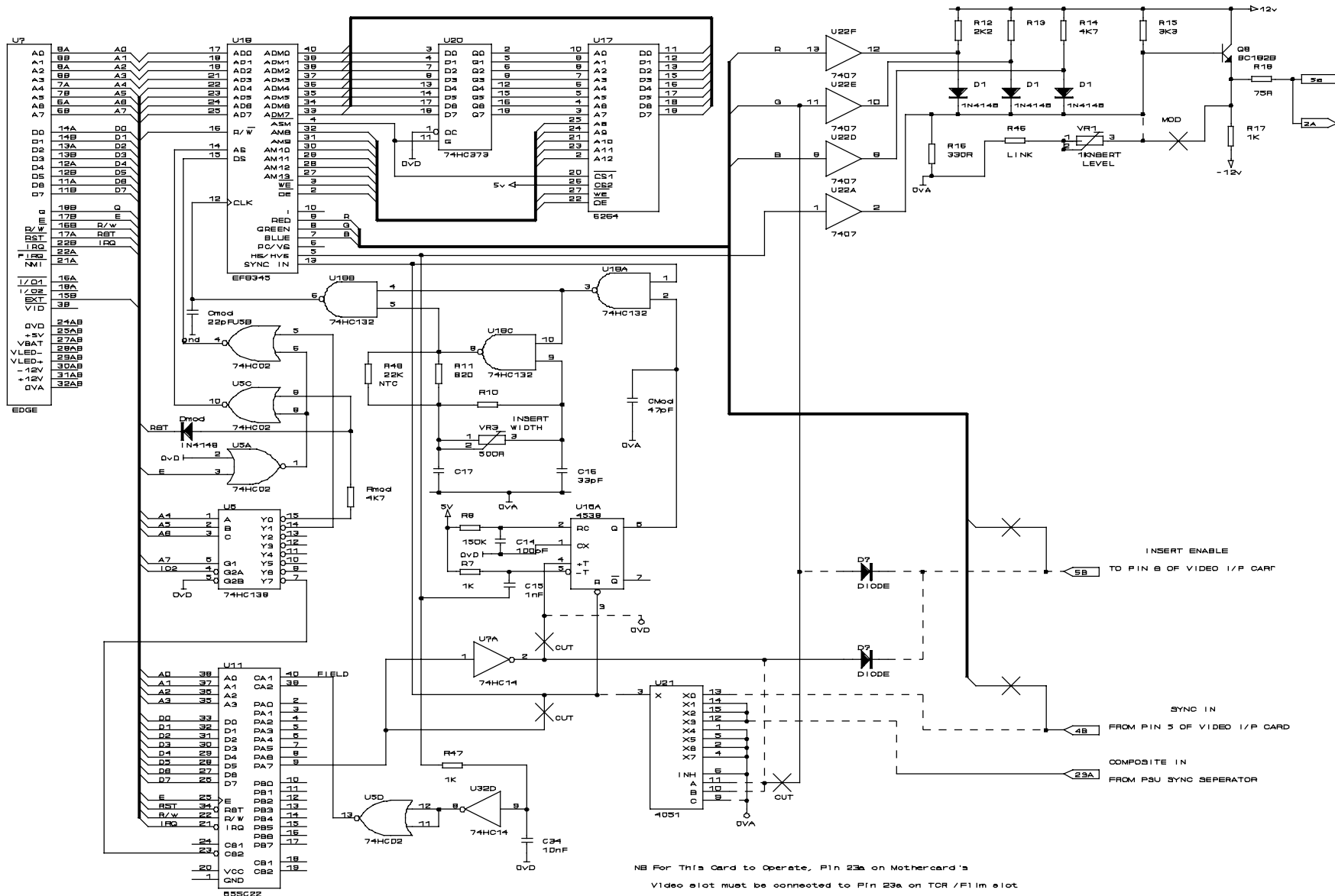
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CB ELECTRONICS  
 Loddonside, Landa End House  
 Beggars Hill Road, Charvill.



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| B                                    | V1DEC2          | 1   |



NB For This Card to Operate, Pin 23a on Mothercard's Video slot must be connected to Pin 29a on TCR / Film slot and U3 pin 1 should be connected to 29a on PSU card. Also cut track leading to pin 29a on TCR card.

|   |                 |
|---|-----------------|
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| Size  | Document Number |
| B   | VIDEO3          |

## BEEP OUTPUT

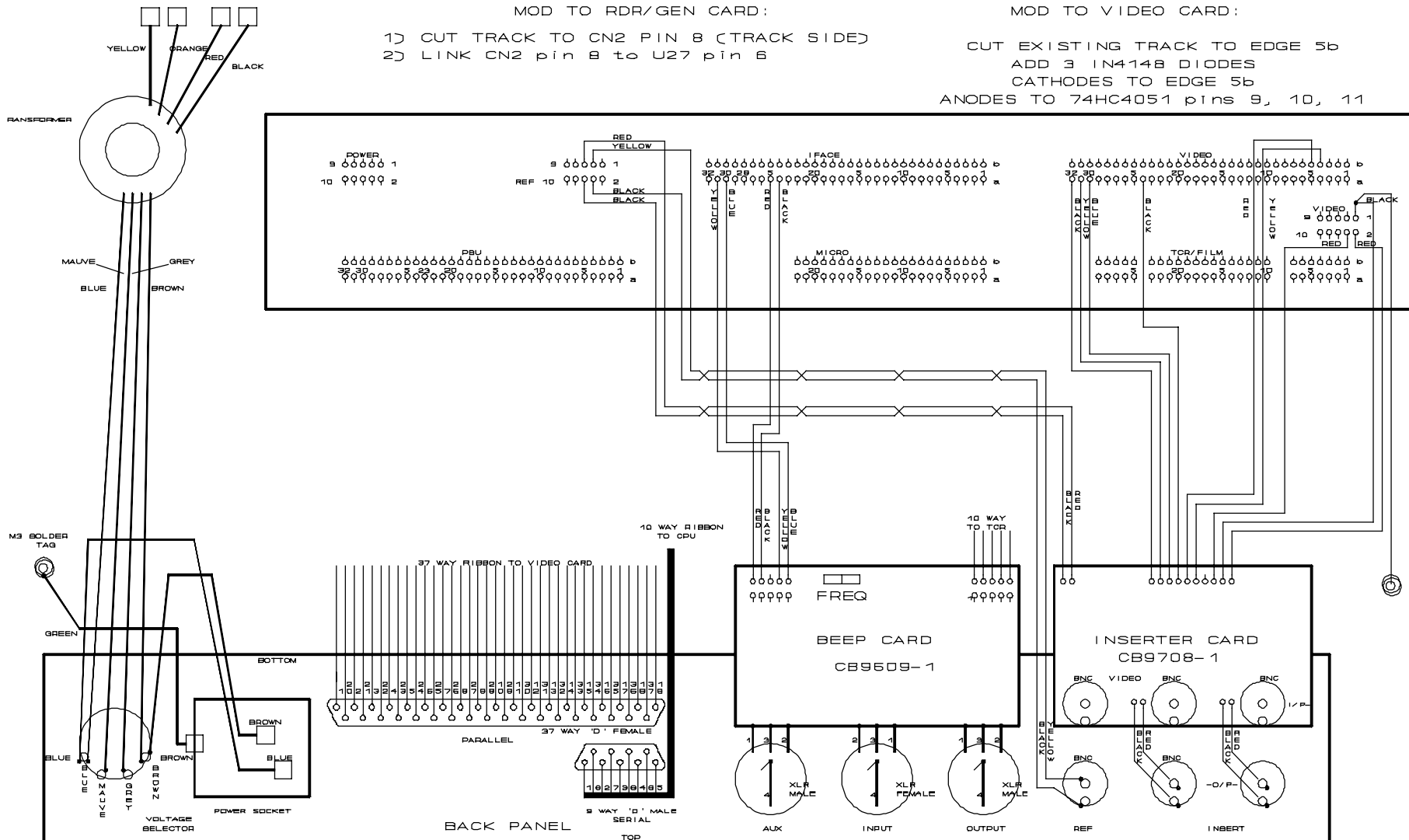
MOD TO RDR/GEN CARD:

- 1) CUT TRACK TO CN2 PIN 8 (TRACK SIDE)
- 2) LINK CN2 pin 8 to U27 pin 6

## VIDEO OUTPUT

MOD TO VIDEO CARD:

- CUT EXISTING TRACK TO EDGE 5b  
 ADD 3 IN4148 DIODES  
 CATHODES TO EDGE 5b  
 ANODES TO 74HC4051 pins 9, 10, 11



|  |                 |     |
|--|-----------------|-----|
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| B                                      | V8FRAMES        | 1   |