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SPECTRAL RECORDING.

DOLBY STEREO SR

SRA5 ADAPTOR FOR CINEMA PROCESSORS

INSTALLATION MANUAL

Dolby Model SRA5
Spectral Recording Cinema Processor

The Dolby SRA5 is an adapter that enables any cinema processor manufactured by Dolby Laboratories to decode the new Dolby Stereo SR optical soundtrack format.

Dolby Stereo SR is a new soundtrack format that gives low-cost 35 mm optical prints the capability to deliver the volume range and fidelity that has previously only been associated with 70 mm releases. The Dolby Stereo SR format is based upon a new and innovative recording process, Dolby spectral recording, or Dolby SR.

Dolby SR is an encode/decode technique, operationally similar to Dolby A-type noise reduction, that is used to retain the fidelity of all recording. Specifically on film soundtracks, Dolby SR can be used in place of Dolby A-type noise reduction yielding an audible improvement in signal-to-noise ratio and a reduction in distortion. While Dolby SR can be used on 70 mm magnetic as well, its benefits are much more apparent on 35 mm optical soundtracks where poor noise and overload performance have been inherent problems.

The SRA5 is constructed as a one-unit high, self-powered chassis that contains two Cat.No.280T SR decoding modules along with the necessary audio switching and control circuits. The SRA5 can be configured for use with all cinema processors manufactured by Dolby Laboratories. The unit is designed to allow easy selection of Dolby Stereo SR (Format 05) using the cinema processor's control panel or its remote control unit.

Specifications

Layout:
Rack-mount unit incorporating two Dolby Cat.No.280T spectral recording modules together with interface circuits and power supply.

Signal and Control Connections:
Two 12-position barrier strips to which fanning strips may be attached to facilitate soldered connections.

Controls and Indicators:
Mode Switch—Toggle switch selection of SR "in", SR "out", and "remote". Switch is located behind front panel.
Mode Indicators—Two LEDs located on the front panel indicate SR "in" and SR "out".
Cinema Processor Selector—Rear panel three position switch for selection of associated cinema processor (CP55, CP50/100, CP200).
Non-sync Level Control—Screwdriver adjustable level control behind front panel for ing of non-sync level when SRA5 is d with the CP55.

Switching Control Signals:
$\overline{SR}$ Input
Low: Open circuit or less than 1 volt switches SR "in".
High: Greater than 1.6 volts, 28 volts maximum switches SR "out" (used with CP50, CP55, CP100, CP200).

ID7 Input (CP55 Aux.)
Low: Open circuit or less than .5 volts.
High: Greater than 1 volt, 28 volts maximum (used with CP55 only).

NR Disable Outputs
Low: Short to ground (less than 1 ohm) when SR is "in".
High: Open circuit (greater than 1 Megohm) when SR is "out".
Used with CP50 if a Cat.No.113C is not present.

Overall Frequency Response:
20 Hz-20 kHz±1 dB
(SRA5 only, back-to-back with standard Dolby SR encoder)

S/N Ratio: (referenced to Dolby level)
Better than 80dB, CCIR/ARM weighted with Cat.No.280T. Better than 70dB, CCIR/ARM weighted in non-sync. Dynamic range off optical film typically greater than 80 dB.

Distortion:
Total Harmonic Distortion at the outputs will not exceed 0.20% at maximum rated output in any mode.

Ambient Operating Temperature:
Up to 40 degrees C.

Construction:
Two plug-in Cat.No.280T spectral recording modules. Fiberglass printed circuit cards, gold-plated connectors, solid-state devices throughout. Fixed-mounted printed circuit board for control, switching, amplification, and power supply. Powered from AC mains, with AC input module and transformer.

Finish:
Bottom tray gold alodine, extrusion black anodized with white lettering, front panel painted dark grey with red and blue stripes and white lettering, cover black textured paint.

Size:
1 Rack Unit 43 mm (1.75") high, 260 mm (10.25") deep behind mounting surface, with holes for mounting in a standard 19 inch rack.

Weight:
5.2 kg (12.5 lb.).

Power Requirements:
4 position switch on rear panel selects 85 to 132 VAC or 187 to 264 VAC. Power consumption about 20VA. Uses one 1.25" slow-blow fuse: 500mA for 85-132 volts, 250mA for 187-264 volts. The unit is designed for operation from a centrally switched power source.

Dolby

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S88/8037/8039

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INSTALLATION MANUAL

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1.1 Introduction

The Dolby SRA5 is an add-on adaptor that enables any cinema processor manufactured by Dolby Laboratories to conveniently decode the new Dolby Stereo SR optical soundtrack format.

Film soundtracks encoded with the Dolby SR process should always be decoded with Dolby SR modules. Films encoded with Dolby A-type noise reduction (Dolby Stereo) should, however, be decoded with the Dolby A-type modules within the cinema processor. Proper decoding of Dolby SR prints can be done either by physically swapping the cinema processor's internal Cat. No. 22 A-type modules with Cat. No. 280T SR modules (in all units except the CP55), or more conveniently, by the addition of an SRA5 adaptor to the system. The SRA5 can be configured for use with all previous and current cinema processors manufactured by Dolby Laboratories. The unit has been designed to allow easy format selection of the Dolby SR format (Dolby Stereo SR--Format 05) via the format selection on the cinema processors control panel or via the remote control unit attached to the cinema processor.

The Dolby Stereo SR format is capable of delivering higher fidelity and greater volume ranges than previously available from 35mm soundtracks. For the audience to be able to hear and appreciate its value, the entire sound system must be operating at its optimum. This includes not only the processing equipment manufactured by Dolby Laboratories but also the projectors, power amplifiers and loudspeakers. Additionally, the auditorium should have a sufficiently low background noise level so that subtle sound effects can be heard.

The SRA5 should, therefore, always be used in association with cinema sound equipment that is properly installed and aligned. The detailed a[illegible] procedure for the Dolby manufactured equipment is covered in the m[illegible]s provided with the main cinema processor. With the CP100 and CP50 processors, it is recommended that a few related circuit modules be upgraded to yield the maximum benefit of the Dolby Stereo SR format. The Cat. No. 280T SR module has been designed specifically for cinema sound processing and must be used in all cinema applications.

Format 05

Dolby Stereo SR is a new 35mm film soundtrack format that utilizes recent advances in audio recording technology. Dolby Stereo SR expands upon the familiar Dolby Stereo format by incorporating the new audio recording process, Dolby SR, in place of the previous Dolby A-type noise reduction.

Briefly explained, Dolby SR involves a frequency sensitive conditioning of the audio to be recorded so that it will "fit" within the limits imposed by the physical size of optical soundtrack. (With optical recording, it is the size of the soundtrack that determines how loud the sound can get during peak moments and how much noise is heard during soft passages.) Additionally, Dolby SR prints have less distortion throughout the entire volume range. Using Dolby SR, the soundtrack is not only quieter and cleaner, but also, it can go louder as needed. Dolby SR allows optical soundtracks to obtain the volume ranges typical of 70mm releases.

1.2 Interfacing the SRA5 with Cinema Processors

All cinema processors manufactured by Dolby Laboratories can be upgraded with the SRA5. Modules will either need to be changed or in some cases added to older units (CP50, CP100) for optimum performance.

The following summarizes the best way to implement Dolby Stereo SR with various Dolby processors.

CP55 Cinema Processor

Modules required:

Cat. No. 321 rear mounted automation interface card.

Modifications required to existing modules:

The Cat. No. 243 control logic module requires additional diodes fitted to program the new format.

Operational changes:

Dolby Stereo SR is selected by using the **Aux** button on the CP55 front panel or via the Cat. No. 321 automation interface.

CP200 Cinema Processor

Modifications required to existing modules:

Minor modifications are needed to the Cat. No. 153 optical format module (before CP200 control unit serial no. 934) and Cat. No. 207 link card.

Recommended improvements:

Cat. No. 108C improved optical pre-amp module extends hf response particularly when used with narrow slit projector optics.

Operational changes:

Dolby Stereo SR is pre-selected by setting a **format thumbswitch** on the CP200 front panel to **05**.

EARLIER CINEMA PROCESSORS

CP50 Cinema Processor

Required items:

1. Cat. No. 150 (replaces Cat. Nos. 116/110) improved matrix decoder module enhances separation.
2. Cat. No. 113C (replaces Cat. No. 112 or Cat. No. 113) improved control/automation card. Allows the SRA5 to be controlled from the CP50.

Recommended improvements:

1. Cat. No. 160 (replaces Cat. No. 110L) low frequency enhancement adds sub- woofer decoding capability.
2. Cat. No. 108C improved optical pre-amp module extends high frequency response particularly when used with narrow slit projector optics.
3. Cat. No. 150D (replaces Cat. No. 150B) improved headroom and stereo image.

Operational changes:

1. With the new Cat. No. 113C installed, Dolby Stereo SR is selected by using the **Format 05** button on the CP50 front panel or remotely via the backpanel.

CP100 Cinema Processor

NOTE

The CP100, first introduced in 1975, can be upgraded to play Dolby Stereo SR films with some difficulty. In view of the improved optical pre-amplifiers, sub-woofer capability and control interface circuits used in the current cinema processors, it may be more desirable to replace the CP100 with either a CP55 or CP200 for Dolby Stereo SR applications.

Required items:

1. SA4 or SA5 surround adapter with Cat. No. 150 decoder module (replaces the SA3 surround adapter).
2. Cat. No. 148SR format module (installed in format slot 3).

Modifications required to existing modules:

Existing Cat. No. 159 located in the SA5 must be modified by the installer.

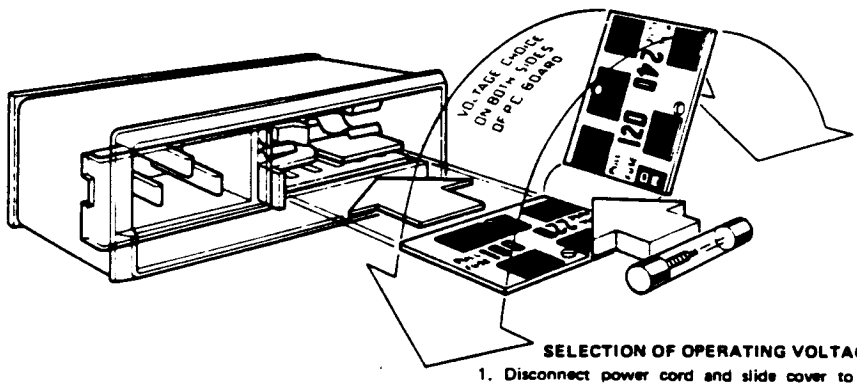
Operational changes:

Dolby Stereo SR is selected by using the **format 3** button on the CP100 front panel or remotely via the rear panel.

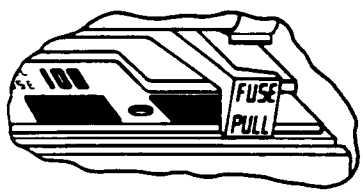
CAUTION

Check the voltage selector and fuse before applying power to the unit.

Check the selected AC mains voltage at rear panel of the SRA5. If necessary, remove the AC voltage selector printed circuit board and set it for the appropriate mains voltage: 100/120/220/240V.



Operating voltage is shown in module window.

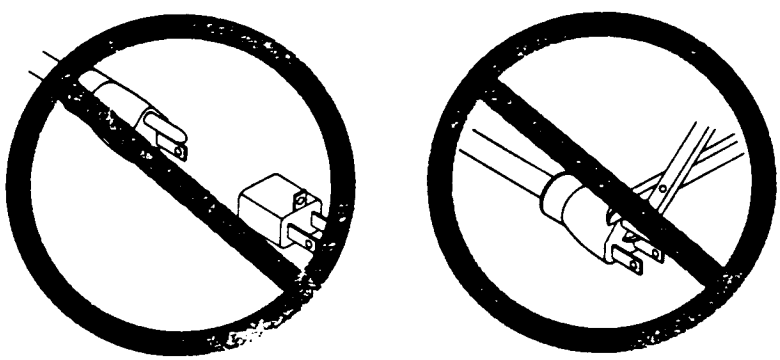


SELECTION OF OPERATING VOLTAGE

1. Disconnect power cord and slide cover to left to gain access to fuse compartment.
2. Remove line fuse by pulling outward on FUSE PULL.
3. To select operating voltage:
   a. Rotate FUSE PULL to left and remove PC board.
   b. Orient PC board so that desired voltage marking is on the top, left-hand side.
   c. Push PC board firmly into its slot.
4. Rotate FUSE PULL back to its normal position and insert fuse in holder. Be sure to use the correct fuse value.

Before you connect the SRA5 to mains power, check that the proper fuse is installed:

100V	500mA	Slow blow	220V	250mA	Slow blow
120V	500mA	Slow blow	240V	250mA	Slow blow



Do not use a ground-lifting adaptor and never cut the ground pin on the standard U.S.A. three-prong plug.

SECTION 3
INSTALLATION WITH CP55

Required items

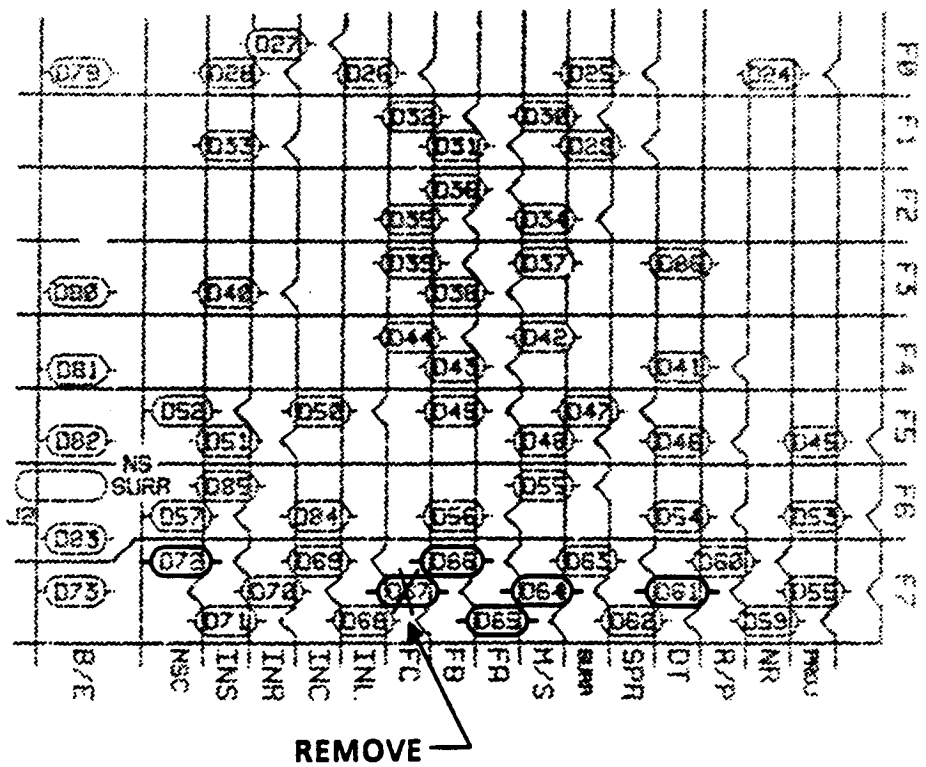
a. Cat. No. 321 Automation Interface Card mounted on the rear panel (may be already fitted)
b. 5 diodes (1N4148 or equivalent)--shipped with each SRA5
c. Cat. No. 69 Test Film
d. Audio voltmeter

Installation

1. Set the CP Selector switch on the SRA5 to the "55" position.
2. Set the Mode switch located behind the front access panel on the SRA5 to "Remote." This allows the "AUX" format button on the CP55 to control the SRA5.
3. Mount the SRA5. We recommend that it be mounted within 300mm (12") of the cinema processor.
4. Install the Cat. No. 321 Automation Card (if not already fitted).
5. Modify Format "AUX" in the CP55 by installing and removing the following diodes on the Cat. No. 243 Card. Be sure to observe that all diodes on this board are mounted in the same direction.

Remove: D67 (FC)

Install: D61 (Disable Cat. No. 222 Inputs)
D64 (Stereo Decode Enable)
D65 (FA)
D66 (FB)
D72 (Enable Non-Sync Inputs)



Note: The holes for the new diodes may be filled with solder. These holes should be cleared with care. Solder can be removed using your soldering iron and a solder removal tool.

6. Perform the following wiring steps (refer to the fold-out page located at the end of this section):

   a. Disconnect existing non-sync source from the CP55 non-sync inputs (TB1) and connect them to the LNS and RNS inputs on the SRA5.

   b. Connect the LT and RT inputs on the SRA5 to the Optical Preamp Outputs on TB2 of the CP55.

   c. Connect the Lout and Rout outputs on the SRA5 to the Non-Sync inputs on TB1 on the CP55.

   d. Connect the SR terminal on the SRA5 to the ID6 terminal on the Cat. No. 321 on the CP55 and the ID7 terminal to the ID7 terminal on the Cat. No. 321.

   e. Connect the OBE output from the SRA5 to J18 "D" connector pin 14 on the CP55.

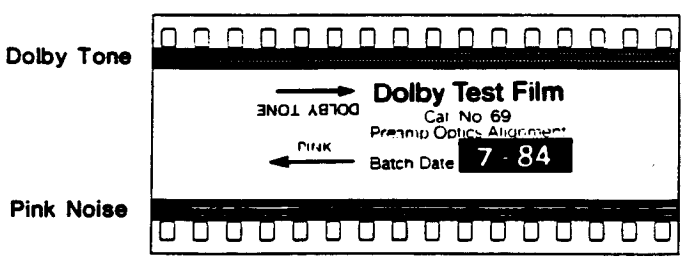
7. Check for proper operation:

   a. Select a non-Dolby format--01 for example. The "SR OUT" LED on the SRA5 front panel should be on.

   b. Select AUX (Format 05). The "SR IN" LED should be on.

NOTE: The following adjustments must be performed even if you do not use a non-sync source.

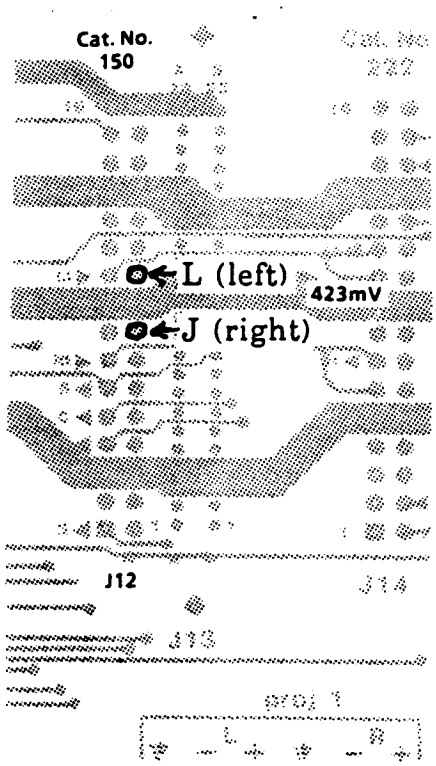
8. Play the Dolby tone side of a Cat. No. 69 test film.



Cat. No. 69

9. Select Format 01, mono optical. Adjust the gain pots on the Cat. No. 240 for correct Dolby level indication on the Cat. No. 222 meters.

10. Select "AUX" format and adjust the Non-Sync pots on the Cat. No. 242 so that the level at pins L (left) and J (right) on the Cat. No. 150 edge connector J12 is 423mV. Seal the Non-Sync pot adjusting screws with silicone rubber or other suitable anti-tampering material.



11. If a non-sync source is used, select it by pressing the "NON-SYNC" Format button on the CP55. Adjust the Non-Sync pot ON THE SRA5 for desired level. Future adjustments of non-sync level must be made with this pot.

12. Run a pink noise film loop (Cat. No. 69) and observe the frequency response in the auditorium when switching between formats 04 and 05 ("AUX"). Observe that the pink noise sounds slightly louder and brighter when Dolby SR format ("AUX") 05 is selected. The LEDs on the SRA5 front panel should indicate "SR IN" for the "AUX" format and "SR OUT" for any other format.

To select Dolby SR decoding, use the AUX button on the CP55 front panel or use your automation system connected to the Cat. No. 321.

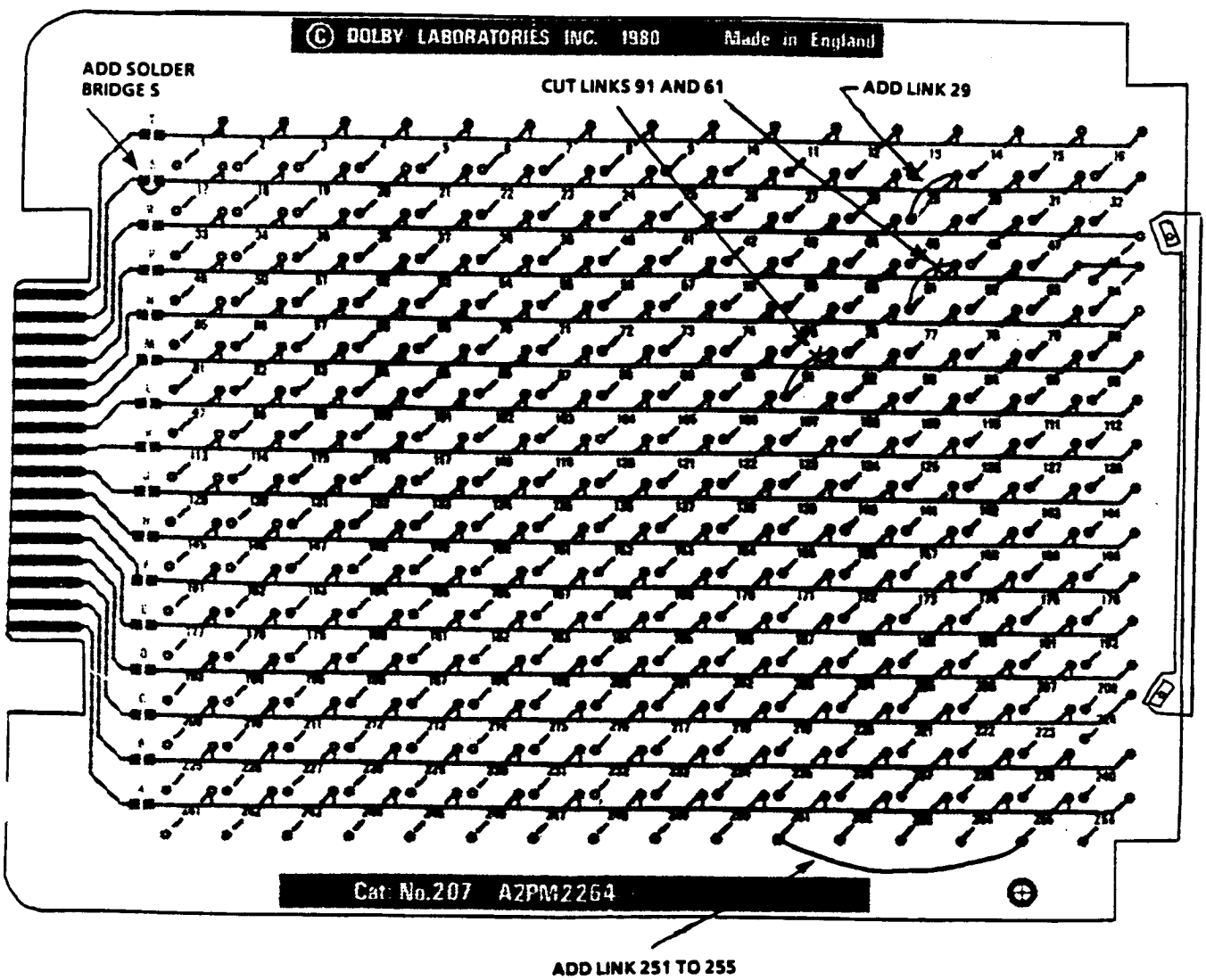
SECTION 4
INSTALLATION WITH CP200

Required Items

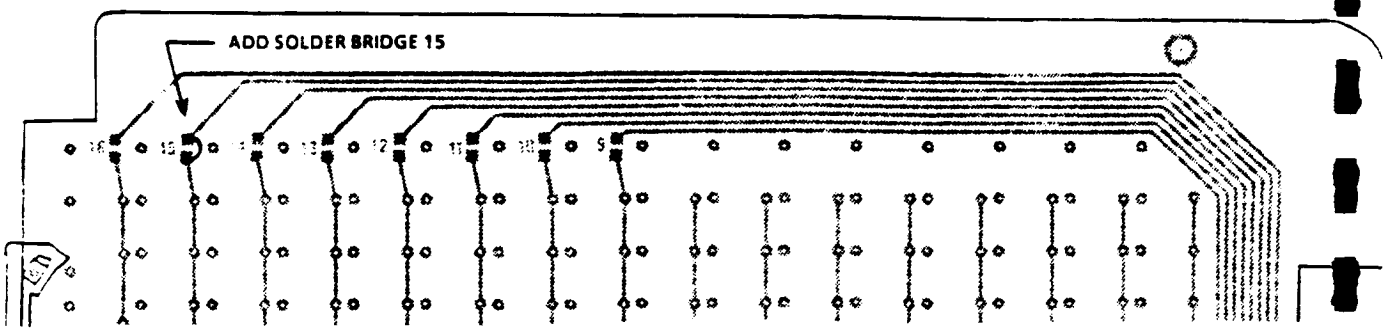
a. 5 diodes (1N4148 or equivalent) - shipped with each SRA5.
b. Modified Cat. No. 207 as described below.
c. Modified Cat. No. 153 as described below.
d. "Modified Item" sticker for the Cat. No. 160.

Installation

1. Set the CP Selector switch on the rear panel of the SRA5 to the "200" position.
2. Set the Mode switch located behind the front access panel on the SRA5 to "Remote".
3. Mount the SRA5 close to the CP200 (300mm/12") but away from the magnetic preamp unit to avoid hum problems.
4. Remove the Cat. No. 207 (special 1) card from the processor unit.
5. On the numbered side of the board add two wire links, one solder bridge and cut two links as shown:



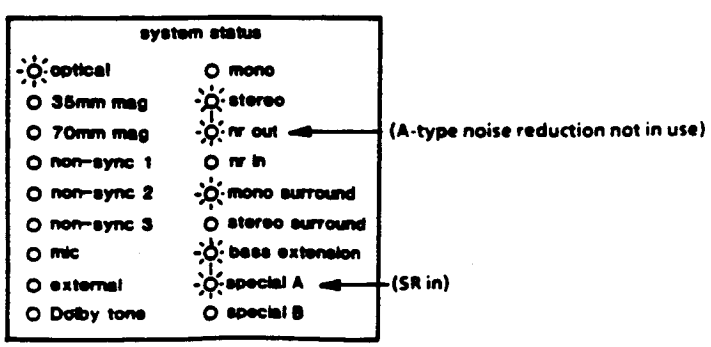
5. On the oposite side of the board (no printed numbers) add one solder bridge as shown:

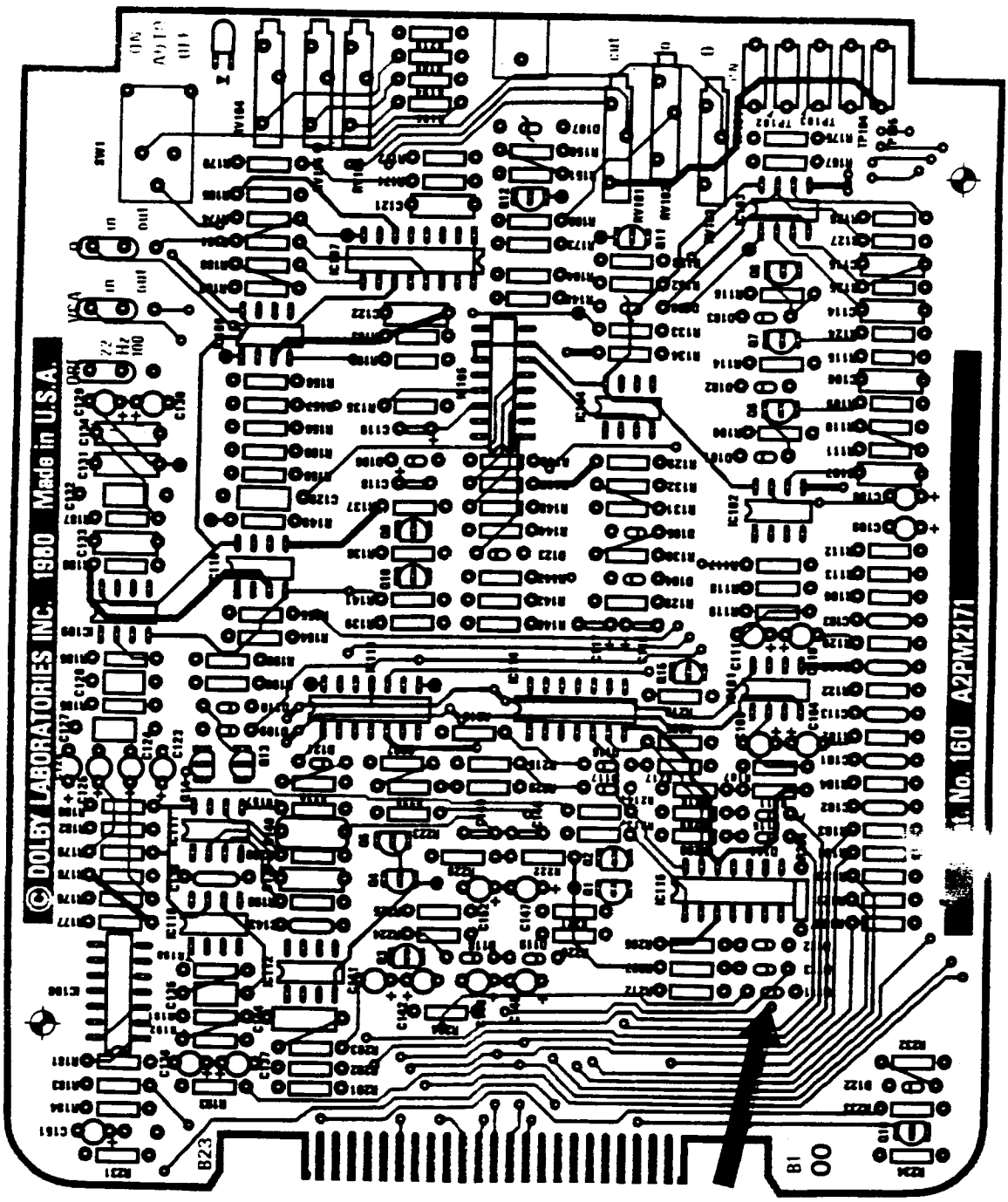


6. Remove the Cat. No. 153 optical format card from the control unit and enable Format 05 by installing diodes at the following locations. Be sure to observe the correct orientation of the diodes. Note: Cards installed in CP200 control units with serial no. 934 and above have these diodes installed.

   Diode #500, for Optical Surround (Bus 13)
   #512, for Bass Extension (Bus 1)
   #509, for Future 7 (Bus 4)
   #487, for Valid Bus (Bus 26)
   #496, for Filter Bus (Bus 17)

7. Reinstall the Cat. Nos. 207 and 153.
8. Remove diode D111 from the Cat. No. 160 Bass Extension card, and affix a modified item sticker thereto.
9. Perform the following wiring steps (refer to the fold-out page located at the end of this section):
   a. Connect the LT and RT inputs on the SRA5 to CP200 BS1 pin 10 (LT) and BS1 pin 11 (RT) on the backplane of the processor unit of the CP200.
   b. Connect the Lout and Rout outputs from the SRA5 to CP200 BS1, terminals 6 (LT) and 7 (RT).
   c. Connect terminal SR on the SRA5 to BS1, pin 9 on the CP200 processor unit.
   d. Connect a second wire from BS1, pin 9 on the CP200 processor unit to a solder hole located on the CP200 control unit backplane as shown on the following fold-out pages.
10. Check for proper operation:
    a. Select format 01. The "SR OUT" LED on the SRA5 front panel should be on.
    b. Select format 05. The "SR IN" LED should be on.
    c. Confirm that the following CP200 system status LEDs are on:





Remove diode D111

CAT. NO. 160 BASS EXTENSION CARD

d. Run a pink noise film loop (Cat. No. 69) and observe the frequency response in the auditorium when switching between formats 04 and 05. Observe that the pink noise sounds slightly louder and brighter when Dolby SR format 05 is selected. The LEDs on the SRA5 front panel should indicate "SR IN" for format 05 and "SR OUT" for any other format.

Use Format 05 to select Dolby SR decoding.

NOTE: **If the SRA5 adaptor is removed for repair, the following two jumpers must be added at the rear panel of the processor unit in order to restore left and right channel signal paths:**

Terminal strip BS1 - Terminals 7 to 11
Terminals 6 to 10

SECTION 5
INSTALLATION WITH CP50

Required Items.

a. Cat. No. 113C automation interface module.
b. Cat. No. 150 (Replaces Cat. Nos. 110/116).

Installation

1. Set the rear panel CP selector on the SRA5 to the "50/100" position.

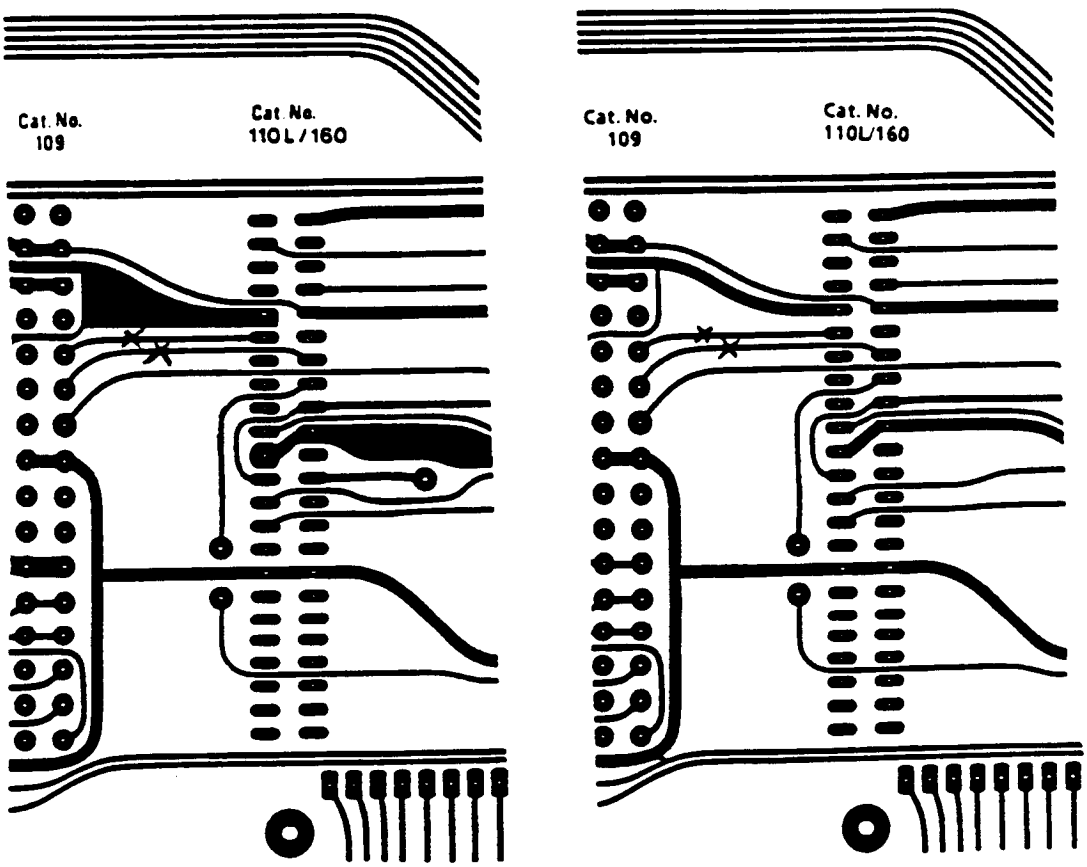
2. Set the Mode switch located behind the front access panel of the SRA5 to "Remote".

3. Mount the SRA5. We recommend that it be mounted within 300mm (12") of the CP50.

4. Remove the following four cards from the CP50: Cat. Nos. 109, 160 (or 110L), 150, and the left Cat. No. 64.

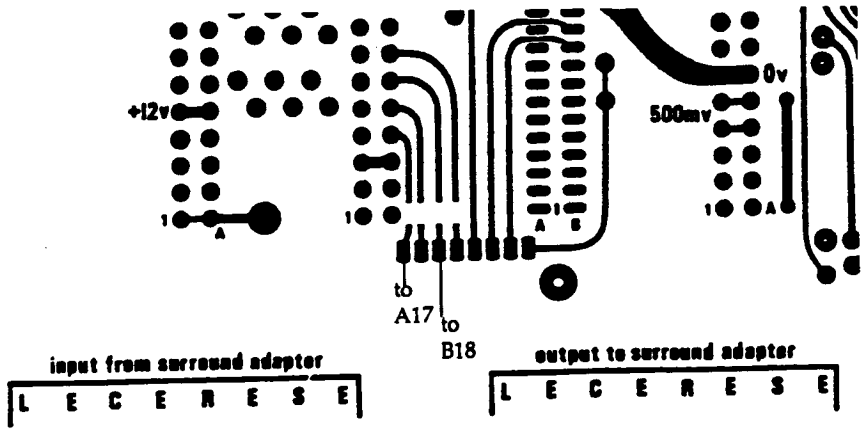
5. With a sharp knife or small drill cut the two traces on the inside of the backplane between the Cat. No. 109 and Cat. No. 160 sockets as shown below.

Early backplanes



6. Replace the cards listed in step 4.

7. On the outside of the Backplane cut the traces leading to Pins D,E,F,H on the Cat. No. 150 socket as shown below.



8. Add two wire links from A17 and B18 on the Cat. No. 160 edge connector Skt to the points shown.

9. Connect the SRA5 to the CP50 as follows. (Refer to the fold-out page at the end of this section:)

   a. Connect the SRA5 Left Total (LT) and Right Total (RT) inputs to the Left and Right "pre-amp outputs" (SK 7/9 and SK 7/11) on the CP50.

   b. Connect the Left (L_{out}) and Right (R_{out}) outputs of the SRA5 to "input from surround adaptor" Left and Right (SK 6/5 and SK 6/9) on the CP50.

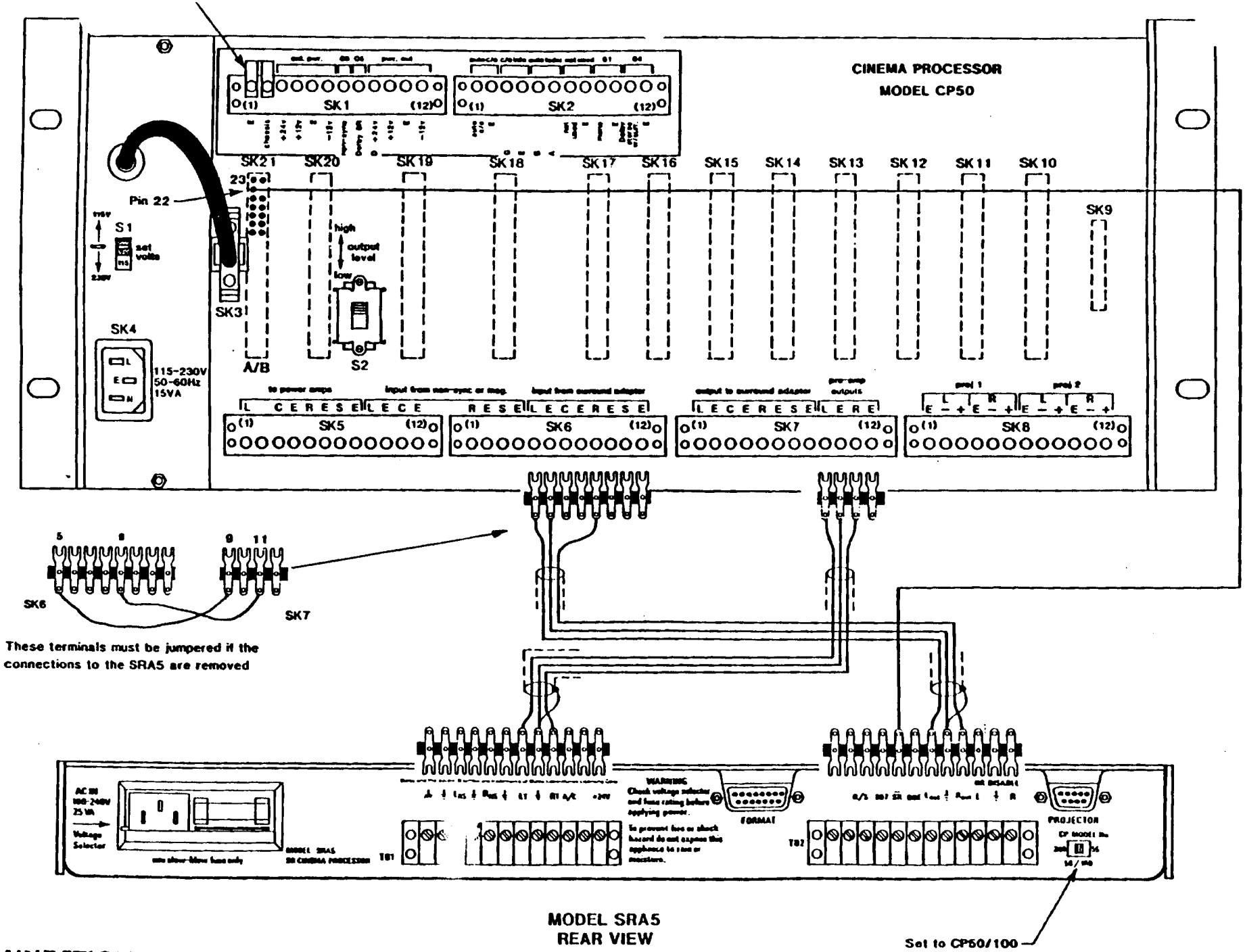
   c. Connect pin A22 of the Cat. No. 113C to the SR terminal of the SRA5.

10. Run a Pink Noise film loop (Cat. No. 69) and observe the frequency response in the auditorium when switching between formats "04" and "05". Observe that the pink noise sounds slightly louder and brighter when Dolby SR format 5 is selected. The LEDs on the front of the SRA5 should indicate "SR IN" for format "05" and "SR OUT" for any other format.

Use the format 05 button on the CP50 to select Dolby SR decoding

NOTE: **If the SRA5 adaptor is removed, the following two links must be added at the rear of CP50 in order to restore left and right channel signal paths.**

link SK6/5 to SK7/9
and link SK6/9 to SK7/11



CONNECTIONS -- SRA5 TO CP50

L88/128

SECTION 6
INSTALLATION WITH CP100

NOTE

The CP100, first introduced in 1975, can be upgraded to play Dolby Stereo SR films with some difficulty. In view of the improved optical pre-amplifiers, sub-woofer capability and control interface circuits used in the current cinema processors, it may be more desirable to replace the CP100 with either a CP55 or CP200 for Dolby Stereo SR applications.

Required items

a. Model SA4 or SA5 Surround Adaptor installed.
b. Cat. No. 148SR available from Dolby Laboratories.
c. Modified Cat. No. 159 as described below (for installation with the SA5 only).

Installation with SA4

1. Set the CP Selector switch on the rear panel of the SRA5 to the "50/100" position.

2. Set the Mode switch located behind the front access panel on the SRA5 to "Remote."

3. Mount the SRA5. We recommend that it be mounted within 300 (12") of the cinema processor but away from the magnetic preamp to avoid hum pickup.

4. Disconnect the wires leading from the CP100 "To Ext. Format" outputs L and R (SK34) to the Surround Adapter. Connect these same CP100 outputs to the LT and RT inputs of the SRA5 (TB1).

5. Connect the SRA5 outputs Lout and Rout (TB2) to the Left and Right inputs (SK1) of the Surround Adapter.

6. Install the Cat. No. 148SR in the CP100 Format 3 slot. Be sure that a Cat. No. 148B (optical) is in the Format 1 slot and that a Cat. No. 84B or 135B (Magnetic) is in the Format 2 slot.

7. Connect SK38 pin 4 on the CP100 to SR (TB2) on the SRA5.

8. Run a pink noise film loop (Cat. No. 69) and observe the frequency response in the auditorium when switching between formats 1 and 3. Observe that the pink noise sounds slightly louder and brighter when Dolby SR format 3 is selected. The LEDs on the SRA5 front panel should indicate "SR IN" for format 3 and "SR OUT" for any other format.

Use the Format buttons on the CP100 (or the CP100 remote inputs) to select the desired form of decoding: Format 1 for 35mm Dolby Stereo and mono, Format 2 for all magnetic formats or Format 3 for Dolby Stereo SR.

Installation with SA5

1. Set the CP Selector switch on the rear panel of the SRA5 to the "50/100" position.

2. Mount the SRA5. We recommend that it be mounted within 300 (12") of the cinema processor but away from the magnetic preamp to avoid hum pickup.

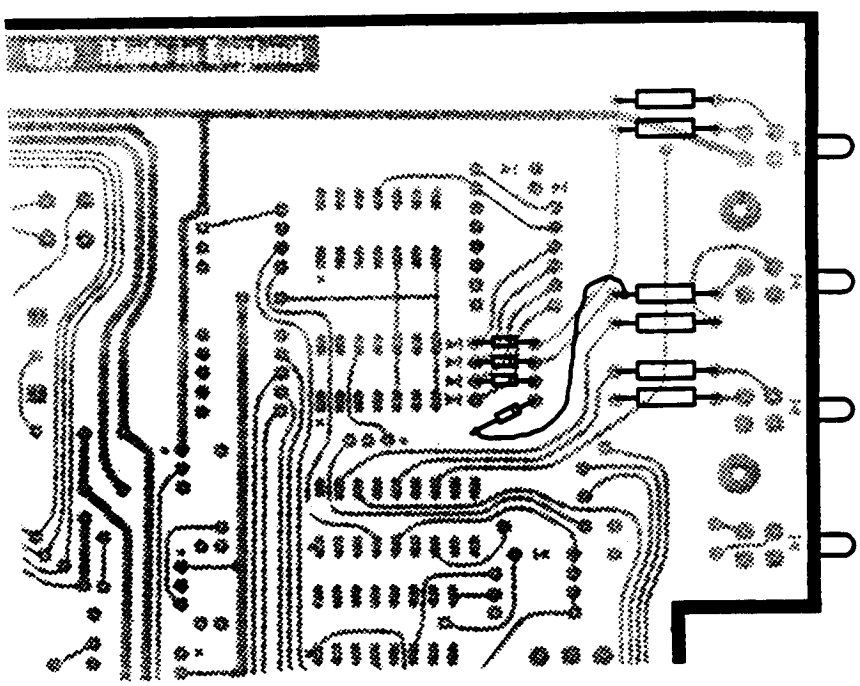
3. Disconnect the wires leading from the CP100 "To Ext. Format" outputs L and R (SK34) to the Surround Adapter. Connect these same outputs to the LT and RT inputs of the SRA5 (TB1).

4. Connect the SRA5 outputs Lout and Rout (TB2) to the L and R inputs of the Surround Adapter marked "CP100 to external format".

5. Install the Cat. No. 148SR in the CP100 Format 3 slot. Be sure that a Cat. No. 148B (optical) is in the Format 1 slot and that a Cat. No. 84B or 135B (Magnetic) is in the Format 2 slot.

6. Connect CP100 SK38 pin 4 to SR (TB2) on the SRA5.

7. Modify the Cat. No. 159 control card in your SA5 as follows:



   a. Unsolder the anode of the diode shown.

   b. Solder a jumper wire from the anode to the left hand lead of the 2K2 resistor as shown.

9. Check for proper operation as follows:

   a. Select FORMAT 1, NR ON, MONO OFF on the CP100.

   b. Observe that the LEDs on the SA5 show OPTICAL FORMAT and NOISE REDUCTION ON.

   c. Confirm that the SRA5 shows "SR OUT".

   d. Select FORMAT 3 on the CP100.

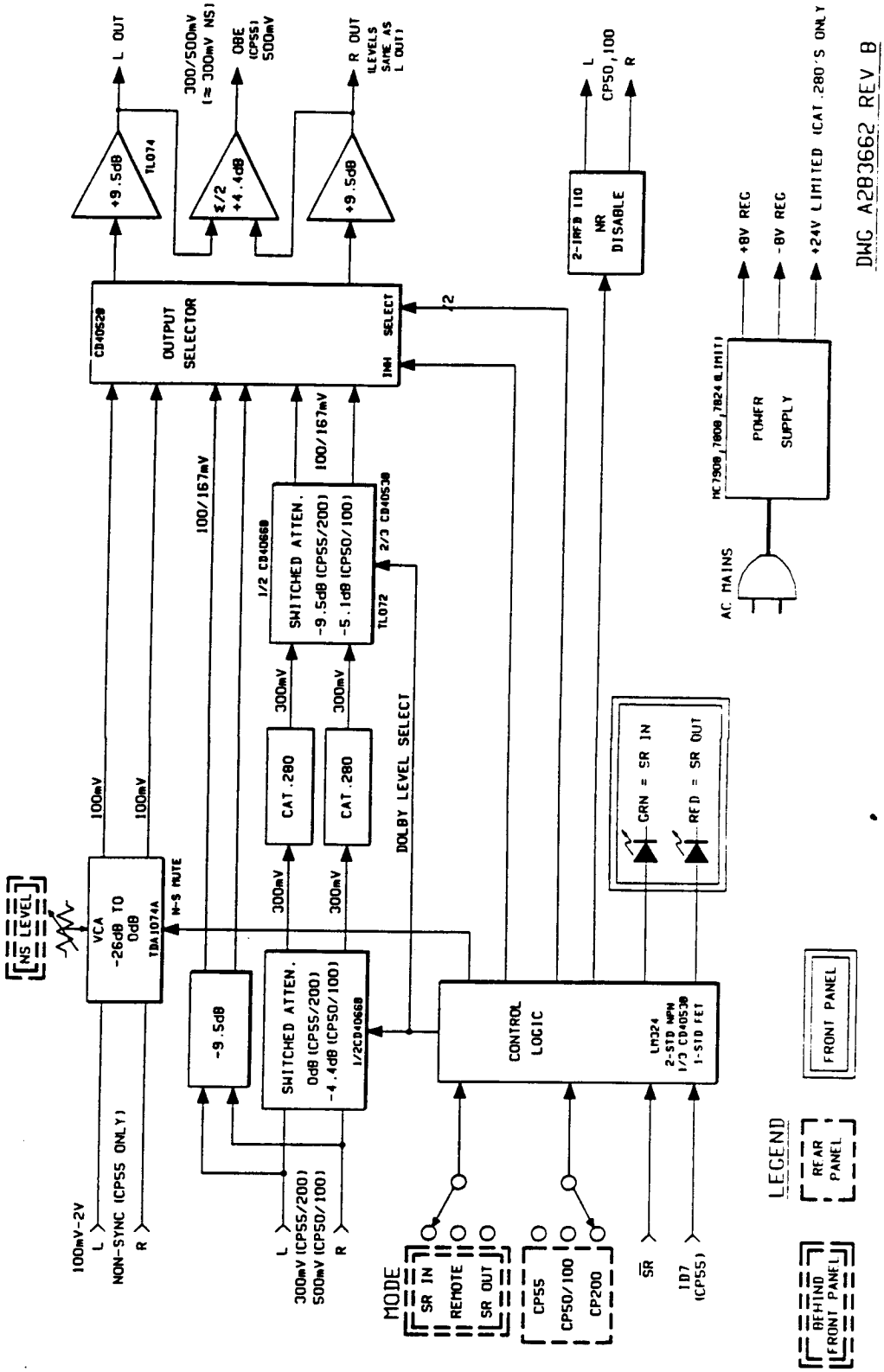
   e. Observe that the LEDs on the SA5 show OPTICAL FORMAT, EXTERNAL FORMAT and NOISE REDUCTION ON.

   f. Confirm that the SRA5 shows "SR IN".

10. Run a pink noise film loop and observe the frequency response in the auditorium when switching between formats 1 and 3. Observe that the pink noise sounds slightly louder and brighter when Dolby SR format 3 is selected. The LEDs on the SRA5 front panel should indicate "SR IN" for the format 3 and "SR OUT" for any other format.

Use the Format buttons on the CP100 (or the CP100 remote inputs) to select the desired form of decoding: Format 1 for 35mm Dolby Stereo and mono, Format 2 for all magnetic formats or Format 3 for Dolby Stereo SR.

SECTION 7
BLOCK DIAGRAM



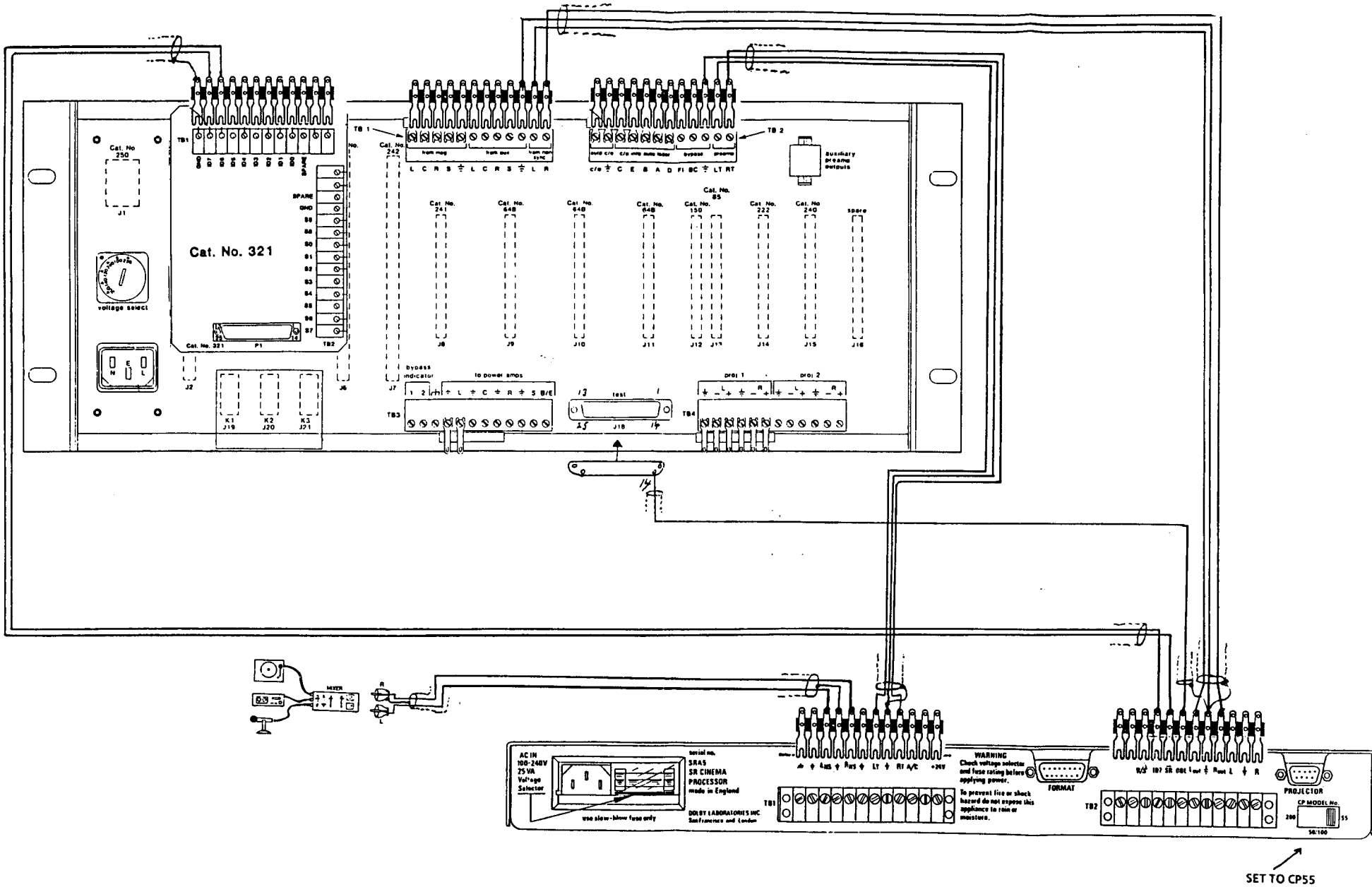
SECTION 8
IN CASE OF DIFFICULTY

8.1 Introduction

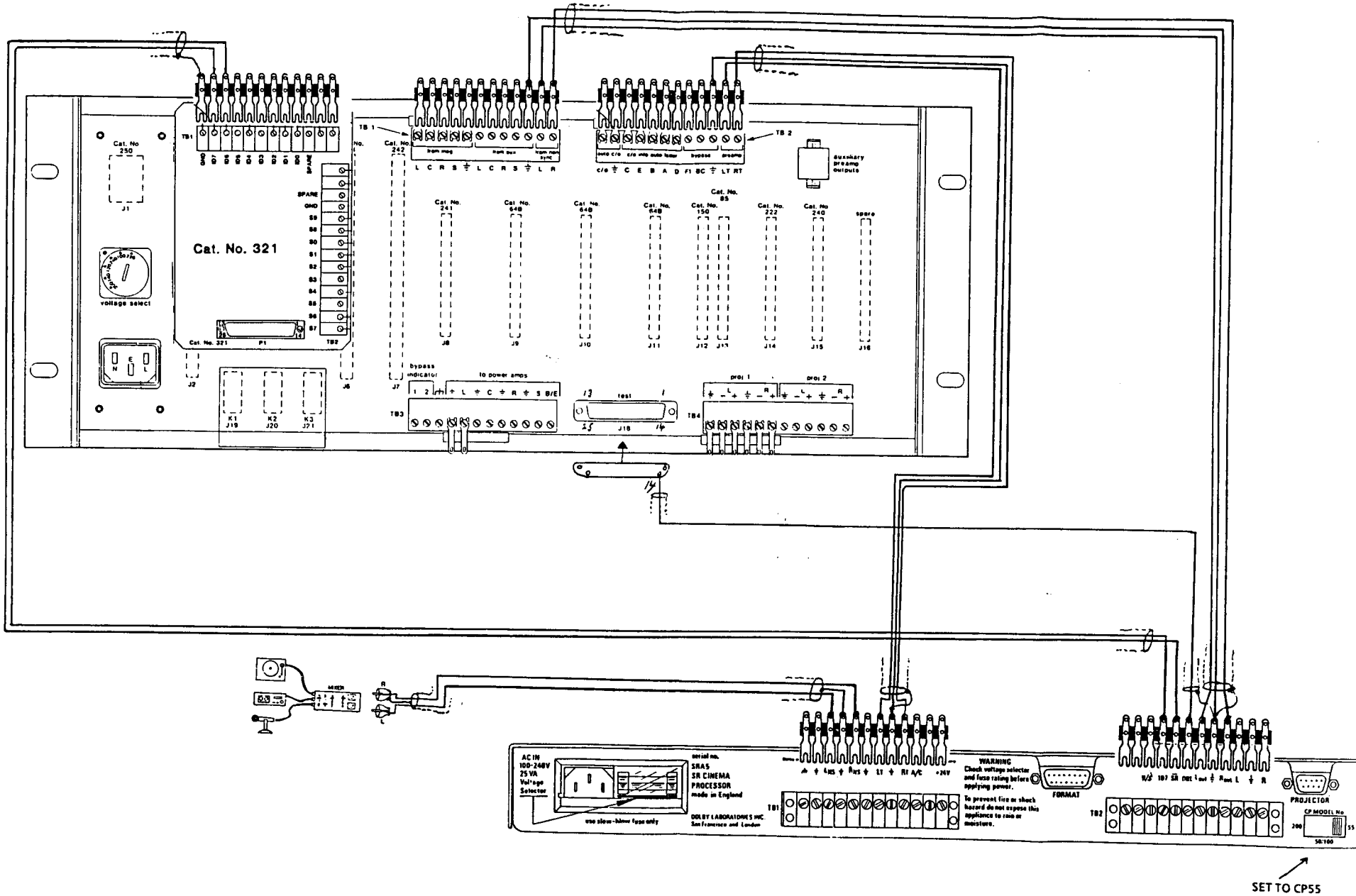
Only the Cat. No. 280T modules and three integrated circuits (ICs) are user replaceable. Faults on the Cat. No. 375 I/O board or the Cat. No. 376 control board require factory service (except that the LEDs and the voltage regulators may be replaced).

8.2 Table of Faults and Suggested Actions

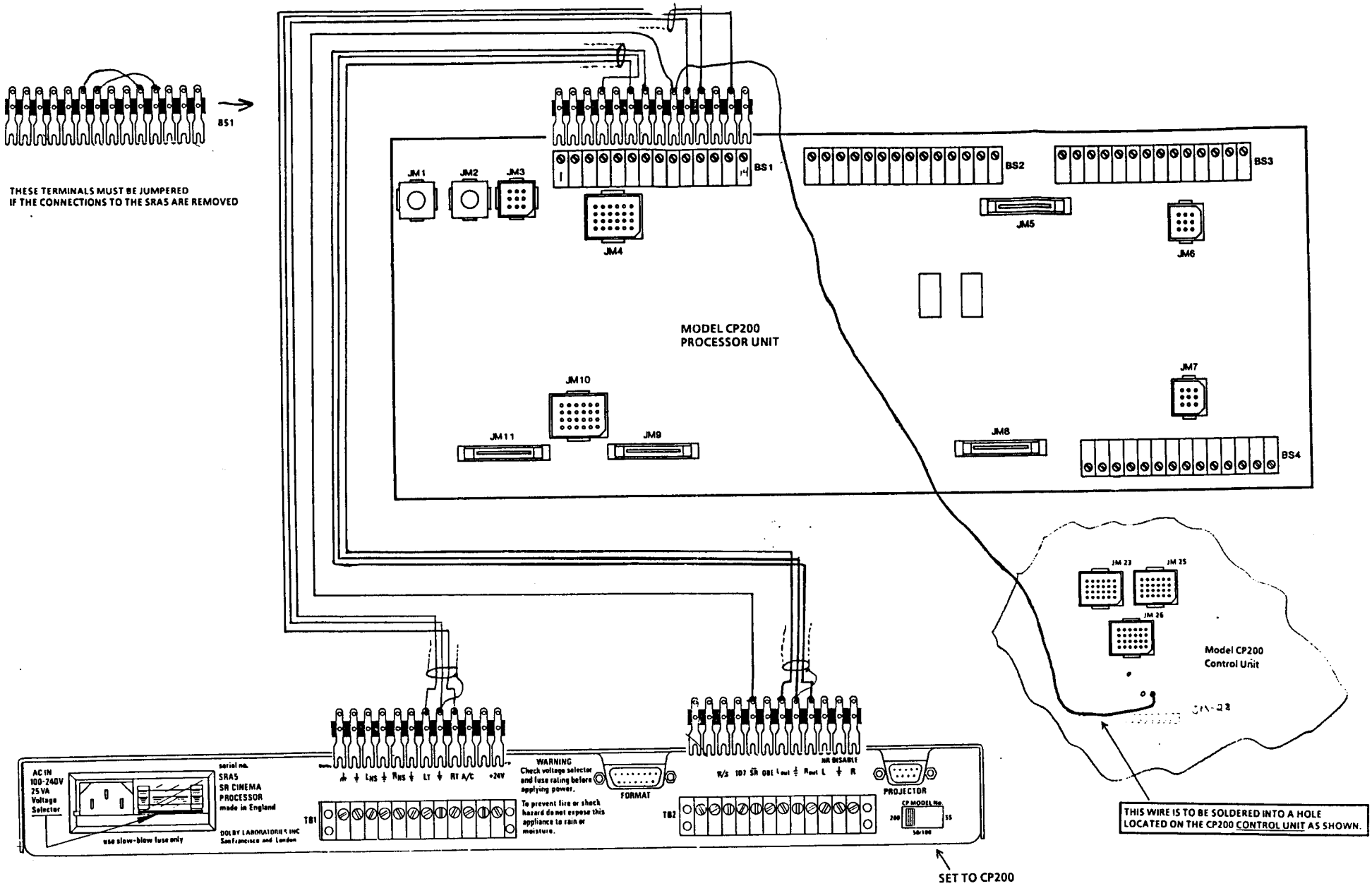
Fault	Possible Cause(s)	Action(s)
1. No output in any mode and no LED on	No power	• Plug-in AC cord • Check fuse • Replace IC105 (+8V Regulator) or IC106 (−8V Regulator)
2. No output only when SR is in - both channels - one channel	No +24V Bad Cat. No. 280T	• Check TB1-12 for +24V (Replace IC108) • Replace module
3. Incorrect levels	• Processor Selector Switch set for wrong CP • Non-Sync Level misadjusted (CP55)	• Reset S101 (rear panel) • Remove front panel and adjust RV101
4. Distortion in all modes, especially at high levels	Low voltages	Check plug-in card in AC Input Module for correct mains voltage selection
5. Mode selection malfunction	Incorrect external inputs	• Disconnect external inputs to SR and ID7 and check MODE switch operation • Check logic levels from external source: High > 1.6V DC Low < 0.5V DC
6. Excessive hum	• Audio cable shields not grounded • Chasis-to-ground connection not appropriate	• Ground shields • Try with and w/o jumper between TB1-1 and TB1-2



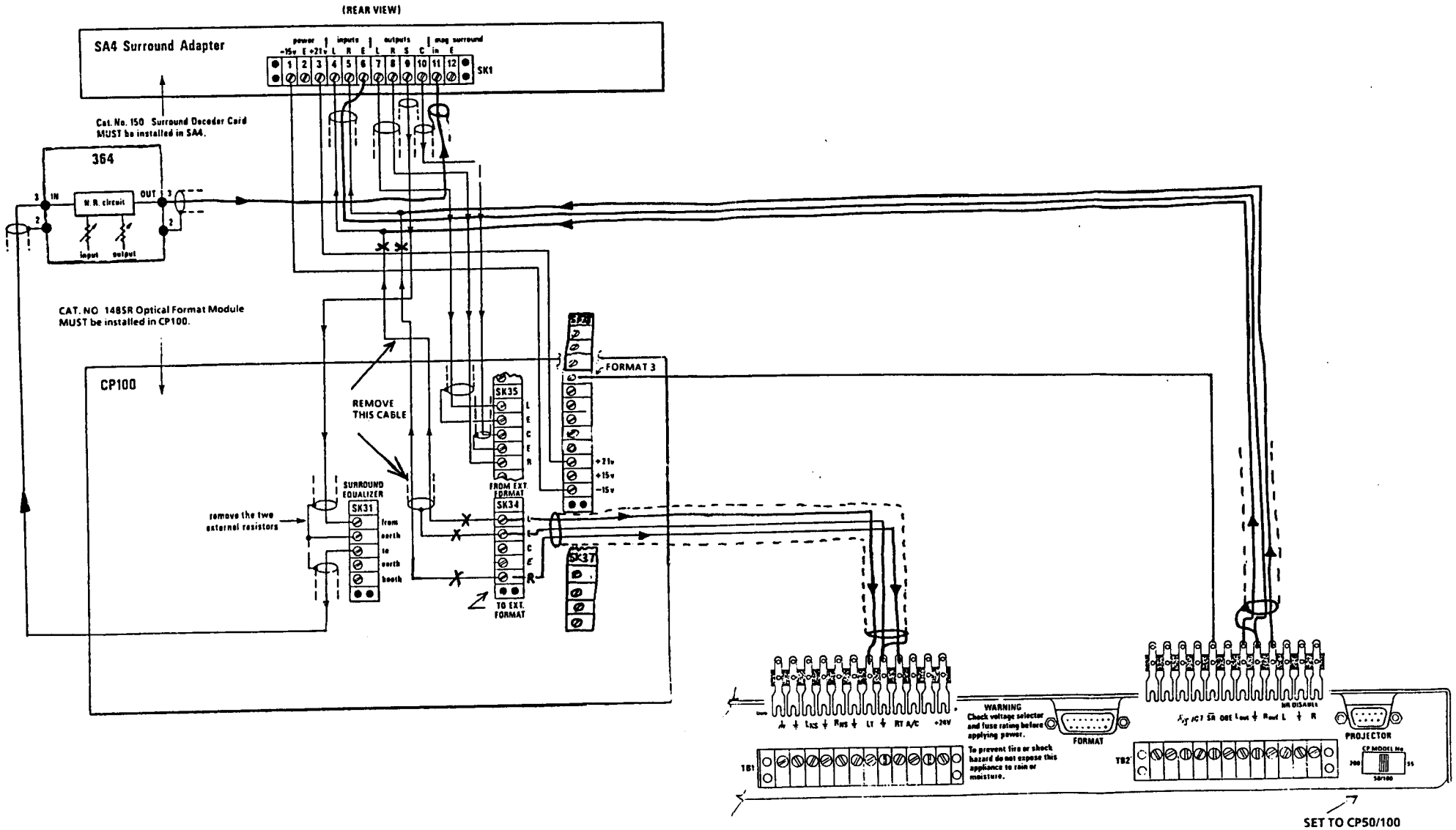
CONNECTIONS -- SRA5 TO CP55 WITH CAT. NO. 321 INSTALLED



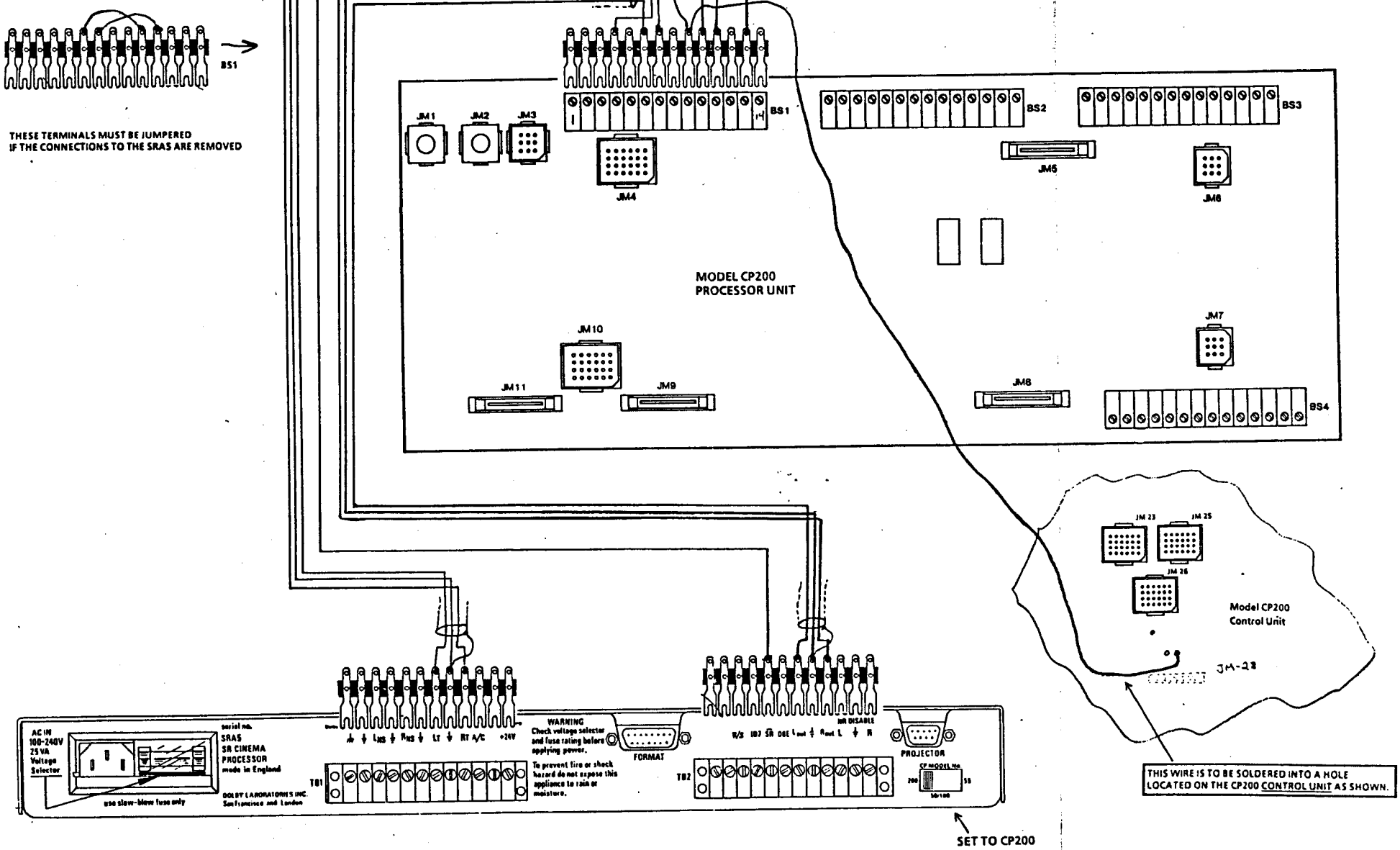
CONNECTIONS -- SRA5 TO CP55 WITH CAT. NO. 321 INSTALLED



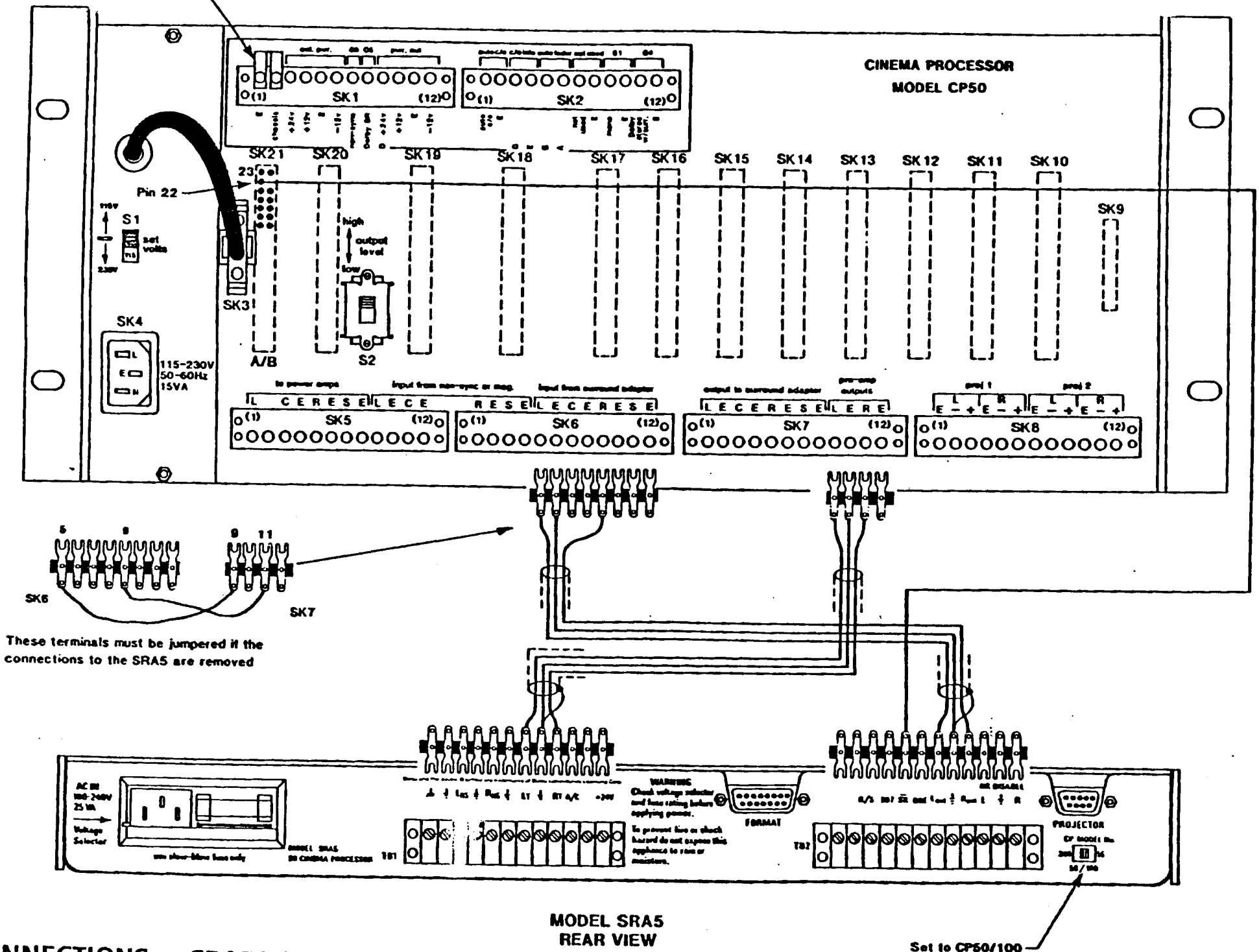
CONNECTIONS -- SRA5 TO CP200 PROCESSOR UNIT



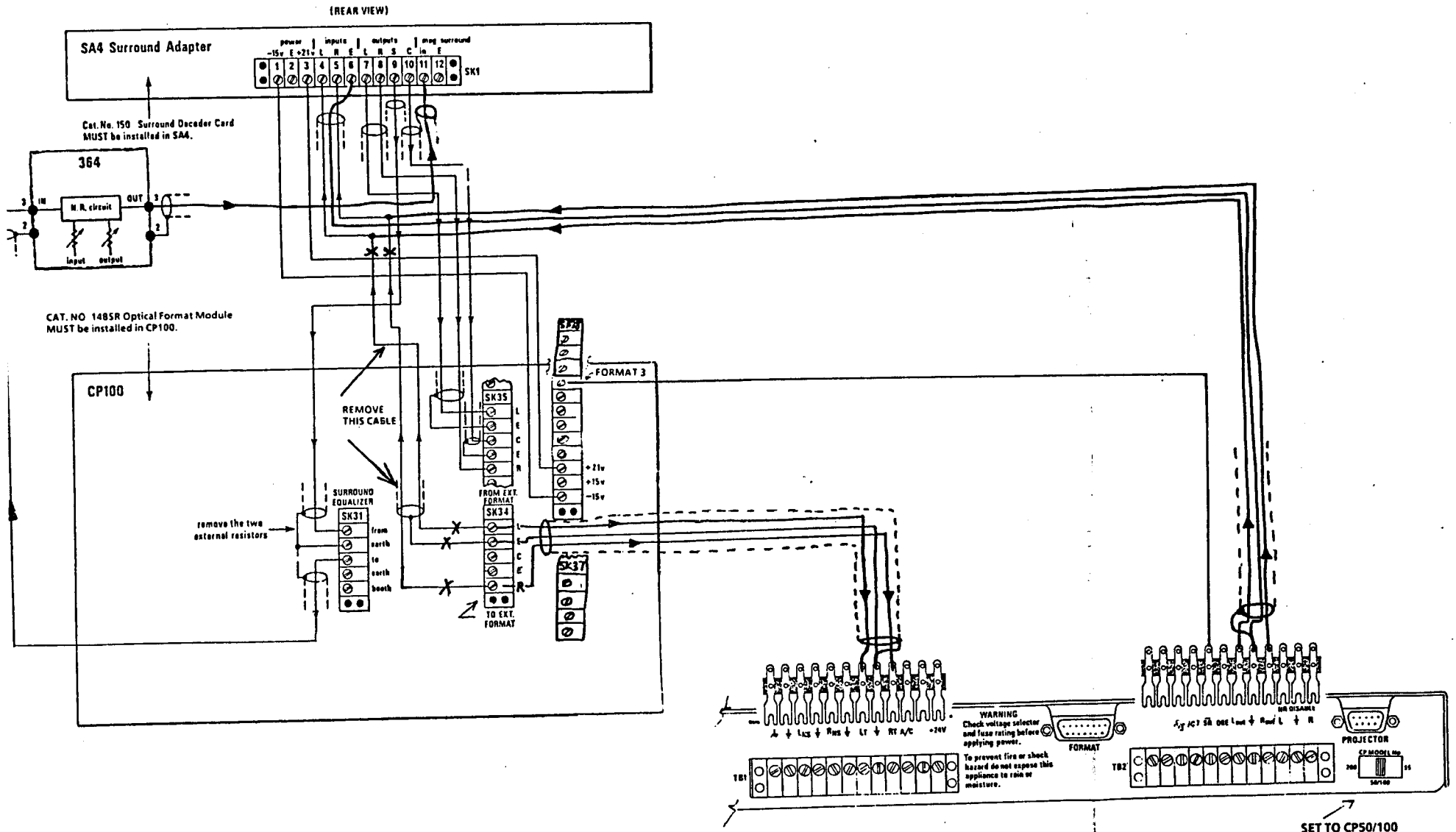
CONNECTIONS -- SRA5 TO CP100 WITH SA4



CONNECTIONS -- SRA5 TO CP200 PROCESSOR UNIT



CONNECTIONS -- SRA5 TO CP50



CONNECTIONS -- SRA5 TO CP100 WITH SA4

SECTION 7
BLOCK DIAGRAM