

# Service information

## Synthesis S-650

### Power Amplifier

Amplifier module specifications, schematic diagrams, and p.c. board layout

Main (front) power sequencer p.c. board schematic diagram

Rear sequencer p.c. board schematic diagram

## 1. TECHNICAL SPECIFICATIONS

Rated Power Output	125 Watts into 8 Ω RMS
Total Harmonic Distortion	< 0.05% at 8 Ω
Input Sensitivity/Input Impedance	1 V RMS/50 kΩ
Frequency Response	10 Hz to 20 kHz
Signal to Noise Ratio (A - weighted)	> 115 dB
Damping Factor (at 8 Ω)	> 200
Power Requirement	(U): 120 V AC, 60 Hz (J): 100/200/250 V AC, 50/60 Hz (K): 110V/50/200/250 V AC, 50/60 Hz
Power Consumption	230 Watts
(U): (full rated output into 8 Ω)	
(K): (10% THD output into 8 Ω)	300 Watts

Design and specifications subject to change without notice.

## 2. TEST EQUIPMENT REQUIRED FOR SERVICING

This table the test equipment required for servicing.

Item	Use
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
AC/UTM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO alignment
Circuit Tester	Trouble shooting
DC/UTM	Voltage measurements (DC)
AC Voltmeter	Monitor's primary power to amplifier
Line Voltmeter	Monitor's potential of primary power to amplifier
Variable Auto-transformer	Adjust level of primary power to amplifier
Shielding Plug	Shots amplifier input to eliminate noise pickup

## 3. IDLING CURRENT ADJUSTMENT

- 1) With the power OFF, set semi - fixed resistor R708 on the PC board (P701) to the center position.
- 2) Connect a digital multimeter, set for the DC V range, between the test pins (J702) on the PC board (P701).
- 3) Turn the power ON, adjust the idling current as follows:
  - Turn the power ON and adjust semi - fixed resistor R708 while observing the digital multimeter indication.
  - The target value is 7 mV (19 mA).

### [Reference]

When a set whose idling current has been adjusted is switched on with after 1 minute it reaches about 4.5 mV. After 10 minutes, it reaches a balanced state and stabilizes at 7 mV (target). Therefore, if the adjustment is made between 30 seconds and 1 minute after the power is switched on, adjust to 3.5 mV. In the same way, if 1 to 2 minutes have passed since the power was switched on, adjust to 4.5 mV. From 2 to 3 minutes, adjust to 6 mV. After more than 5 minutes since the power was switched on, adjust to the setting of 7 mV.

Time since power switched on	Idling current adjustment
30 seconds - 1 minute	3.5 mV
1 - 2 minutes	4.5 mV
2 - 3 minutes	6 mV
More than 5 minutes	7 mV

## 規格

定格出力	130 W 8 Ω RMS
歪率	0.05%
定格入力レベル	1 V RMS
周波数特性 (-1 dB)	10 - 100 kHz
SN比 (HIF - A)	95 dB
ダンピングファクター (1 kHz)	170
電源	AC100 V, 50/60 Hz
消費電力 (電気用品取締法)	96 W
外形寸法	94 mm
高さ	132 mm
奥行	450 mm
重量	8kg
付属品	リモコン用ケーブル X1

本機の規格および外観は改良のため予告なく変更することがありますが、ご了承ください。

## アイドリング電流の調整

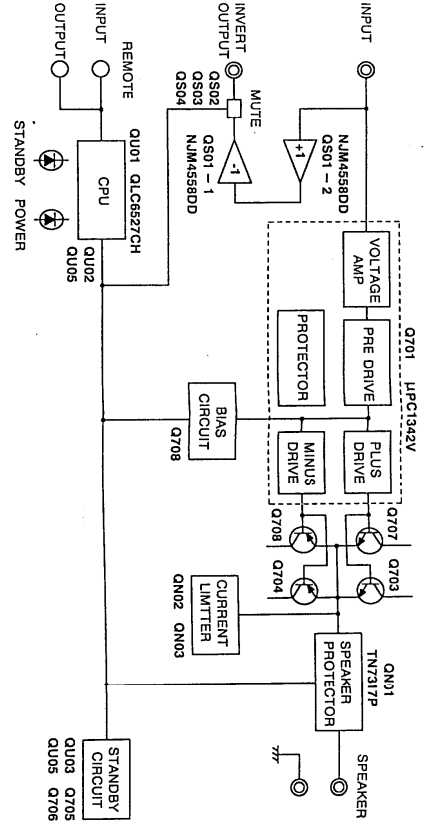
- 1) 電源を投入しない状態で、プリント基板(P701)内の半固定抵抗、R708を中央の位置とします。
- 2) プリント基板(P701)内のテストピン(J702)の両端に、直流電圧レンジとしたデジタルボルテージメーターを接続します。
- 3) 上記の設定が完了した後、アイドリング電流の調整を次の様に行ないます。
  - 電源を投入しプリント基板(P701)内の半固定抵抗R708をデジタルボルテージメーターの指示により調整します。
  - 設定値は、7 mV(19 mA)です。

### [参考]

アイドリング電流調整済みのSETを冷えた状態から電源投入すると、30秒後に約3.5 mV、1分後に約4.5 mVに達します。10分後には平衡状態となり、7 mV(設定値)に安定します。従って、電源投入後、30秒から1分にかけて調整作業を行う場合は、3.5 mVに調整します。同様に、1分後から2分後にわたる場合は4.5 mVに調整し、2分後から3分後にわたる場合は、6 mVに調整します。5分後以降は、設定値である7 mVに調整を参照下さい。

電源投入後経過時間	アイドリング電流調整値
30秒後-1分後	3.5 mV
1分後-2分後	4.5 mV
2分後-3分後	6 mV
5分後~	7 mV

## 4. BLOCK DIAGRAM



## PIN ASSIGNMENT TABLE

PIN NO.	PORT NAME	I/O	ACT	FUNCTION
1	OSC1	-	-	4.00MHz
2	TEST	-	-	GND
3	VSS	-	-	GND
4	RES	-	-	REST
5	PA0	-	-	GND
6	PA1	-	-	GND
7	PA2	-	-	GND
8	PA3	-	-	GND
9	VDD	-	-	+5V
10	PC0	-	-	RC-5 INPUT
11	PC1	0	L	POWER ON LED
12	PC2	0	L	STAND BY LED
13	PC3	0	L	RC-5 RECEIVE LED
14	PC0	0	H	STAND BY OUT
15	PD1	-	-	5V
16	PD2	-	-	GND
17	PD3	-	-	GND (SYSTEM1) / +5V (SYSTEM2)
18	OSC2	-	-	4.00MHz

NOTE 1) SYSTEM1 is for the Remote Controller with Power SW (ex. Model AV500, etc.).

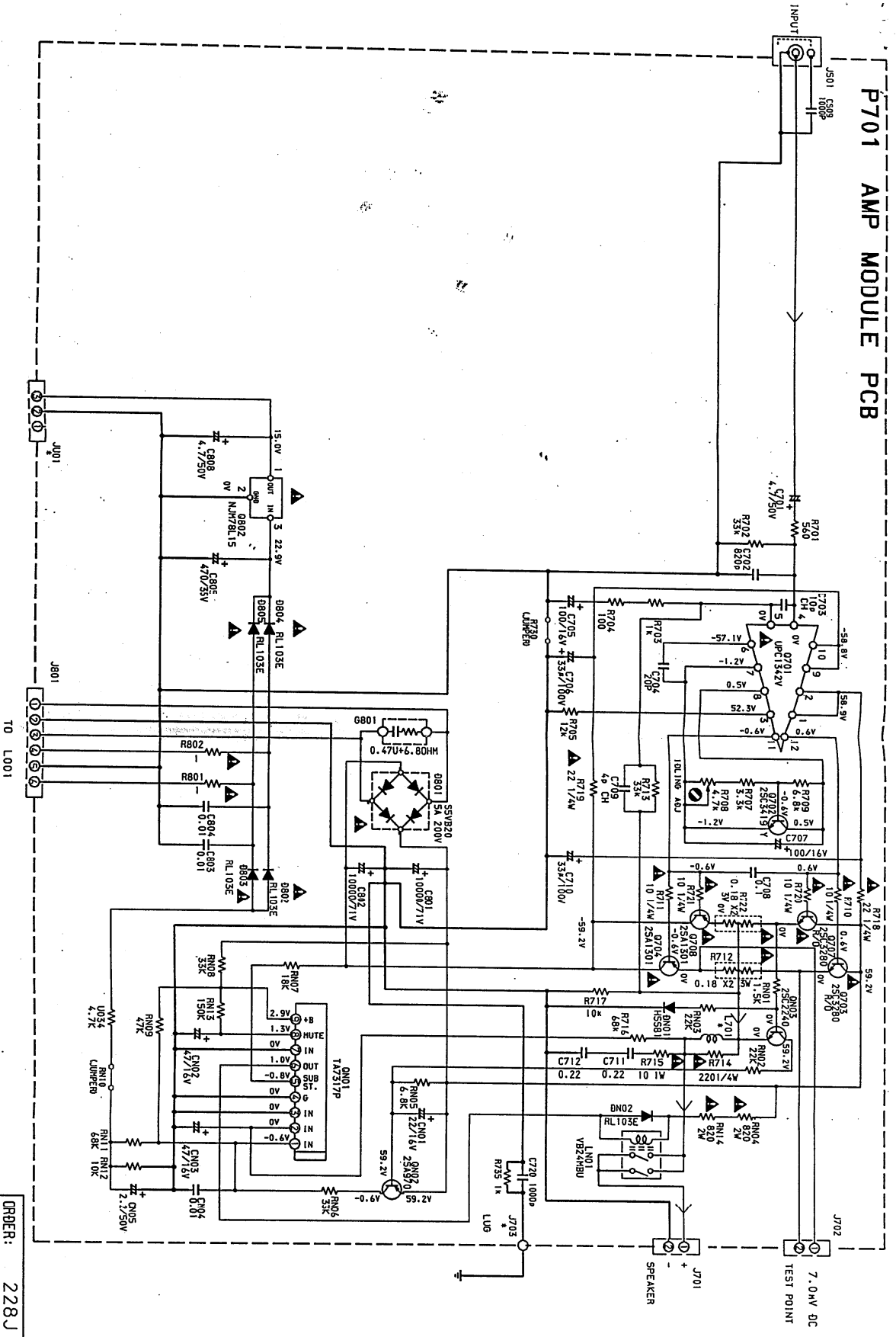
NOTE 2) SYSTEM2 is for the Remote Controller that turns on the Power SW by Function SW (ex. Model SR92, etc.).

NOTE 1) SYSTEM1はPOWER SWを押するリモコン (例 Model AV500用等) に対応。

NOTE 2) SYSTEM2はFUNCTION SWでPower onするリモコン (例 PM700AV用等) に対応。

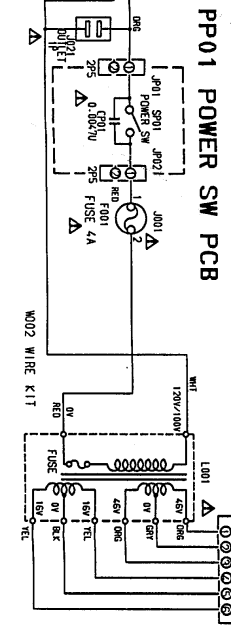
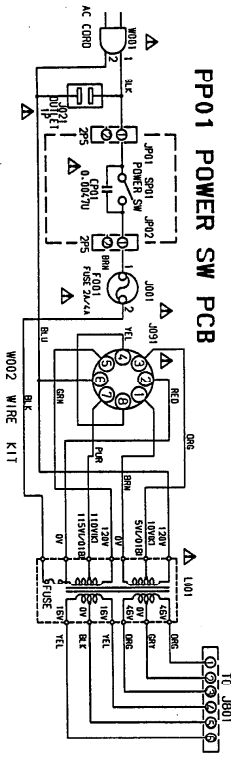
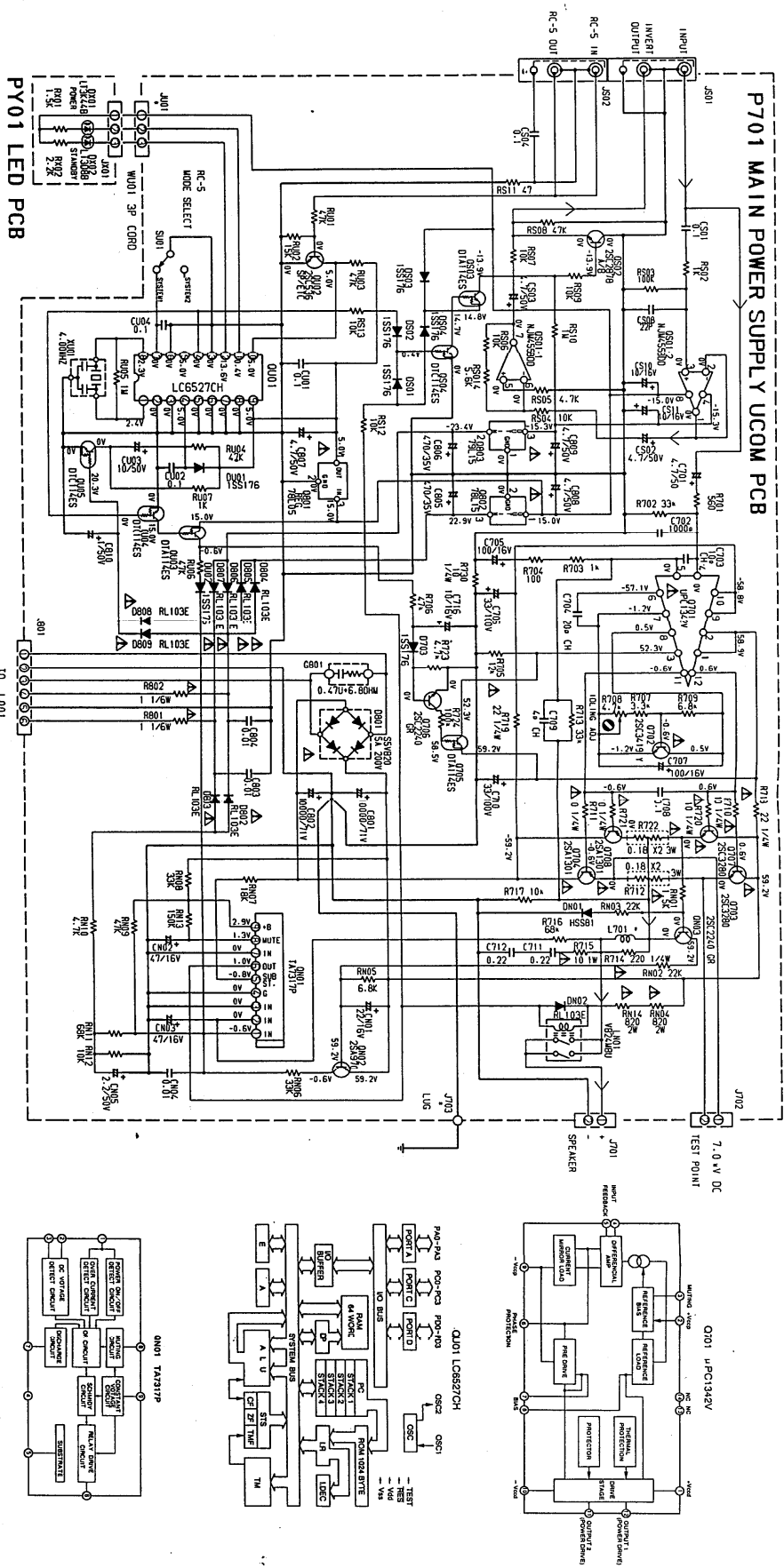
◆BUS SYSTEM (SYSTEM1/SYSTEM2) SWは、リフトパネルにあります。

# P701 AMP MODULE PCB



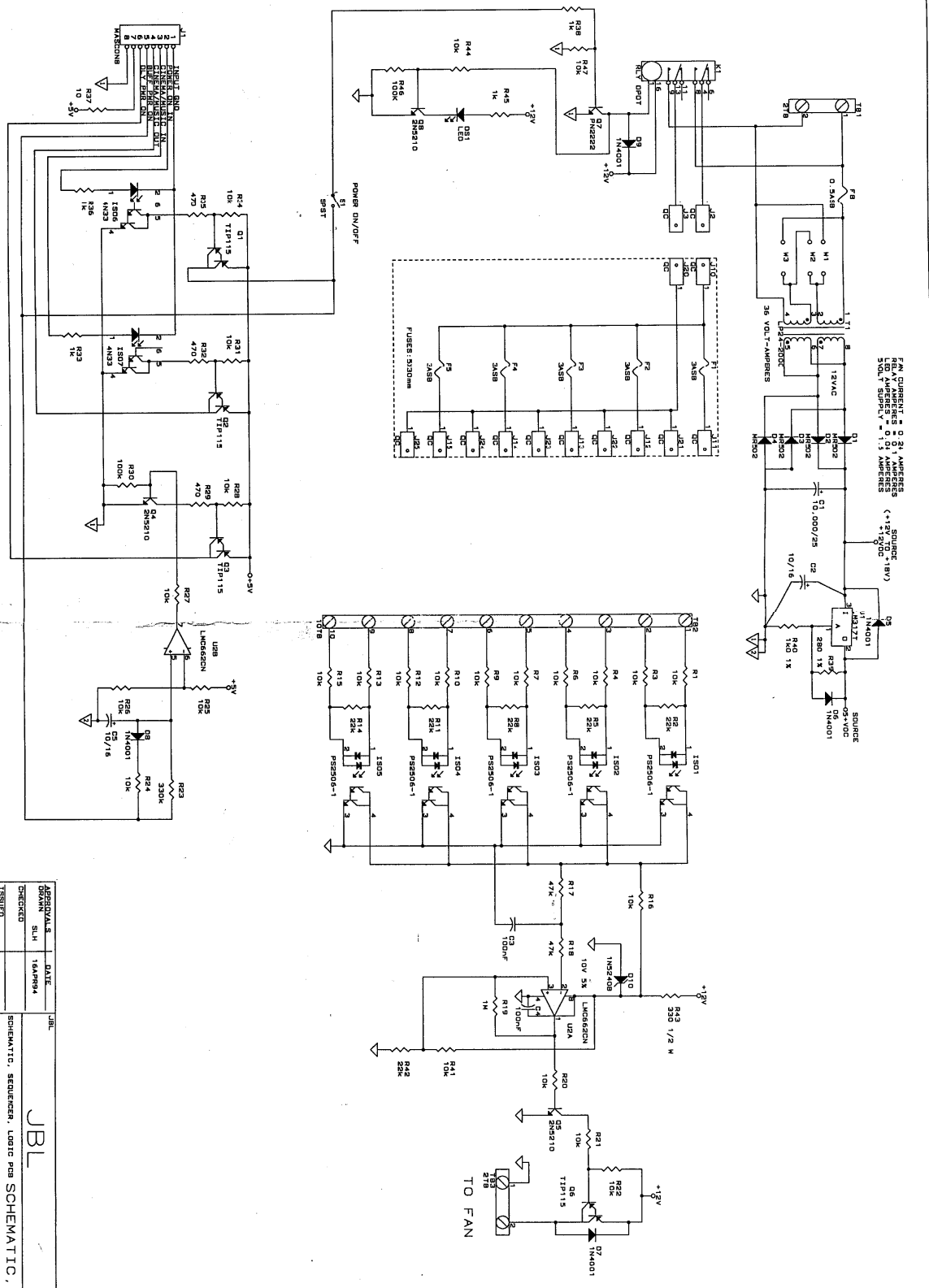
ORDER: 228J	SCHEMATIC DIAGRAM OF PAS130
DESIGNED BY H. OHISHI	DATE 1984-4-5
DESIGNED BY H. SUEMATSU	DATE 1984-4-5
APPROVED BY	228J493030 1
	MARANTZ JAPAN INC

5. SCHEMATIC DIAGRAM



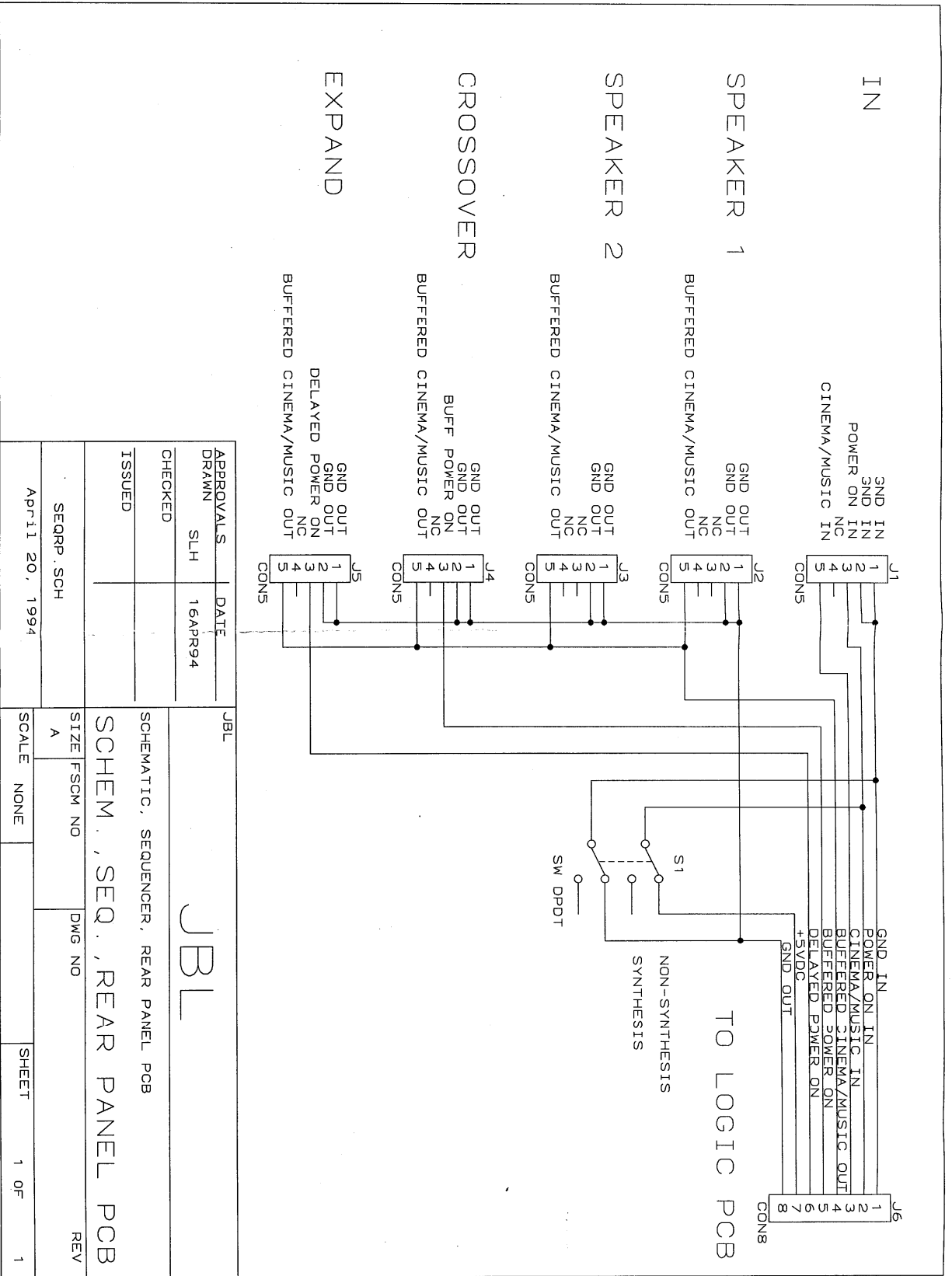
END V/01R

FOR U/F



PWR CURRENT = 0.21 AMPERES (+5V REGULATOR -18V)  
 REG V AMPERES = 0.07 AMPERES  
 500V SUPPLY = 1.1 AMPERES

APPROVAL S	DATE	JBL
DRMANN	16APR94	
CHECKED	SLH	
ISSUED		
<b>SEQUENCER, LOGIC PCB SCHEMATIC,</b> <b>SEQUENCER, LOGIC PCB</b>		
STE PSON NO	DMB NO	REV
SEDLIS SCH		
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APPROVALS	DATE
DRAWN SLH	16APR94
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JBL	
SCHEMATIC, SEQUENCER, REAR PANEL PCB	
SCHEM., SEQ., REAR PANEL PCB	
SIZE A	FSCM NO
DWG NO	REV
SCALE NONE	SHEET 1 OF 1
Apr 11 20, 1994	SEQRP.SCH

6: CIRCUIT BOARD DIAGRAM (PATTERN SIDE)

