

MODEL TP325

TRIPLE OUTPUT LABORATORY POWER SUPPLY

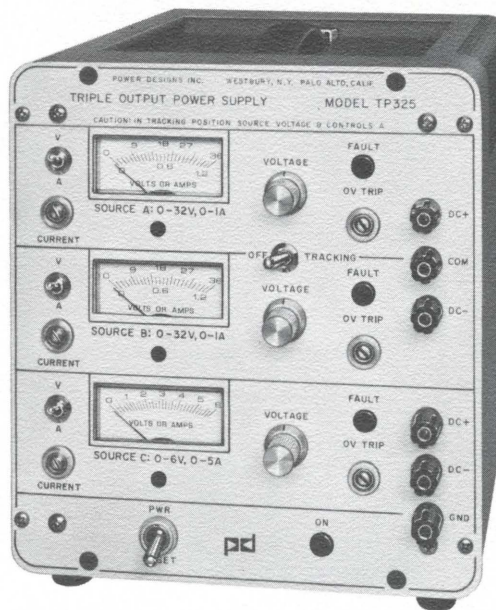
DIGITAL AND ANALOG APPLICATIONS

0-32 VDC, 0-1A*

0-32 VDC, 0-1A*

0-6 VDC, 0-5A

**NOISE & RIPPLE
LESS THAN 1.0
MILLIVOLT P-P**



* Independent or 0.1% tracking with panel switch

features:

- No derating. All outputs may be operated simultaneously at full capacity for a maximum of 94 VA.
- Outputs are floating with respect to each other and chassis except for an internal connection between one negative terminal and one positive terminal of the 32 volt sources. The two 32 volt sources may be operated in series to provide 0-64 VDC, 0-1A in any polarity with respect to chassis or left floating. The 0-6 VDC source may be operated in any polarity with respect to chassis or left floating.
- Independent adjustment of each output voltage utilizing 10-turn potentiometers with .05% resolution.
- Separate current limiting adjustment for each output.
- Separately adjustable overvoltage crowbars on each output. Overvoltage crowbars on 0-32V outputs trip simultaneously at the lower voltage trip setting of either source.
- Three taut band suspension dual range meters individually selectable for voltage or current of each source.
- A "FAULT" indicator lamp on each output signals overload, short circuit, crowbar trip or current limit operation.
- Automatic voltage tracking of the 0-32 VDC sources to $\pm 0.1\%$ by means of a panel toggle switch. This switch is equipped with a locking lever to prevent accidental operation. Single potentiometer control of tracking outputs.
- Outputs may be shorted into each other in any polarity without damage.

electrical specifications:

PARAMETER:	0-32V, 0-1A (each output)	0-6V, 0-5A
INPUT:	105-125V, 55-440 Hz, 200 w	
OUTPUT:	0-32 VDC, 0-1A	0-6V, 0-5A
LOAD REGULATION:	.01% +1 MV	.01% +5MV per amp
LINE REGULATION:	.01% +0.5 MV	.01% +0.5 MV
STABILITY:	*.02% +3 MV	*.02% +3 MV
RECOVERY TIME:	**50 μ s	**100 μ s
CURRENT LIMIT:	10-105% of rated current	0-105% of rated current
TEMPERATURE:	0-50°C	0-50°C
TEMP. COEFFICIENT:	.02% +300 μ V/°C	.02% +300 μ V/°C
OV CROWBAR:	adj. 5-40V	adj. 2.5-8V.
TRACKING:	.1% +5 MV by front panel switch	
SOURCE IMPEDANCE:	less than 1.0 ohm to 1 MHz	less than 1.0 ohm to 1 MHz
VOLTAGE CONTROLS:	10-turn potentiometers	single-turn potentiometer
FAULT INDICATORS:	lamp indicates short circuit and overload	lamp indicates short circuit and overload
METERING:	dual range volt/ammeter	dual range volt/ammeter

*24 hours at constant, line, load and ambient temperature.
 **To recover within 15 millivolts of nominal for a 10-100% load change.
 *** Both crowbars trip together independent of setting

mechanical specifications:

DIMENSIONS: 8 $\frac{3}{4}$ " H x 7 $\frac{3}{4}$ " W x 13 $\frac{1}{2}$ " D.
 WEIGHT: 20 lbs.
 FINISH: Natural anodized aluminum etched panels blue vinyl enamel cabinet, with carrying handle.

price:
\$395.00

F.O.B. WESTBURY, N. Y.
 Price subject to
 change without notice.

POWER DESIGNS

A D D E N D A

POWER SUPPLY

MODELS

TP-325	For operation	105 - 125 VAC	57 - 63 HZ
TP-325 J	For operation	105 - 125 VAC	47 - 63 HZ
TP-325 K	For operation	210 - 250 VAC	47 - 63 HZ

The Electrical Parts List and/ or Schematic Diagram have been modified as follows:

Circuit Number	Description	Mfr Code Number	Part Number
CHANGE:			
R113	Resistor, precision, metal film, 1 k Ω , $\pm 1\%$, 1/4 w	98095	RD-102-1QA
R115	Resistor, precision, metal film, 1 k Ω , $\pm 1\%$, 1/4 w	98095	RD-102-1QA
R121	Resistor, composition, 2.2 k Ω , $\pm 10\%$, 1/2 w	01121	EB 2221
R246	Resistor, wirewound, .1 Ω , $\pm 10\%$, 5 w	98095	RW-0F1-4RA
R133	Resistor, precision, metal film, 5.9 k Ω , $\pm 1\%$, 1/4 w	98095	RD-592-1QA
R256	Resistor, wirewound, .1 Ω , $\pm 10\%$, 5 w	98095	RW-0F1-4RA
R278	Resistor, precision, metal film, 3.6 k Ω , $\pm 1\%$, 1/4 w	98095	RD-362-1QA
R279	Resistor, precision, metal film, 1.91 k Ω , $\pm 1\%$, 1/4 w	98095	RD-1911-1QA
R286	Resistor, precision, metal film, 280 Ω , $\pm 1\%$, 1/4 w	98095	RD-281-1QA
T1	Transformer		
	For TP-325	98095	TTM-TP325(A)
	For TP-325 J, K	98095	TTM-TP325K(A)

A P P E N D I X

1. INTRODUCTION

This Appendix contains an Electrical Parts List, Schematic Diagram, Parts Location Diagram and Equipment Warranty.

2. ELECTRICAL PARTS LIST

All electrical and electronic parts are listed in the sequence of their circuit numbers as shown on the Schematic Diagram. A brief description of each part is given, followed by the code number of the manufacturer and his part number. All manufacturers' code numbers are taken from Cataloging Handbooks H4-1 and H4-2, Federal Supply Code for Manufacturers. These handbooks can be obtained from Federal Agencies or ordered directly from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

We recommend that all parts with the code number 98095 be ordered directly from Power Designs, Inc. The commercial equivalents of these parts may have wide parameter tolerances or require special factory inspection or modification before they can be used in the power supply.

All components used in the power supply or supplied as replacements are carefully inspected at the factory. Inspections are performed on a 100% basis or at AQL levels to Military Specification MIL-Q-9858 under which Power Designs, Inc. has been qualified.

All semiconductors are inspected on a 100% basis, not only for operating parameters, but also for critical characteristics related to reliability and predictable life expectancy. Some of these characteristics are observed when the device is taken beyond its normal operating regions. These test techniques have been developed under a "predictable reliability" program in operation at Power Designs, Inc. for the past twelve years. Under this program, quality control procedures are constantly reevaluated and updated as advances are made in solid state technology and experience is gained from field history.

Semiconductor manufacturers are continually modifying their products. Complete lines are discontinued to be replaced by devices having improved gain, operating voltage levels and frequency responses. The high gain, closed loop DC amplifiers used in regulator circuits are particularly sensitive to slight changes in these parameters. Commercial or military "equivalent" transistors may affect the performance of the power supply. We can assure compliance with the original specifications if replacement semiconductors are ordered from the Factory.

All replacement semiconductors are processed and stocked at the factory to insure complete interchangeability with the devices in the original equipment. These devices are coded with a Power Designs, Inc. part number. For example:

<u>MS</u>	<u>1028</u>	<u>A</u>
Semiconductor Manufacturer's Code	Power Designs, Inc. Type	Suffix Identifying Special Parameters

When ordering replacements, please identify the device as thoroughly as possible, giving the model and serial number if available.

The replacement part you receive may not have the same part number as that shown on the Electrical Parts List. This can be due to several factors:

- a) A different prefix indicates that Power Designs, Inc. is using another vendor source. The operating characteristics of the devices are identical.
- b) A completely different part number indicates:
 1. The original vendor has discontinued manufacture of the item or can no longer manufacture it to the original specifications.
 2. A better device for use in a particular circuit has been substituted.
 3. Tighter controls for interchangeability have provided greater assurance of reliability with the replacement.

ELECTRICAL PARTS LIST

NOTE: Before replacing semiconductors, see paragraph 2 of this Appendix.

Circuit Number	Description	Mfr Code Number	Part Number
C101	Capacitor, plastic film, 0.1 μ f, 200 vdc	98095	CP-17-2
C102	Capacitor, electrolytic, 100 μ f, 50 vdc	98095	CE-95-.5
C103	Capacitor, electrolytic, 21,000 μ f, 15 vdc	98095	CE-213-15
C104	Capacitor, plastic film, .0033 μ f, 200 vdc	98095	CP-18-2
C105, C106	Capacitor, plastic film, .001 μ f, 200 vdc	98095	CP-24-2
C107, C108	Capacitor, tantalum, 6.8 μ f, 35 vdc	98095	CE-6A8-.35
C109	Capacitor, plastic film, .01 μ f, 200 vdc	98095	CP-16-2
C110	Capacitor, electrolytic, 350 μ f, 10 vdc	98095	CEX-350-10
C111	Capacitor, tantalum, 1 μ f, 35 vdc	98095	CE-1-35
C112	Capacitor, ceramic disc, .02 μ f, 500 vdc	98095	CC-23-5
C201	Capacitor, electrolytic, 260 μ f, 15 vdc	98095	CEX-260-15
C202	Capacitor, plastic film, .01 μ f, 200 vdc	98095	CP-16-2
C203, C204	Capacitor, electrolytic, 1800 μ f, 55 vdc	98095	CE-182-55
C205	Capacitor, plastic film, 680 pf, 200 vdc	98095	CP-27-2
C206	Capacitor, ceramic disc, .02 μ f, 100 vdc	98095	CC-21-1
C207	Capacitor, plastic film, .001 μ f, 200 vdc	98095	CP-24-2
C208	Capacitor, plastic film, .022 μ f, 200 vdc	98095	CP-A022-2
C209	Capacitor, plastic film, .01 μ f, 200 vdc	98095	CP-16-2
C211	Capacitor, plastic film, .0047 μ f, 200 vdc	98095	CP-26-2
C212, C213	Capacitor, tantalum, 1 μ f, 50 vdc	98095	CE-1-500
C214, C215	Capacitor, tantalum, 6.8 μ f, 35 vdc	98095	CE-6A8-.35
C216	Capacitor, plastic film, .01 μ f, 200 vdc	98095	CP-16-2
C217, C218	Capacitor, electrolytic, 51 μ f, 50 vdc	98095	CEX-51-50
C219, C220	Capacitor, plastic film, 0.1 μ f, 200 vdc	98095	CP-17-2
C221	Capacitor, ceramic disc, .02 μ f, 500 vdc	98095	CC-23-5
C223	Capacitor, plastic film, .001 μ f, 200 vdc	98095	CP-24-2
C224	Capacitor, paper film, .047 μ f, 200 vdc	98095	CP-32-2
CR101, CR102	Diode, silicon	98095	GI44
CR103, CR104	Diode, silicon	98095	SY300
CR105 thru CR108	Diode, silicon	98095	GI44
CR109	Rectifier, silicon controlled	98095	MS9918-2
CR110	Diode, silicon	98095	SI5A2
CR201	Diode, silicon	98095	GI44
CR202	Bridge, rectifier	83003	VS248X/TT
CR206 thru CR214	Diode, silicon	98095	GI44
CR215	Rectifier, silicon controlled	98095	TIC47
CR216	Rectifier, silicon controlled	98095	2N4442
CR217, CR218	Diode, silicon	98095	MR754
DS101	Pilot light assembly (red)	98095	PLA-21
DS201	Pilot light assembly (red)	98095	PLA-24
DS202, DS203	Pilot light assembly (red)	98095	PLA-21

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ELECTRICAL PARTS LIST

Circuit Number	Description	Mfr Code Number	Part Number
F1	Fuse, 3A, Slo-Blo	71400	MDX
F101	Fuse, 8A, 32V, Slo-Blo	71400	MDL
F201, F202	Fuse, 2A, 250V, Slo-Blo	71400	MDX
M101	Meter, 0-6V, 0-6A	98095	MVA-151
M201, M202	Meter, 0-36V, 0-1.2A	98095	MVA-152
Q101	Transistor, silicon, NPN	98095	TI2270/U
Q102	Transistor, silicon, PNP	98095	TI1028A
Q103	Transistor, silicon, NPN	98095	TI2270/U
Q104, Q105	Transistor, silicon, NPN	98095	*ST1700/TRW1700C
Q106	Transistor, silicon, NPN	98095	ST/MS1700/TRW1700C
Q107	Transistor, silicon, PNP	98095	TI1028A
Q108 thru Q110	Transistor, silicon, NPN	98095	TI2270/U
Q111	Transistor, silicon, PNP	98095	TI1028A
Q201	Transistor, silicon, NPN	98095	2N2243A
Q202	Transistor, silicon, PNP	98095	MS1075
Q203	Transistor, silicon, NPN	98095	TI2270/U
Q204, Q205	Transistor, silicon, NPN	98095	TRW/STC1700C(r. dot)
Q206	Transistor, silicon, NPN	98095	RA2270/U
Q207, Q208	Transistor, silicon, NPN	98095	2N2243A
Q209, Q210	Transistor, silicon, NPN	98095	TRW/STC1700C(r. dot)
Q211, Q212	Transistor, silicon, PNP	98095	MS1075
Q213	Transistor, silicon, NPN	98095	2N2243A
Q214	Transistor, silicon, PNP	98095	TI1028A
Q215, Q216	Transistor, silicon, NPN	98095	TI2270/U
Q217	Transistor, silicon, NPN	98095	2N2243A
Q218, Q219	Transistor, silicon, PNP	98095	MS1075
Q220	Transistor, silicon, NPN	98095	2N2243A
Q221, Q222	Transistor, silicon, PNP	98095	TI1028A
R101	Resistor, composition, 2.7 k Ω , \pm 10%, 1 w	01121	HB2721
R102	Resistor, wirewound, 600 Ω , \pm 5%, 3 w	98095	RW-601-3KA
R103	Resistor, composition, 2.2 k Ω , \pm 10%, 1/2 w	01121	EB2221
R104	Resistor, wirewound, 700 Ω , \pm 5%, 3 w	98095	RW-701-3KA
R105	Resistor, composition, 1 k Ω , \pm 10%, 1/2 w	01121	EB1021
R106	Resistor, composition, 39 k Ω , \pm 10%, 1/2 w	01121	EB3931
R107	Resistor, composition, 3.3 k Ω , \pm 10%, 1/2 w	01121	EB3321
R108	Resistor, composition, 4.7 k Ω , \pm 10%, 1/2 w	01121	EB4721
R109	Resistor, composition, 100 Ω , \pm 10%, 1/2 w	01121	EB1011
R110, R111	Resistor, precision, metal film, 1.21 k Ω , \pm 1%, 1/4 w	98095	RD-1211-1QA

* If Q104 and Q105 are MS1700, R121 is 22 Ω , \pm 10%, 1/2 w, part #EB2201 and R122 is 330 Ω , \pm 10%, 1/2 w, part #EB3311.

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ELECTRICAL PARTS LIST

Circuit Number	Description	Mfr Code Number	Part Number
R112	Resistor, wirewound, .2 Ω , $\pm 5\%$, 5 w	98095	RW-002-3D
R113	Resistor, precision, metal film, 845 Ω , $\pm 1\%$, 1/4 w	98095	RD-8450-1QA
R114	Resistor, wirewound, .2 Ω , $\pm 5\%$, 5 w	98095	RW-002-3D
R115	Resistor, precision, metal film, 845 Ω , $\pm 1\%$, 1/4 w	98095	RD-8450-1QA
R116	Resistor, precision, metal film, 806 Ω , $\pm 1\%$, 1/4 w	98095	RD-8060-1QA
R117	Resistor, composition, 12 k Ω , $\pm 10\%$, 1/2 w	01121	EB1231
R118	Resistor, composition, 1 k Ω , $\pm 10\%$, 1/2 w	01121	EB1021
R119	Resistor, composition, 4.7 meg Ω , $\pm 10\%$, 1/2 w	01121	EB4751
R120	Resistor, precision, metal film, 5.62 k Ω , $\pm 1\%$, 1/4 w	98095	RD-5621-1QA
R121	Resistor, composition, 180 Ω , $\pm 10\%$, 1/2 w	01121	EB1811
R122	Resistor, composition, 1 k Ω , $\pm 10\%$, 1/2 w	01121	EB1021
R123	Resistor, precision, metal film, 3.95 k Ω , $\pm 1\%$, 1/4 w	98095	RD-3921-1QA
R124	Resistor, composition, 470 Ω , $\pm 10\%$, 1/2 w	01121	EB4711
R125	Resistor, precision, metal film, 20 k Ω , $\pm 1\%$, 1/4 w	98095	RD-203-1QA
R126	Resistor, potentiometer, 1 k Ω , $\pm 10\%$, 1 w	98095	RVC-102B/C4-1.125
R127	Resistor, potentiometer, 2 k Ω , $\pm 10\%$, 1-1/4 w	98095	RWTP-202-C4
R128	Resistor, precision, metal film, 402 Ω , $\pm 1\%$, 1/4 w	98095	RD-4020-1QA
R129	Resistor, potentiometer, 5 k Ω , $\pm 10\%$, 1-1/4 w	98095	RWTP-502-C4
R130	Resistor, precision, metal film, 6.04 k Ω , $\pm 1\%$, 1/4 w	98095	RD-6041-1QA
R131	Resistor, potentiometer, 200 Ω , $\pm 10\%$, 1-1/4 w	98095	RWTP-201-C4
R132	Resistor, potentiometer, 6 k Ω , $\pm 10\%$, 4 w	98095	RWV602M4-.87
R133	Resistor, precision, metal film, 6.04 k Ω , $\pm 1\%$, 1/4 w	98095	RD-6041-1QA
R134	Resistor, precision, metal film, 665 Ω , $\pm 1\%$, 1/4 w	98095	RD-6650-1QA
R135	Resistor, composition, 100 Ω , $\pm 10\%$, 1/2 w	01121	EB1011
R136	Resistor, potentiometer, 1 k Ω , $\pm 10\%$, 1 w	98095	RVC-102B/C4-1.125
R137	Resistor, composition, 10 Ω , $\pm 10\%$, 1/2 w	01121	EB1001
R138	Resistor, composition, 100 Ω , $\pm 10\%$, 1/2 w	01121	EB1011
R140	Resistor, composition, 22 Ω , $\pm 10\%$, 1/2 w	01121	EB2201
R142	Resistor, composition, 47 Ω , $\pm 10\%$, 1/2 w	01121	EB4701
R201	Resistor, composition, 10 Ω , $\pm 10\%$, 1/2 w	01121	EB1001
R202	Resistor, wirewound, 1.2 k Ω , $\pm 5\%$, 3 w	98095	RW-122-3KA
R203, R204	Resistor, composition, 4.7 k Ω , $\pm 10\%$, 1/2 w	01121	EB4721
R205	Resistor, wirewound, 1.2 k Ω , $\pm 5\%$, 3 w	98095	RW-122-3KA
R206	Resistor, composition, 390 Ω , $\pm 10\%$, 1/2 w	01121	EB3911
R207	Resistor, composition, 8.2 k Ω , $\pm 10\%$, 1/2 w	01121	EB8221
R208	Resistor, composition, 68 Ω , $\pm 10\%$, 1/2 w	01121	EB6801
R209	Resistor, composition, 8.2 k Ω , $\pm 10\%$, 1/2 w	01121	EB8221
R210	Resistor, precision, metal film, 4.32 k Ω , $\pm 1\%$, 1/4 w	98095	RD-4321-1QA
R211	Resistor, potentiometer, 5 k Ω , $\pm 10\%$, 1-1/4 w	98095	RWTP-502-C4
R212	Resistor, composition, 68 Ω , $\pm 10\%$, 1/2 w	01121	EB6801
R213	Resistor, wirewound, 2 Ω , $\pm 5\%$, 5 w	98095	RW-020-3RA
R214, R215	Resistor, wirewound, 1 Ω , $\pm 5\%$, 5 w	98095	RW-010-3RA
R216	Resistor, wirewound, 2 Ω , $\pm 5\%$, 5 w	98095	RW-020-3RA
R217	Resistor, composition, 330 Ω , $\pm 10\%$, 1/2 w	01121	EB3311
R218	Resistor, wirewound, 2 k Ω , $\pm 5\%$, 10 w	98095	RW-202-3EA
R219	Resistor, composition, 2.2 k Ω , $\pm 10\%$, 1/2 w	01121	EB2221
R220	Resistor, wirewound, 1.5 k Ω , $\pm 5\%$, 3 w	98095	RW-152-3KA
R221	Resistor, composition, 1 k Ω , $\pm 10\%$, 1/2 w	01121	EB1021

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ELECTRICAL PARTS LIST

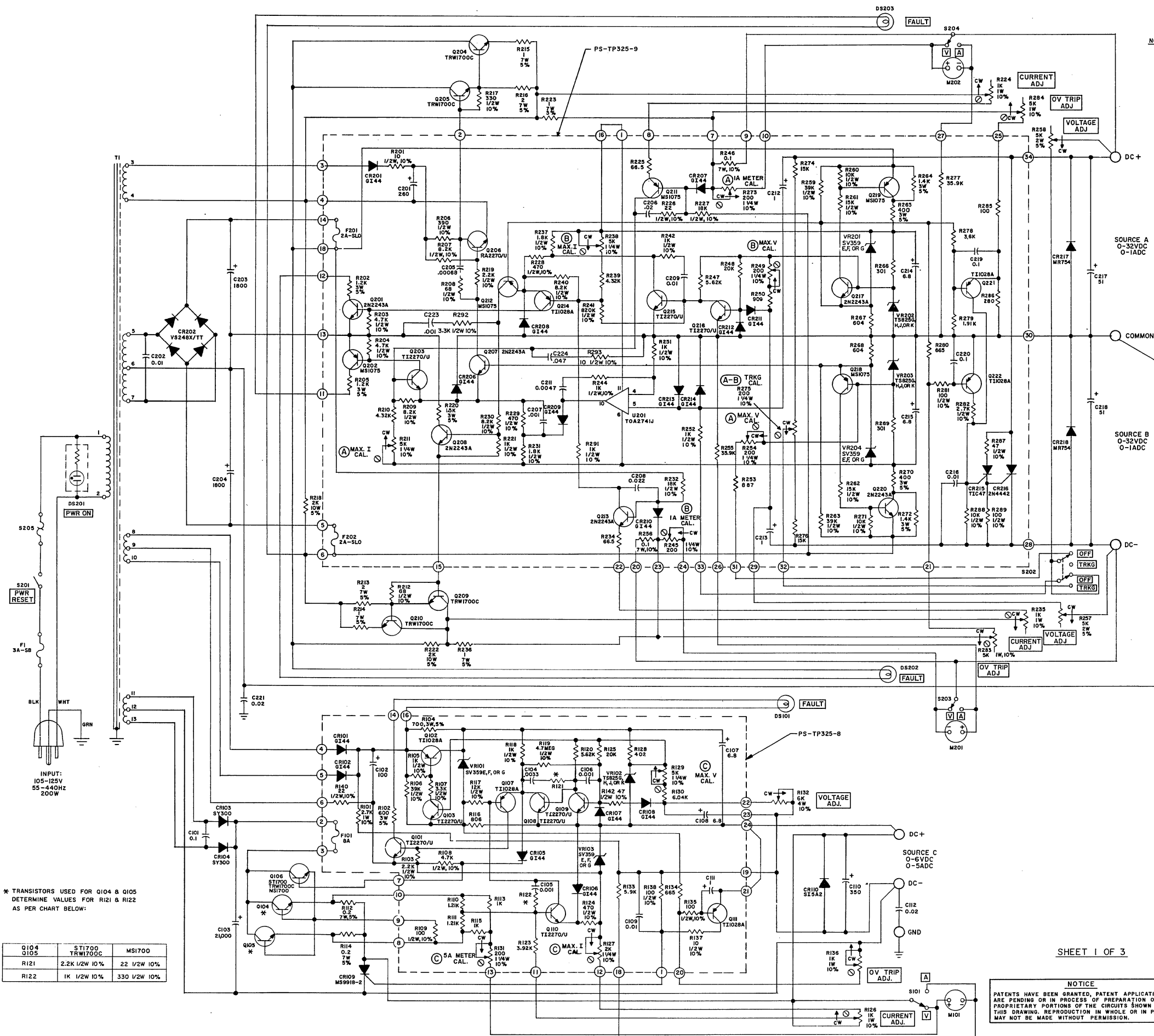
Circuit Number	Description	Mfr Code Number	Part Number
R222	Resistor, wirewound, 2 k Ω , \pm 5%, 10 w	98095	RW-202-3EA
R223	Resistor, wirewound, 1 Ω , \pm 5%, 5 w	98095	RW-010-3RA
R224	Resistor, potentiometer, 1 k Ω , \pm 10%, 1 w	98095	RVC-102B/C4-1.125
R225	Resistor, precision, metal film, 66.5 Ω , \pm 1%, 1/4 w	98095	RD-66F5-1QA
R226	Resistor, composition, 22 Ω , \pm 10%, 1/2 w	01121	EB2201
R227	Resistor, composition, 18 k Ω , \pm 10%, 1/2 w	01121	EB1831
R228, R229	Resistor, composition, 470 Ω , \pm 10%, 1/2 w	01121	EB4711
R230	Resistor, composition, 8.2 k Ω , \pm 10%, 1/2 w	01121	EB8221
R231	Resistor, composition, 1.8 k Ω , \pm 10%, 1/2 w	01121	EB1821
R232	Resistor, composition, 18 k Ω , \pm 10%, 1/2 w	01121	EB1831
R234	Resistor, precision, metal film, 66.5 Ω , \pm 1%, 1/4 w	98095	RD-66F5-1QA
R235	Resistor, potentiometer, 1 k Ω , \pm 10%, 1 w	98095	RVC-102B/C4-1.125
R236	Resistor, wirewound, 1 Ω , \pm 5%, 5 w	98095	RW-010-3RA
R237	Resistor, composition, 1.8 k Ω , \pm 10%, 1/2 w	01121	EB1821
R238	Resistor, potentiometer, 5 k Ω , \pm 10%, 1-1/4 w	98095	RWTP-502-C4
R239	Resistor, precision, metal film, 4.32 k Ω , \pm 1%, 1/4 w	98095	RD-4321-1QA
R240	Resistor, composition, 8.2 k Ω , \pm 10%, 1/2 w	01121	EB8221
R241	Resistor, composition, 820 k Ω , \pm 10%, 1/2 w	01121	EB8241
R242	Resistor, composition, 1 k Ω , \pm 10%, 1/2 w	01121	EB1021
R244	Resistor, composition, 1 k Ω , \pm 10%, 1/2 w	01121	EB1021
R245	Resistor, potentiometer, 200 Ω , \pm 10%, 1-1/4 w	98095	RWTP-201-C4
R246	Resistor, wirewound, .1 Ω , \pm 5%, 5 w	98095	RW-0F1-3RA
R247	Resistor, precision, metal film, 5.62 k Ω , \pm 1%, 1/4 w	98095	RD-5621-1QA
R248	Resistor, precision, metal film, 20 k Ω , \pm 1%, 1/4 w	98095	RD-203-1QA
R249	Resistor, potentiometer, 200 Ω , \pm 10%, 1-1/4 w	98095	RWTP-201-C4
R250	Resistor, precision, metal film, 909 Ω , \pm 1%, 1/4 w	98095	RD-9090-1QA
R251, R252	Resistor, composition, 1 k Ω , \pm 10%, 1/2 w	01121	EB1021
R253	Resistor, precision, metal film, 887 Ω , \pm 1%, 1/4 w	98095	RD-8870-1QA
R254	Resistor, potentiometer, 200 Ω , \pm 10%, 1-1/4 w	98095	RWTP-201-C4
R255	Resistor, precision, metal film, 35.9 k Ω , \pm 1%, 1/4 w	98095	RD-3592-1QA
R256	Resistor, wirewound, .1 Ω , \pm 5%, 5 w	98095	RW-0F1-3RA
R257, R258	Resistor, potentiometer, var., 5k Ω , \pm 5%, 2w, 10 turn	98095	RWV-502-3C10
R259	Resistor, composition, 39 k Ω , \pm 10%, 1/2 w	01121	EB3931
R260	Resistor, composition, 10 k Ω , \pm 10%, 1/2 w	01121	EB1031
R261, R262	Resistor, composition, 15 k Ω , \pm 10%, 1/2 w	01121	EB1531
R263	Resistor, composition, 39 k Ω , \pm 10%, 1/2 w	01121	EB3931
R264	Resistor, wirewound, 1.4 k Ω , \pm 5%, 3 w	98095	RW-142-3KA
R265	Resistor, wirewound, 400 Ω , \pm 5%, 3 w	98095	RW-401-3KA
R266	Resistor, precision, metal film, 301 Ω , \pm 1%, 1/4 w	98095	RD-3010-1QA
R267, R268	Resistor, precision, metal film, 604 Ω , \pm 1%, 1/4 w	98095	RD-6040-1QA
R269	Resistor, precision, metal film, 301 Ω , \pm 1%, 1/4 w	98095	RD-3010-1QA
R270	Resistor, wirewound, 400 Ω , \pm 5%, 3 w	98095	RW-401-3KA

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ELECTRICAL PARTS LIST

Circuit Number	Description	Mfr Code Number	Part Number
R271	Resistor, composition, 10 k Ω , \pm 10%, 1/2 w	01121	EB1031
R272	Resistor, wirewound, 1.4 k Ω , \pm 5%, 3 w	98095	RW-142-3KA
R273	Resistor, potentiometer, 200 Ω , \pm 10%, 1-1/4 w	98095	RWTP-201-C
R274	Resistor, precision, metal film, 15 k Ω , \pm 1%, 1/4 w	98095	RD-153-1QA
R275	Resistor, potentiometer, 200 Ω , \pm 10%, 1-1/4 w	98095	RWTP-201-C
R276	Resistor, precision, metal film, 15 k Ω , \pm 1%, 1/4 w	98095	RD-153-1QA
R277	Resistor, precision, metal film, 35.9 k Ω , \pm 1%, 1/4 w	98095	RD-3592-1QA
R278	Resistor, precision, metal film, 2.26 k Ω , \pm 1%, 1/4 w	98095	RD-2261-1QA
R279	Resistor, precision, metal film, 3.32 k Ω , \pm 1%, 1/4 w	98095	RD-3321-1QA
R280	Resistor, precision, metal film, 665 Ω , \pm 1%, 1/4 w	98095	RD-6650-1QA
R281	Resistor, composition, 100 Ω , \pm 10%, 1/2 w	01121	EB1011
R282	Resistor, composition, 2.7 k Ω , \pm 10%, 1/2 w	01121	EB2721
R283, R284	Resistor, potentiometer, 5 k Ω , \pm 10%, 1 w	98095	RVC-502P/C4
R285	Resistor, precision, metal film, 100 Ω , \pm 1%, 1/4 w	98095	RD-1010-1QA
R286	Resistor, precision, metal film, 442 Ω , \pm 1%, 1/4 w	98095	RD-4420-1QA
R287	Resistor, composition, 47 Ω , \pm 10%, 1/2 w	01121	EB4701
R288	Resistor, composition, 10 k Ω , \pm 10%, 1/2 w	01121	EB1031
R289	Resistor, composition, 100 Ω , \pm 10%, 1/2 w	01121	EB1011
R291	Resistor, composition, 1 k Ω , \pm 10%, 1/2 w	01121	EB1021
R292	Resistor, composition, 3.3 k Ω , \pm 10%, 1/2 w	01121	EB3321
R293	Resistor, composition, 10 Ω , \pm 10%, 1/2 w	01121	EB1001
S101	Switch, toggle, SPDT	98095	ST-37
S201	Switch, ON-OFF, SPST	98095	ST-31
S202	Switch, toggle DPDT	98095	ST-36
S203, S204	Switch, toggle, SPDT	98095	ST-37
S205	Thermostat	98095	STH-2
T1	Transformer	98095	TTM-TP325(
U201	Integrated circuit	98095	T0A2741
VR101	Diode, silicon, zener	98095	SV359E, F, G
VR102	Diode, silicon, zener	98095	TS825G, H, J,
VR103	Diode, silicon, zener	98095	SV359E, F, G
VR201	Diode, silicon, zener	98095	SV359E, F, G
VR202, 203	Diode, silicon, zener	98095	TS825G, H, J,
VR204	Diode, silicon, zener	98095	SV359E, F, G

CODE LIST OF MANUFACTURERS

01121	Allen-Bradley Company	Milwaukee, Wisconsin
71400	Bussman Manufacturing Division	St. Louis, Missouri
83003	Varo, Inc.	Garland, Texas
98095	Power Designs Inc.	Westbury, New York



NOTE:
 1. UNLESS OTHERWISE SPECIFIED:
 ALL RESISTANCE IN OHMS, 1/4W, 1%.
 ALL CAPACITANCE IN MICROFARADS.
 2. ALL FRONT PANEL CONTROL FUNCTIONS AND INDICATORS ARE SHOWN IN RECTANGLES. ALL OTHER CONTROLS ARE ON P.C. BOARDS.
 3. NUMERALS IN CIRCLES INDICATE P.C. BOARD TERMINAL NUMBERS.

* TRANSISTORS USED FOR Q104 & Q105 DETERMINE VALUES FOR R121 & R122 AS PER CHART BELOW:

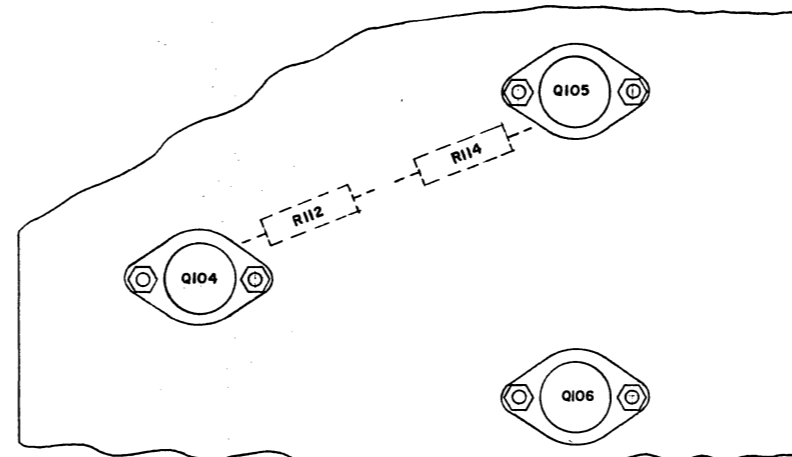
Q104	ST1700	MS1700
Q105	TRW1700C	MS1700
R121	2.2K 1/2W 10%	22 1/2W 10%
R122	1K 1/2W 10%	330 1/2W 10%

SHEET 1 OF 3

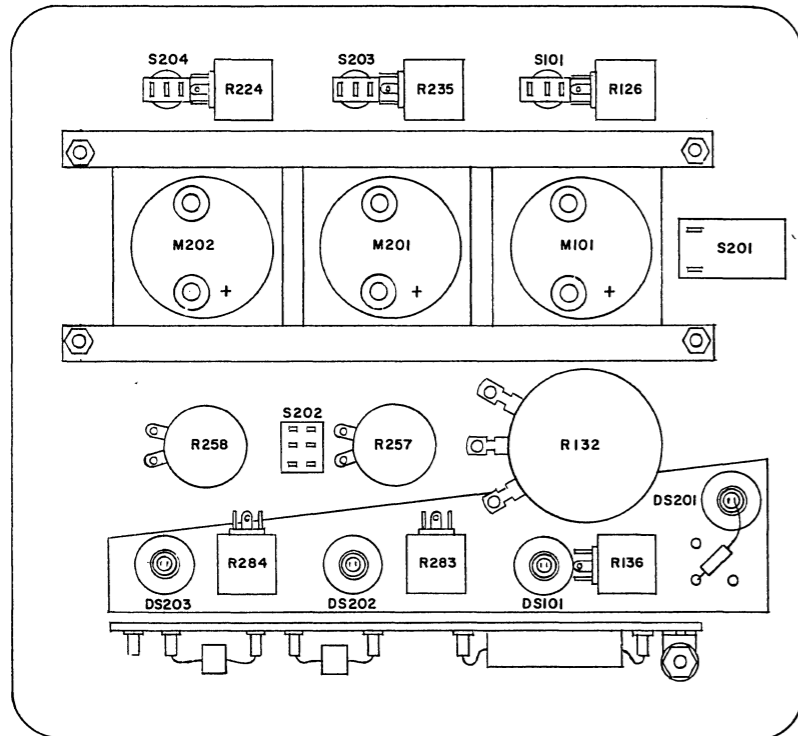
NOTICE
 PATENTS HAVE BEEN GRANTED, PATENT APPLICATIONS ARE PENDING OR IN PROCESS OF PREPARATION ON THE PROPRIETARY PORTIONS OF THE CIRCUITS SHOWN ON THIS DRAWING. REPRODUCTION IN WHOLE OR IN PART MAY NOT BE MADE WITHOUT PERMISSION.

N	REVISED, ECN 2807	
M	REVISED, ECN 2806	
L	REVISED, ECN 2797	
K	REVISED, ECN 2573	
J	REVISED, ECN 2630	
H	REVISED, ECN 2621	
G	REVISED, ECN 2548	
F	REVISED, ECN 2539	
E	REVISED, ECN 2513	
D	REVISED, ECN 2511	
C	REVISED, ECN 2509	
B	REVISED, ECN 2476	
A	RELEASED	

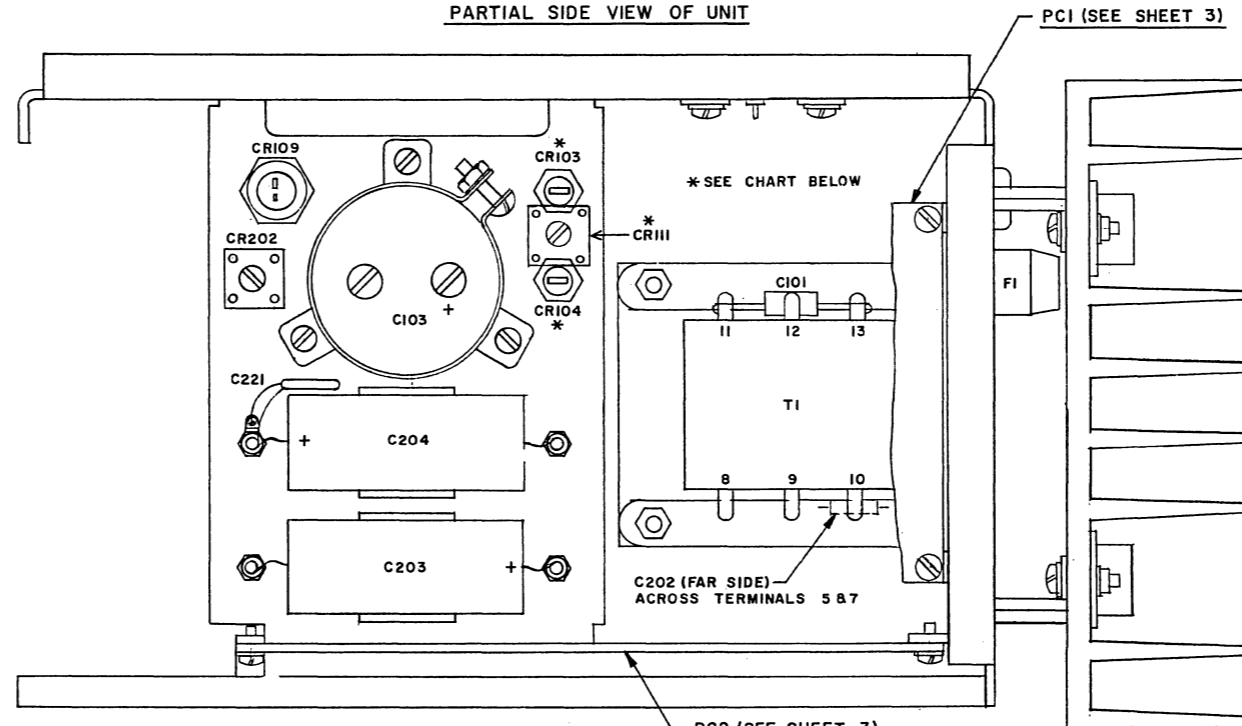
SYN	DESCRIPTION	APPRO. DATE
REVISIONS		
DRAWING NO. PS-TP325-1		
TITLE SCHEMATIC, MODEL TP325		
DRAWN	HC	CHECKED
DATE	11/20/74	DATE
Power Designs Inc. NEW YORK		



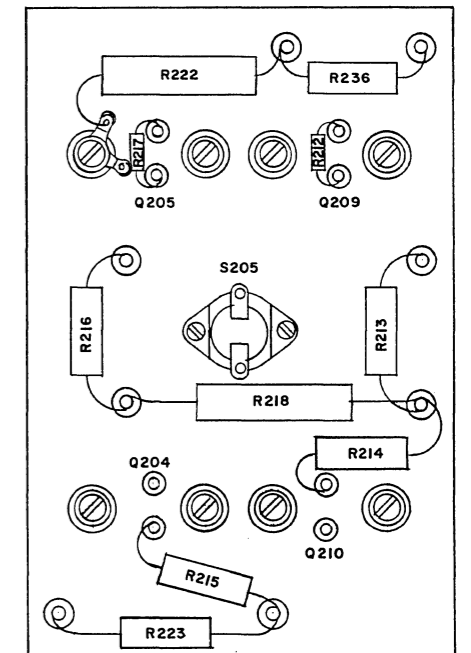
PARTIAL SIDE VIEW OF UNIT



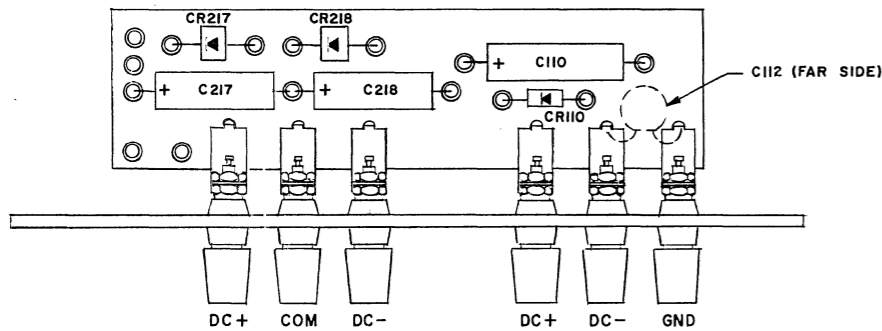
PANEL-REAR VIEW



TOP VIEW OF UNIT



HEATSINK-REAR VIEW

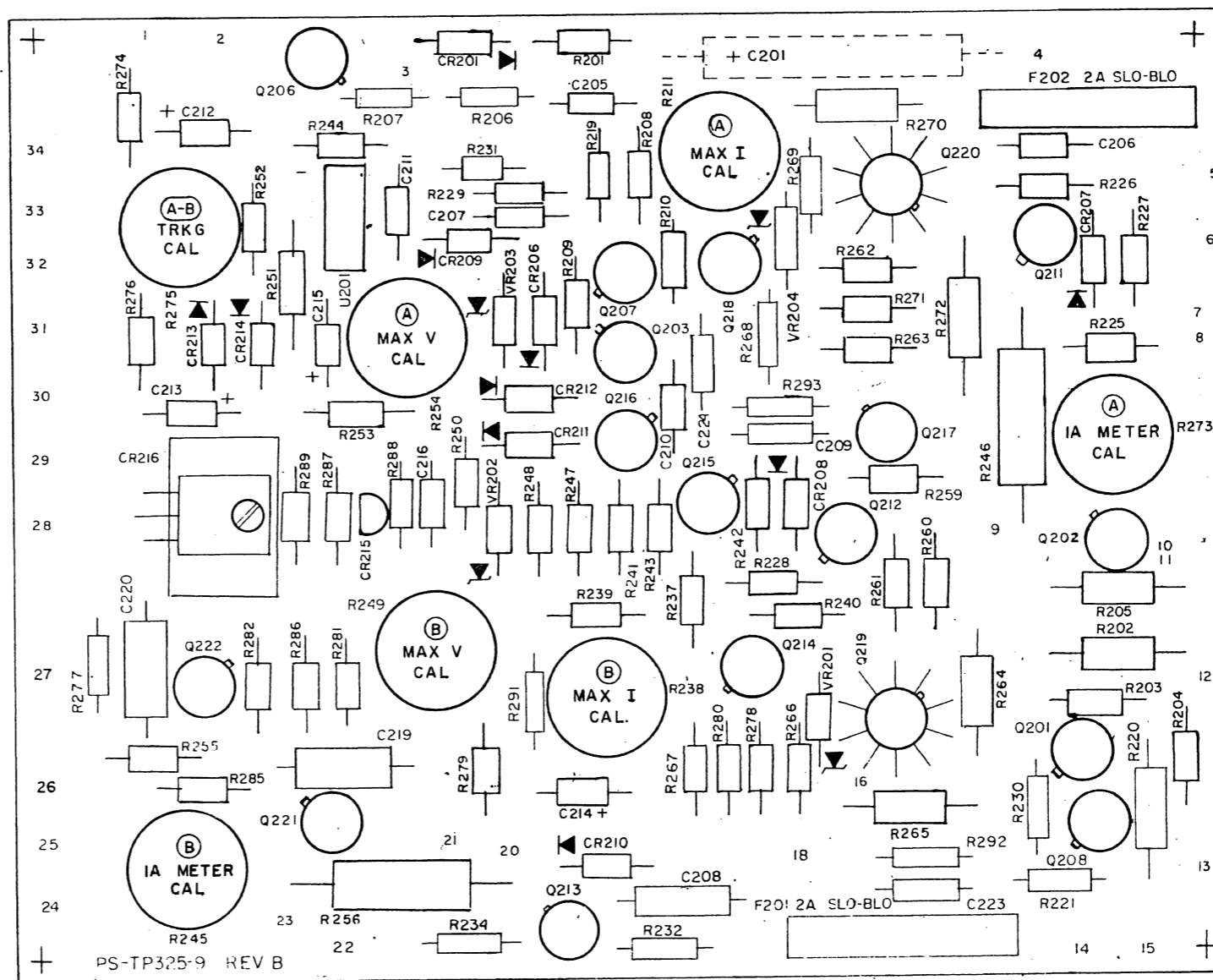
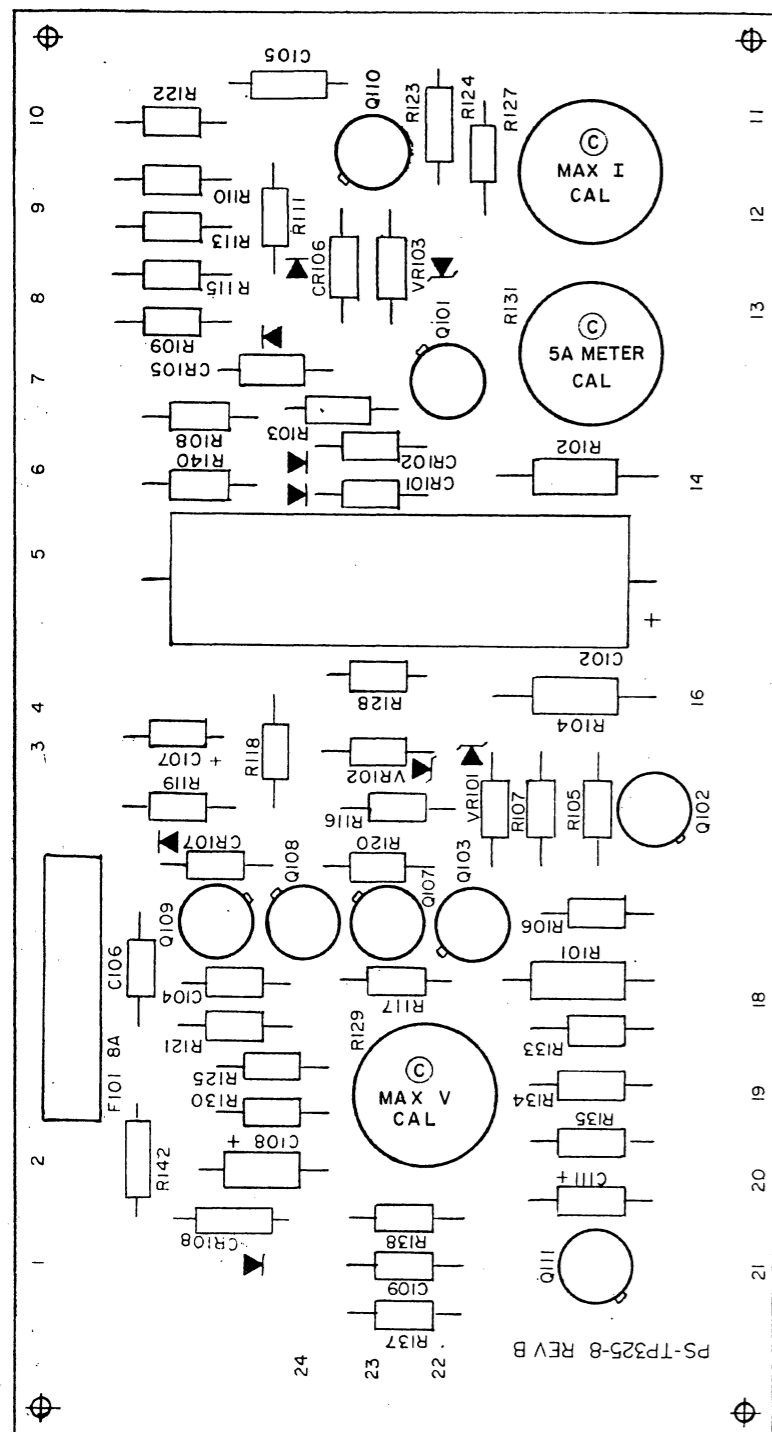


	MODEL TP-325	MODEL TP-330
CRI03	USED	NOT USED
CRI04	USED	NOT USED
CRII	NOT USED	USED

SHEET 2 OF 3

N	REVISED, ECN 2807	12/2/74
M	REVISED, ECN 2806	11/14/74
L	REVISED, ECN 2797	11/7/74
K	REVISED, ECN 2573	11/2/74
J	REVISED ECN 2630	11/2/74
H	REVISED ECN 2621	11/2/74
G	REVISED ECN 2548	11/2/74
F	REVISED ECN 2539	11/2/74
E	REVISED ECN 2513	11/2/74
D	REVISED ECN 2511	11/2/74
C	REVISED ECN 2509	11/2/74
B	REVISED, ECN 2476	11/2/74
A	RELEASED	11/2/74

SYM.	DESCRIPTION	APPD.	DATE
REVISIONS			
DRAWING NO. PS-TP325-1/ PS-TP-330-1			REV. N
TITLE LOCATION OF COMPONENTS MODEL TP-325/TP-330			
DRAWN HC	CHECKED	APPROVED	
DATE 12/4/74	DATE	DATE	
 Power Designs inc. NEW YORK			



SHEET 3 OF 3

N	REVISED, ECN 2807	
M	REVISED, ECN 2806	
L	REVISED, ECN 2797	
K	REVISED, ECN 2573	
J	REVISED ECN 2630	
H	REVISED ECN 2621	
G	REVISED ECN 2548	
F	REVISED ECN 2539	
E	REDRAWN ECN 2513	

SYM.	DESCRIPTION	APPD.	DATE
REVISIONS			

DRAWING NO. PS-TP325-1/PS-TP330-1 REV. N
 TITLE MODEL TP-325/TP-330
 LOCATION OF COMPONENTS

DRAWN	CHECKED	APPROVED
DATE	DATE	DATE

Power Designs inc.
 NEW YORK

WARRANTY

POWER DESIGNS INC., warrants to the original purchaser, each instrument sold by us, or our authorized agents, and all the parts thereof, to be free from defects in material or workmanship under normal use and service within the specified ratings and operating conditions.

Its obligation under this warranty is hereby limited to the repair or replacement of any instrument, or part thereof, which is returned to us within one year after delivery, and which shall prove, after our examination, to be thus defective.

This warranty does not include the cost of transportation charges to and from the factory and/or the cost of packaging or crating of instruments for return to the factory, unless such instrument is returned within thirty (30) days from the date of original shipment as shown on the packing list or shipping documents, and prior written authorization for such costs is obtained from the factory.

The repair or replacement of an instrument, or any part thereof, does not void or extend the original warranty.

POWER DESIGNS INC., reserves the right to discontinue any instrument without notice, or to make modifications in design at any time, without incurring any obligation to make these modifications in instruments previously sold.

POWER DESIGNS INC.

Westbury, L. I., New York

POWER DESIGNS PACIFIC, INC.

Palo Alto, California