DLF-100-200-1500

OPERATOR'S MANUAL

DYNALOAD DIVISION
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ILLUSTRATIONS

1. INTRODUCTION

The Dynaload is a precision instrument which simulates electrical loads to test power supplies, genrators, servo systems, batteries, and similar electrical power sources. It simulates, at the option of the user, resistive loads (amps/volt) or may be switched to a constant current load characteristic (current regulated at a pre-selected value). Provisions are also made for external programming in automated test setups. The external programming voltage is from 0-10V, with an input impedance of 10K minimum. Load current is directly proportional to the programming voltage.

The meter normally reads average pulse current, so for accuracy when loading in the pulse mode it is recommended to monitor the current sample output.

The circuit breaker used to connect the source to the power devices in the load is electronically controlled and senses overvoltage.

In the event of an overvoltage condition protection circuits open the electronic circuit breaker. In the event of an overcurrent or overpower condition, circuitry is activated to limit the load current.

2. SPECIFICATIONS

The following specifications apply:

Load Voltage:	0-100V
Load Current:	0-200A
Average Power Dissipation:	0-1500W
Self-Protection:	Overvoltage--less than 120V Overcurrent--less than 120A Over-power --less than 1800W

Front Panel Switches - Refer to front panel layout

S101 AC, Power ON/OFF Switch

S1 Voltmeter Range Select Switch

S2 Ammeter Range Select Switch

S3 DC Load ON/OFF Switch

MODE SELECTION

S4 20A DC LOAD - 0 to 20A constant current mode which is controlled by the front panel DC Load adjust.

S5 200A DC LOAD - 0 to 200A constant current mode which is controlled by the front panel DC Load adjust.

S6 12A/V DC LOAD - 0 to 12A/V constant resistance mode which is adjusted by the front panel DC Load adjust.

S7 120A/V DC LOAD - 0 to 120A/V constant resistance mode which is adjusted by the front panel DC Load adjust.

S8 20A PULSE LOAD - 0 to 20A pulse mode. The amplitude, frequency, duty cycle and DC baseline are adjustable by the front panel controls.

S9 200A PULSE LOAD - 0 to 200A pulse mode. The amplitude, frequency, duty cycle and DC baseline are adjustable by the front panel controls.

S10 REMOTE PROGRAM - In this mode the user can program the current level with a 0 to 10V programming voltage applied to J101 on the rear panel. The front panel controls are locked out.

S11 SHORT CIRCUIT - Drives load to saturation. Effective resistance is less than .015 ohms.

FRONT PANEL ADJUSTMENTS

Refer to Front Panel Layout.

DC Load Adjust - Coarse and fine adjust controls with a 10 to 1 ratio for precise setting of load current for the constant resistance and constant current functions. This control is also functional in the pulse mode to adjust the DC load component.

Pulse Amplitude - Coarse and fine adjust controls with a 10 to 1 ratio for setting the peak current in the pulse mode, the maximum setting is 200 Amps peak.

Freq. Adj. - Coarse and fine controls adjust the frequency of the pulse generator.

Width - Adjusts the percentage of the on time to off time ratio of the pulse generator a minimum of 10% on time, to maximum of 90% on time can be achieved.

FRONT PANEL STATUS INDICATORS

DC This indicator is on when the DC circuit breaker is engaged.

OV When an overvoltage condition exists alarm will light and the DC breaker will disengage.

OC This alarm will light when the Dynaload is in current limit.

OP This alarm will light when the Dynaload has reached power limit.

OT If the Dynaload reaches overtemperature this alarm will light and the load will stop drawing current.

LOC This indicator will be on when one of the local modes are selected.

REM This indicator will light when the Dynaload is in the remote programming mode.

REAR PANEL CONNECTIONS

E+ Positive Load Input
E- Negative Load Input

J103 AC, Input Connector
J101 Program Input Connector

3. OPERATING INSTRUCTIONS

The following procedure is recommended for connecting the Dynaload: The AC and DC Dynaload switches should be turned off so that the load is disconnected. The load adjustment controls should be set in the counterclockwise position. The mode selector switch should be set to the appropriate mode to be used. The Dynaload should be plugged into standard 115V, 50-60 Hz power (optional input voltage ranges are available), and connections should be made from the source to be tested to the appropriate load terminals of the dynaload. (E+ and E- on the rear of the unit.) If external modulation is to be used, the external programming voltage should also be connected.

With the AC power switch on, the digital meters should turn on. The DC-on should now be actuated. The front panel Dynaload voltmeter should indicate the source voltage. (If the circuit breaker does not close, or if there is no indication of source voltage, check all the external connections for voltage and polarity.) The load may now be increased by turning the load adjust controls clockwise until the appropriate load is obtained. External instrumentation may be used to monitor current waveforms and eliminate the effects of line voltage drops at high currents.

3.1 Constant Resistance Mode (Amps/Volt)

Two scales are provided, 0-12A/V and 0-120A/V. Minimum resistance on the 0-12A/V range is .083 ohms, and minimum resistance on the 0-120A/V range is .0083 ohms. For example, to test a 12V battery with a two ohm resistive load, the 12A/V mode should be selected, and the coarse and fine load adjust controls adjusted to obtain the 6A load. The two ohm load is now set, and this resistance value will remain constant for the full range of input voltage.

The resistive load characteristics of the dynaload simulate a pure resistance down to approximately 1 to 2V input; i.e., for a given resistance setting, the current is directly proportional to the voltage over wide dynamic ranges. In the very low voltages, the power transistors will saturate.

3.2 Constant Current Mode

Some power sources, such as variable power supplies, are rated at a fixed maximum load current and adjustable over a predetermined voltage range: i.e., 5-30V @ 20A. If the resistive load characteristic were used for this type of test, it would be necessary to reset the load each time the power supply voltage was changed, in order to maintain the full load current. However, if the load is set to the 20A constant current mode, a load of 20A is applied, then the power supply can be adjusted from 5-30V, and the load current will remain constant.

It should be noted that many power supplies are designed for short circuit protection by internal current limiting and bendback, and therefore, may not start up into a constant current type of load. Accordingly, the constant resistance characteristic should be used as a load when simulating short circuit protection and recovery of most power supplies, unless otherwise specified by the manufacturer.

3.3 Pulse Mode

The pulse load may be varied from 0-20A or from 0-200A peak current by the pulse amplitude control on the front panel. The frequency may be varied from approximately 200Hz to 20KHz by the frequency control on the front panel and the duty cycle of the square wave can be adjusted from 10% to 90% with the width control on the front panel. This pulse load may be superimposed on top of a constant DC load, which may be selected by the DC load control on the front panel.

If the pulse is to be used down to a no-load state,* the DC load controls should be turned fully counterclockwise. The maximum total of the pulse and DC load will be limited around 220A by the internal current limit protection.

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*The pulse load is most effective with some steady state load current to which the pulse added. Pulsing from zero load creates a delay in the pulse rise and fall. The pulse current should be monitored on an oscilloscope to assure proper operation.

The rise time of the load current pulse is approximately 15 us for a 10-200A pulse and return. Operation at low voltages (less than 5V) may result in transient to less than 1V at the input terminal due to Ldi/dt drops in the power leads. This in turn may cause pulse waveform distortion and the user should monitor the load current waveforms to assure proper operation.

The DC and pulse load may be mixed in any combination through the use of the separate DC load coarse and fine and the pulse load coarse and fine controls.

3.4 External Modulation

In the external modulation mode, the dynaload acts as a constant current load with the constant current proportional to the external voltage applied to J101.

The dynaload will program from 0-200A with a 0-10V @ 1 MA control signal. The input impedance of the external modulation terminals is approximately 10K ohms.

The linearity of the external program is set to be within ±1% above 2A.

The load may be pulsed or it will follow the programming waveform within the transient response limits of the Dynaload.

3.5 Power Rating

The model DLF 100-200-1500 will dissipate 1500W continuously. In order to assure that overheating does not occur, the rear and top of the Dynaload should be clear for the air intake and the air exhaust; i.e., the cooling air enters from the top and leaves from the rear. The dynaload should periodically be checked for dust accumulation.

3.6 Protective Circuits

The Dynaload has internal current limiting at approximately 220A maximum. In the event that an overvoltage is applied to the Dynaload, an internal overvoltage circuit will open the circuit breaker, thereby protecting all internal circuits.

The voltage current product (power) is also monitored to prevent an overpower condition from happening. Accordingly, the current limit characteristic is set to approximately 220A, which is maintained to approximately 6.8V. At this point, the current limit characteristic is reduced as the input voltage is increased, thereby limiting the maximum power which may be programmed into the Dynaload.

3.7 Special Applications

The Dynaload may be used for AC load testing, within its ratings, by the use of an external bridge rectifier, so that the Dynaload sees pulsating DC, but the AC source sees an AC load. The effect of the rectifier is to slightly distort the Dynaload characteristics at low voltages and currents. The Dynaload is not normally recommended for testing AC sources above 1000 cycles unless the user specifically recognizes the load characteristics at higher frequencies.

3.8 Effects of Cable Inductance on Pulse Loading

When the Dynaload is used for high current pulse loading, the effects of cable inductance must be considered. A special 5 foot coaxial power cable is provided with the DLF to minimize wiring inductance and its use is strongly recommended. Other types of wiring or larger cables will limit speed of response and may cause ringing, etc.

The critical parameters are the 15 microsecond rise time and the 1.0V minimum compliance specifications. If the inductance of the cables from the voltage source to the dynaload is great enough to cause the voltage at the Dynaload to go below 1.0V, then excessive current wave form distortion will occur. This is because the power devices are driven into saturation in an attempt to reach the programmed current which cannot occur because of the low Drain voltage. Once in a saturated state, the response time is much slower. The result is a significant overshoot on the rising edge of the pulse.

The following is suggested to partially compensate for longer power leads:

1. 1 microhenry = 2.4 feet of wire (total).

2. 50A @ 15 microseconds rise time = 3.3 volt drop with 1 microhenry.

3. The inductive drop cannot exceed the difference between the source voltage and the 1.0V compliance.

For example: To test a 5.0v source with a 85A pulse, the maximum cable length would be:

E Max drop = 4.0V

E = L(di/dt) 4.0V = L(85A/15us)

L = 0.71 microhenries maximum

Maximum cable length = 1.7 feet total

Since this distance is relatively short, a low inductance cable is provided. This cable (5 feet long with an overall inductance of 5 uh) is compensated for internally by the load.

If the distance from the load to the source must be greater than this, there are several methods to increase the maximum distance. One way is to use several insulated conductors. This cuts the inductance in half if 4 are used instead of 2, or by one-third if 6 are used. This doubles or triples the maximum length, respectively. If oscillations or ringing occur with longer cables, the unit may be stabilized by an electrolytic capacitor in series with a damping resistor across the terminals of the load.

4. CALIBRATION PROCEDURES (Refer to FIG. 1)

4.1 Current Sample calibrate

A. Set current sample for 10.0V with Dynaload drawing 200A, adjust R5(CS CAL) on the A6 PC board.

B. With the Dynaload drawing 20A set current sample for 1.0V, adjust R10(CS OFFSET) on A6.

C. Repeat these two steps until no further adjustments are necessary.

4.2 Remote Programing Calibrate

A. Set programming source to 10.0V adjust R1(REMOTE) on A1 so the Dynaload draws 200.0A

B. Set program source for 1.0V and adjust R14(OFFSET) on A1 so the load draws 20.0A.

C. Repeat steps A and B until no further adjustments are necessary. Check programming linearity at 1.0V intervals.

4.3 Voltmeter Calibrate

A. Select the high range and apply 100V to the load inputs. Adjust R47(HV) on A4 so the voltmeter indicates the correct voltage.

B. Select the low range and apply 10V to the load inputs. Adjust R45(LV) on A4 so the voltmeter indicates the correct voltage.

4.4 Ammeter Calibrate

A. Select the high range and with the Dynaload drawing 200.0A adjust R42(HA) on A4 so the ammeter indicates the correct current.

B. Select the low range and with the Dynaload drawing 15.0A adjust R40(LA) on A4 so the ammeter indicates the correct current.

4.5 Constant Current Calibrate

A. Select the 20A constant current mode and turn the DC Load coarse adjust fully clockwise. Adjust R4(LCC) on A4 so the load draws 20.0A.

B. Select the 200A constant current mode and turn the DC Load coarse adjust fully clockwise. Adjust R5(HCC) on A4 so the load draws 200.0A.

4.6 Constant Resistance Calibrate

A. Select the 12A/V constant resistance mode, apply 10.0V to DC load inputs and turn the DC Load coarse adjust fully clockwise. Adjust R8(LA/V) on A4 until the load draws 120.0A.

B. Select the 120A/V constant resistance mode, apply 1.5V to the DC load inputs and turn the DC Load coarse adjust fully clockwise. Adjust R9(HA/V) so the load draws 180.0A.

4.7 Current Limit Calibrate

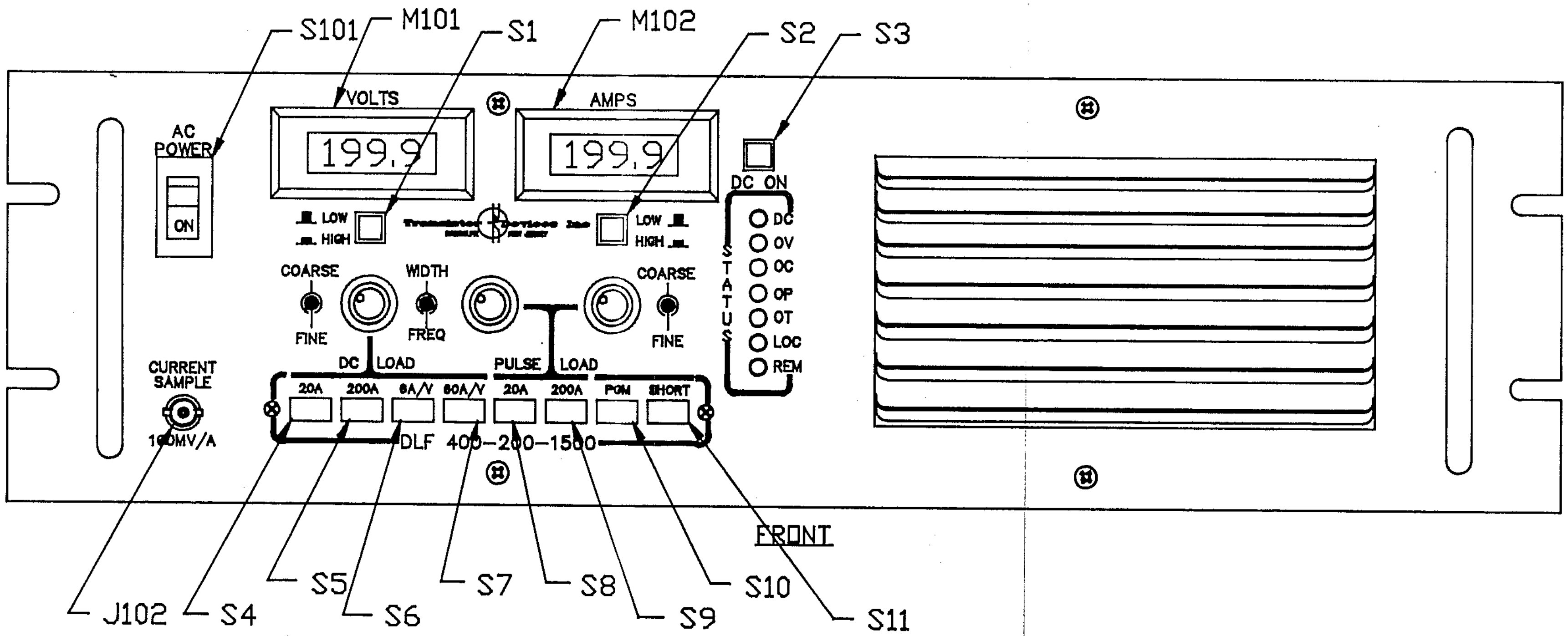
Select the 120A/V constant resistance range and apply 2V to the load inputs. Increase the current to between 210 and 240 amps. Adjust R7(CL) on A1 until current limit is achieved and the OC alarm lights.

4.8 Power Limit Calibrate

Select the 0-200A constant current mode and apply 20V to the load inputs. Increase the current to 85A and adjust R10(CL) on A1 to limit the current between 76A and 85A at 20V input. Check that the PL alarm lights. Increase input voltage to 50V and the current should be limited between 31A and 34A.

4.9 Overvoltage Calibrate

Set overvoltage trip point between 110V and 120V by adjusting R24(OV) on A1. Check that the OV alarm lights.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M101
S1
M102
S2
S3
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ON
VOLTS
199.9
AMPS
199.9
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HIGH
DC ON
DC
OV
OC
OP
OT
LOC
REM
STATUS
COARSE
FINE
WIDTH
FREQ
CURRENT SAMPLE
100MV/A
DC LOAD
PULSE LOAD
20A
200A
6A/V
60A/V
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S4
S5
S6
S7
S8
S9
S10
S11

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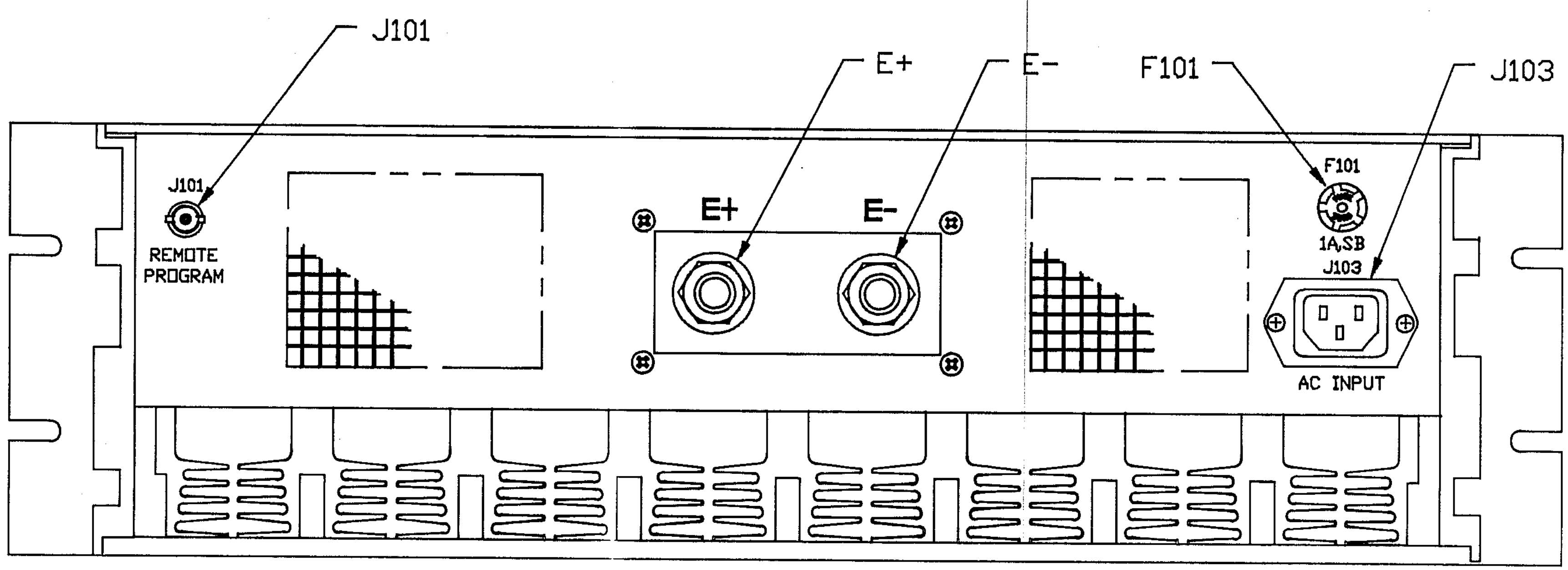
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E+
E-
F101
J103
REMOTE PROGRAM
1A,SB
AC INPUT

REAR

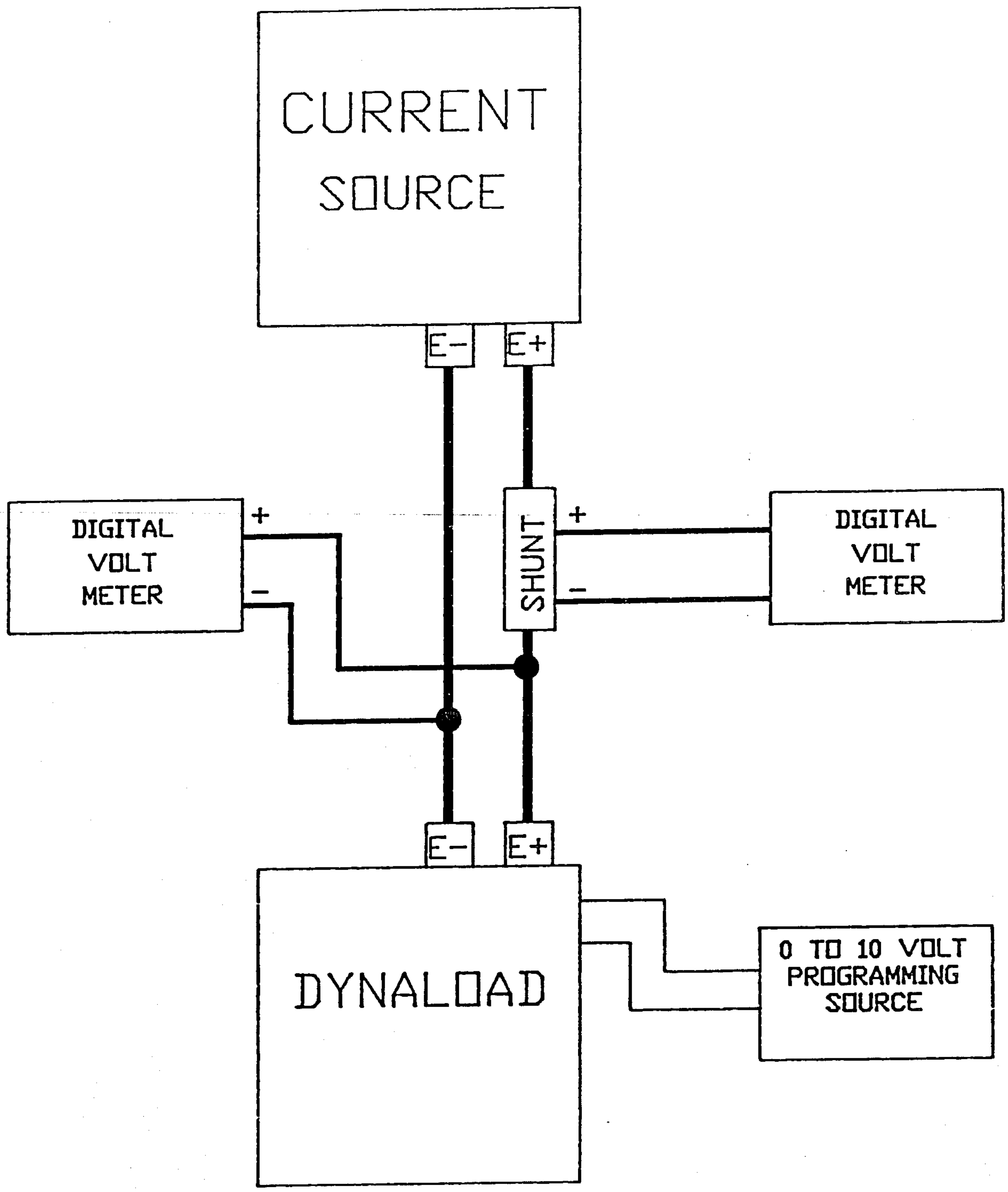
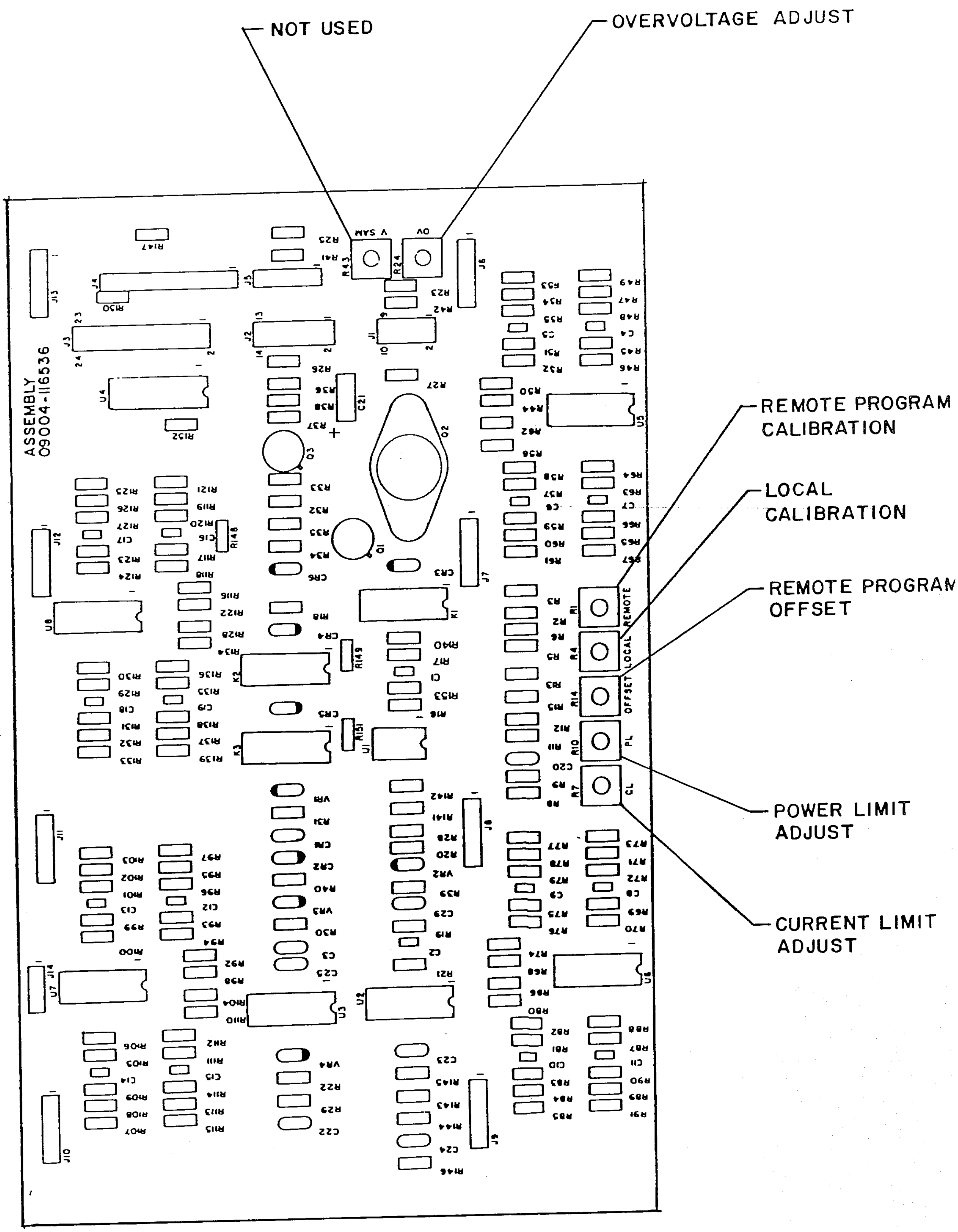


FIGURE 1. CALIBRATION SETUP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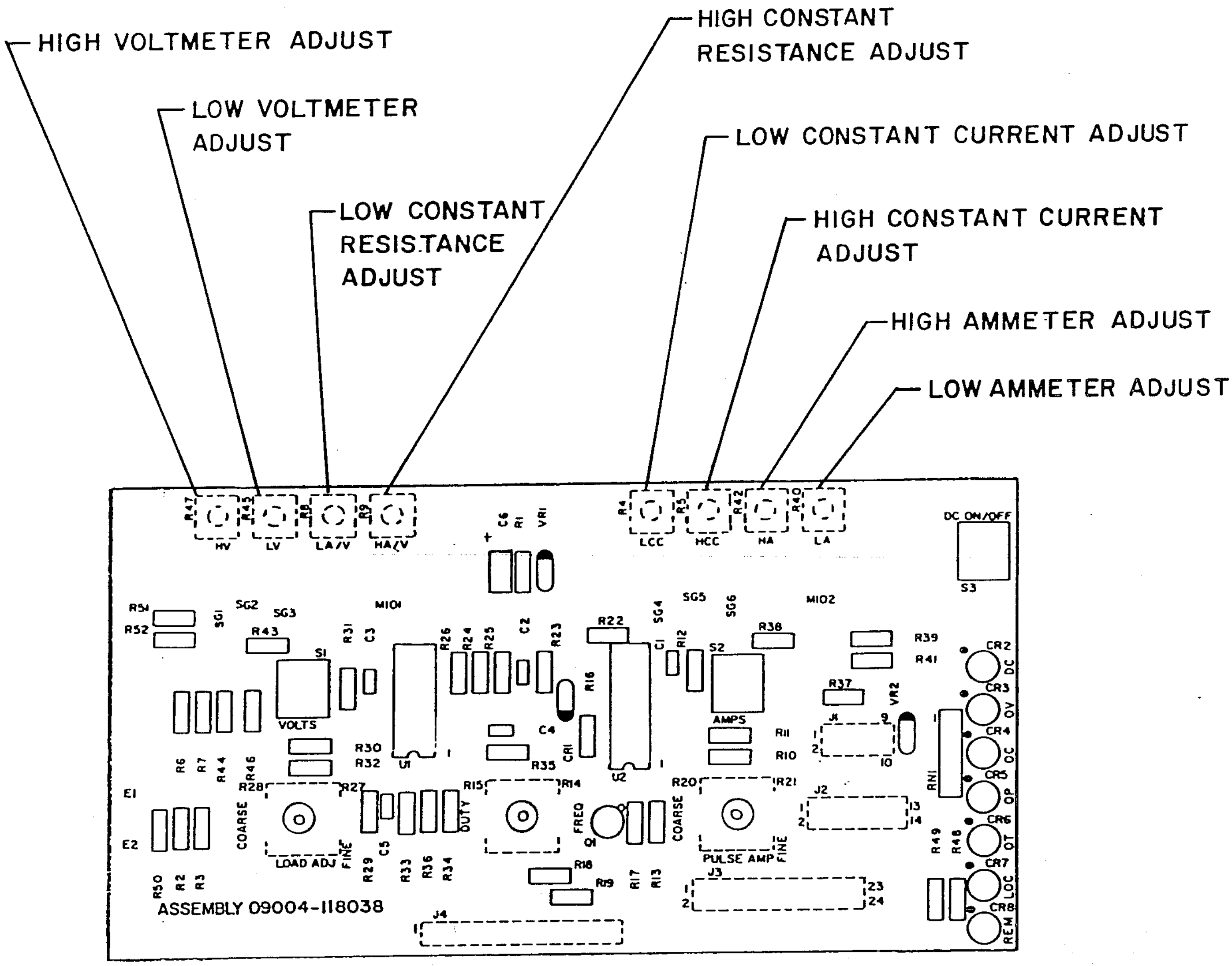
ASSEMBLY
09004-116536

AI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LOW VOLTMETER ADJUST
LOW CONSTANT RESISTANCE ADJUST
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LOW CONSTANT CURRENT ADJUST
HIGH CONSTANT CURRENT ADJUST
HIGH AMMETER ADJUST
LOW AMMETER ADJUST
HV
LV
LA/V
HA/V
LCC
HCC
HA
LA
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VOLTS
AMPS
LOAD ADJ
PULSE AMP
ASSEMBLY 09004-118038

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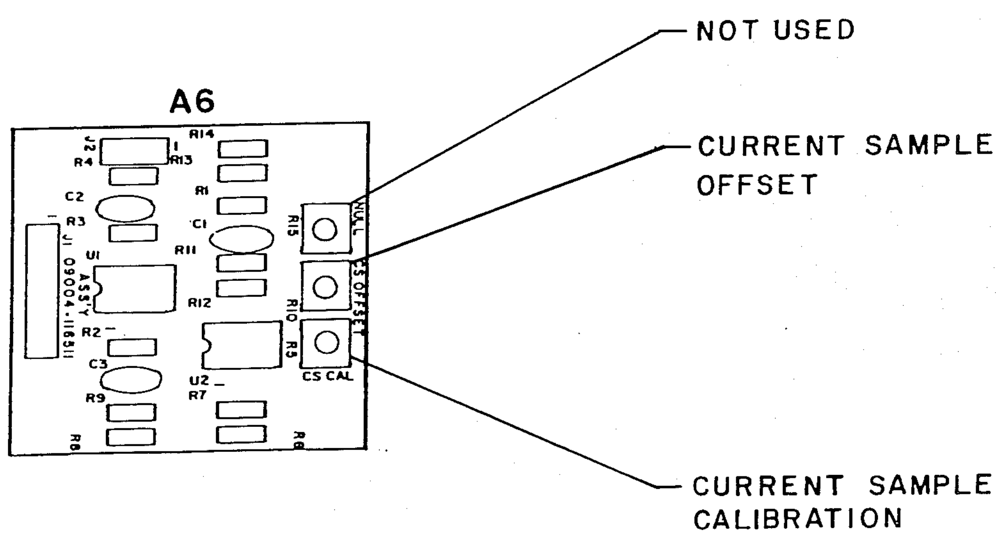
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CURRENT SAMPLE CALIBRATION
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CS OFFSET
CS CAL
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A6

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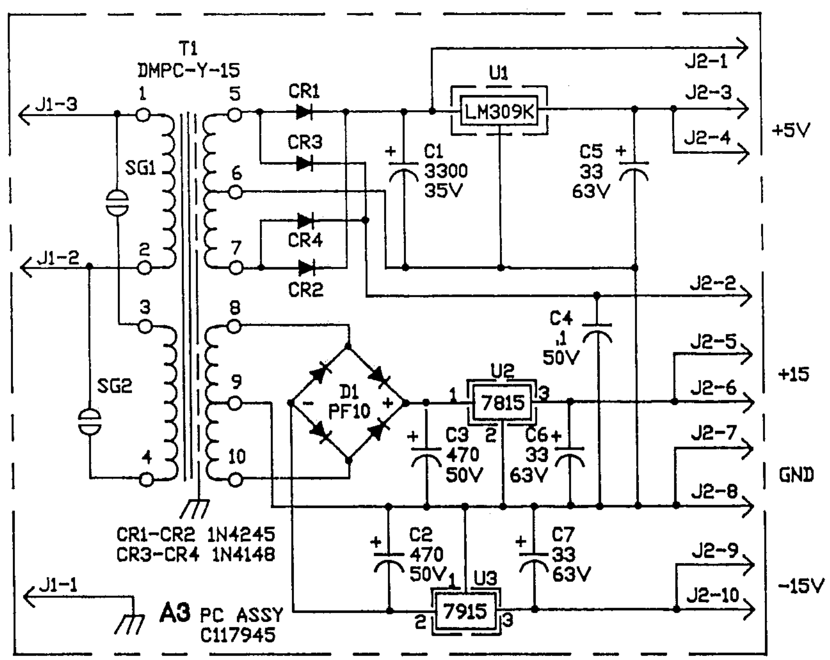

NOTES:

1. UNLESS OTHERWISE SPECIFIED:

   ALL RESISTANCE VALUES ARE IN OHMS, 1/4W, 2%

   ALL CAPACITANCE VALUES ARE IN MICROFARADS

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PARTS LIST

NEXT ASSY	USED ON
	SPS3716
	SPS3715
	DLF1500
	DLF750
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES: ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO.
DR CROUSE 8 NOV 90
CHK
APPD
APPROVED
BY DIRECTION OF

Transistor Devices Inc
Randolph New Jersey

DRAWING TITLE
SCHEMATIC
POWER SUPPLY

SIZE	CODE IDENT NO.	DRAWING NO.
C	09004	121490

SCALE DLF/PWRSUP1 SHEET OF

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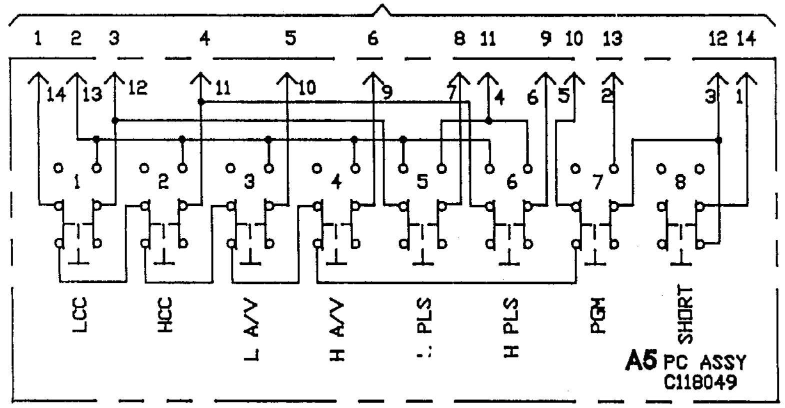

A5 SELECTOR SWITCH FUNCTION

SWITCH IDENT	MODEL NO.							
	DLF 100-100-750	DLF 400-100-750	DLF 100-200-1500	DLF 400-200-1500	DLF 100-600-4000	DLF 400-600-4000	DLF 600-5-750	DLF 600-5-1500
LCC	10A	10A	20A	20A	60A	60A	.5A	.5A
HCC	100A	100A	200A	200A	600A	600A	5A	5A
LA/V	10A/V	3A/V	12A/V	6A/V	30A/V	12A/V	.01A/V	.01A/V
HA/V	100A/V	30A/V	120A/V	60A/V	300A/V	120A/V	.10A/V	.10A/V
L PLS	10A	10A	20A	20A	60A	60A	.5A	.5A
H PLS	100A	100A	200A	200A	600A	600A	5A	5A
PGM	PGM	PGM	PGM	PGM	PGM	PGM	PGM	PGM
SHORT	SHORT	SHORT	SHORT	SHORT	SHORT	SHORT	SHORT	SHORT

QTY REQD	CODE IDENT NO.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

PARTS LIST

NEXT ASSY	USED ON
	SPS3716
	SPS3715
	DLF4000
	DLF1500
	DLF750

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO.
DR CROUSE 8 NOV 90
CHK
APPD
APPROVED
BY DIRECTION OF

Transistor Devices Inc
Randolph New Jersey

DRAWING TITLE
SCHEMATIC
FUNCTION SELECTOR SWITCH

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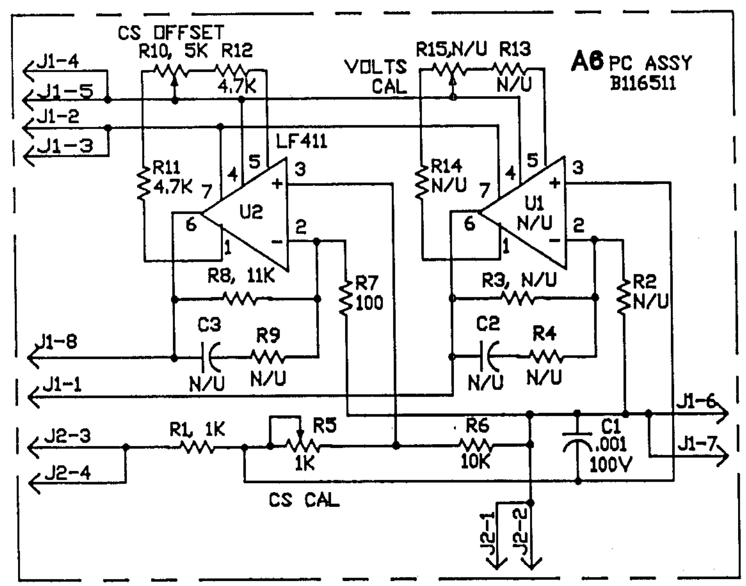

NOTES:

1. UNLESS OTHERWISE SPECIFIED:

   ALL RESISTANCE VALUES ARE IN OHMS, 1/4W, 2%

   ALL CAPACITANCE VALUES ARE IN MICROFARADS

QTY REQD	CODE IDENT NO.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
PARTS LIST				

NEXT ASSY	USED ON
	DLF4000
	DLF1500
	DLF750
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES: ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO.

DR CROUSE 17 AUG 90

CHK

APPD

APPROVED

BY DIRECTION OF

Transistor Devices Inc
Randolph New Jersey

DRAWING TITLE

SCHEMATIC

CURRENT SAMPLE AMPLIFIER

SIZE	CODE IDENT NO.	DRAWING NO.
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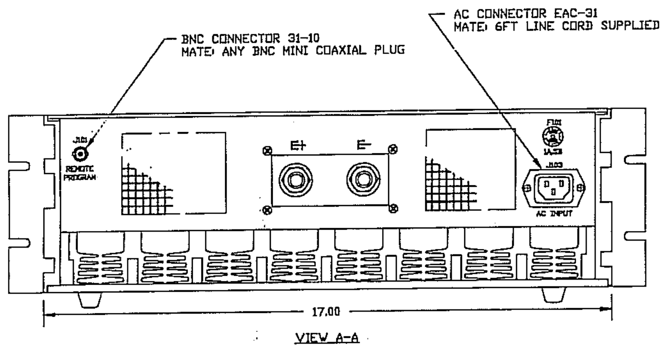

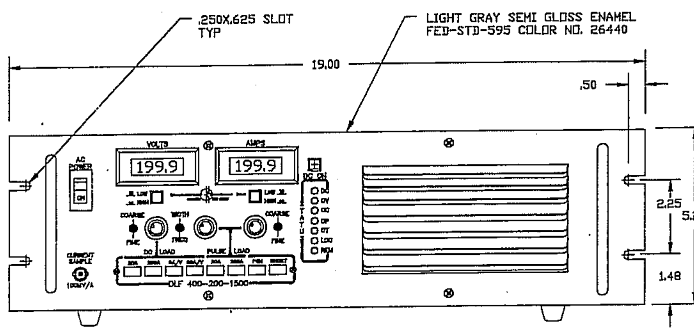

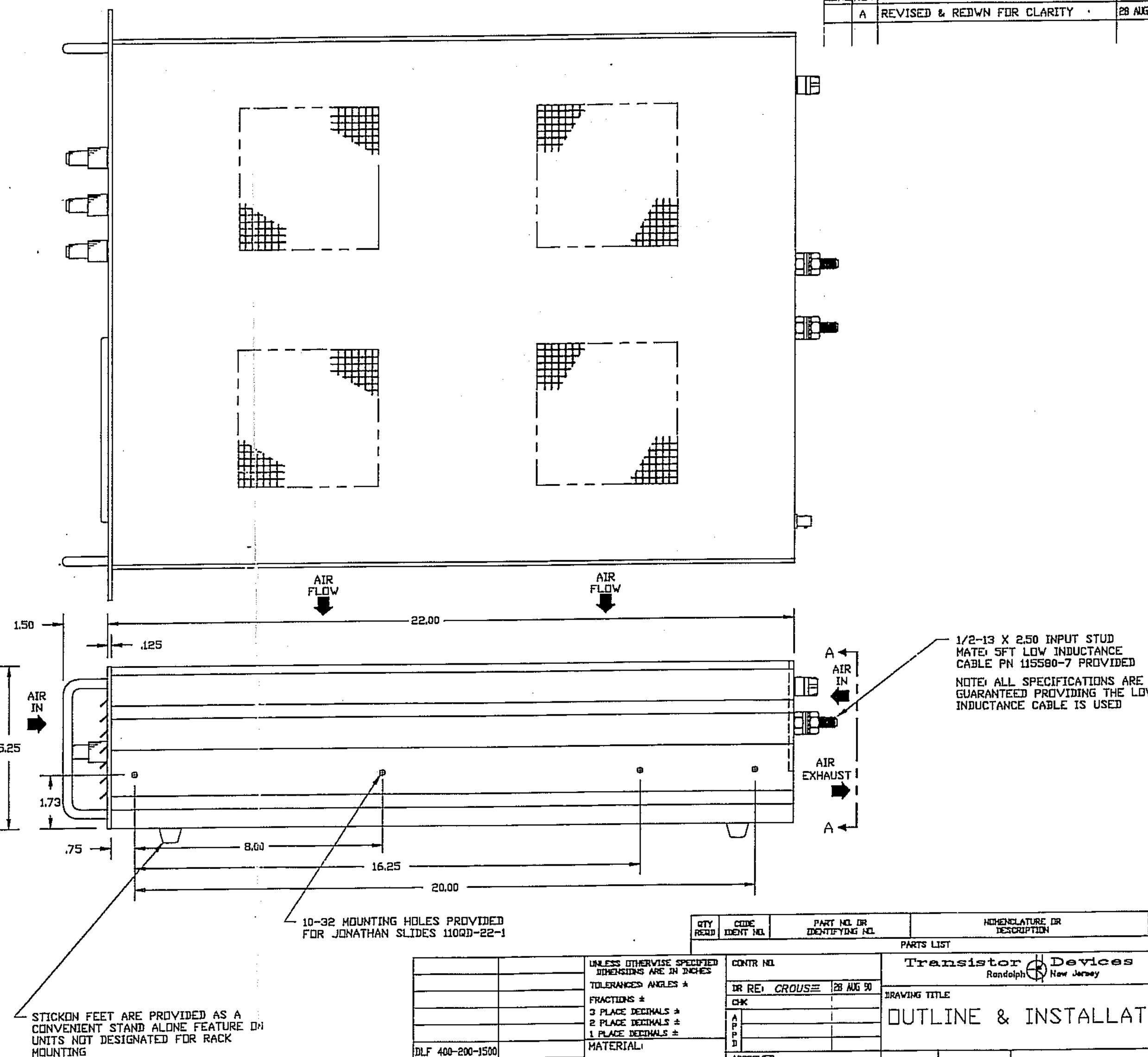

SWITCH FUNC.	MODEL NO.	
	DLF 100-200-1500	DLF 400-200-1500
LCC	20A	20A
HCC	200A	200A
LA/V	12A/V	6A/V
HA/V	120A/V	60A/V
L PLS	20A	20A
H PLS	200A	200A
PGM	PGM	PGM
SHORT	SHORT	SHORT

QTY REQD	CODE IDENT NO.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

PARTS LIST

NEXT ASSY	USED ON
DLF 400-200-1500	
DLF 100-200-1500	DLF1500

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES: ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO.
DR REI CROUSE 28 AUG 90
CHK
APPD
APPROVED
BY DIRECTION OF

Transistor Devices Inc
Randolph New Jersey

DRAWING TITLE
OUTLINE & INSTALLATION

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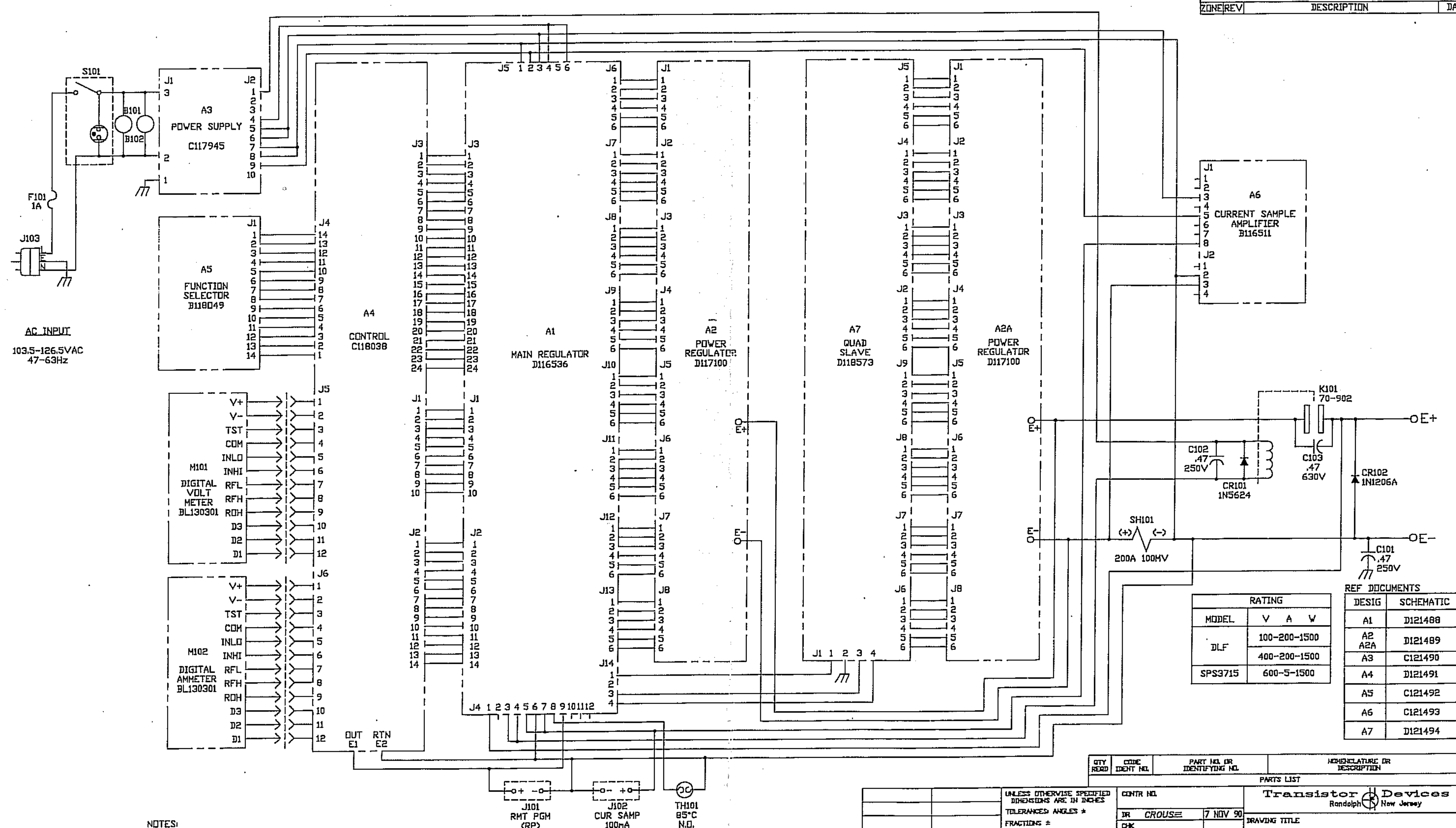

RATING	
MODEL	V A W
DLF	100-200-1500
	400-200-1500
SPS3715	600-5-1500

REF DOCUMENTS

DESIG	SCHEMATIC
A1	D121488
A2 A2A	D121489
A3	C121490
A4	D121491
A5	C121492
A6	C121493
A7	D121494

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
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   ALL CAPACITANCE VALUES ARE IN MICROFARADS

QTY REQD	CODE IDENT NO.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

PARTS LIST

NEXT ASSY	USED ON
SPS3715	
DLF1500	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES: ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO.
DR CROUSE 7 NOV 90
CHK
APPD
APPROVED
BY DIRECTION OF

Transistor Devices Inc
Randolph New Jersey

DRAWING TITLE

SYSTEM SCHEMATIC

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ZONE | REV | DESCRIPTION | DATE | APPD

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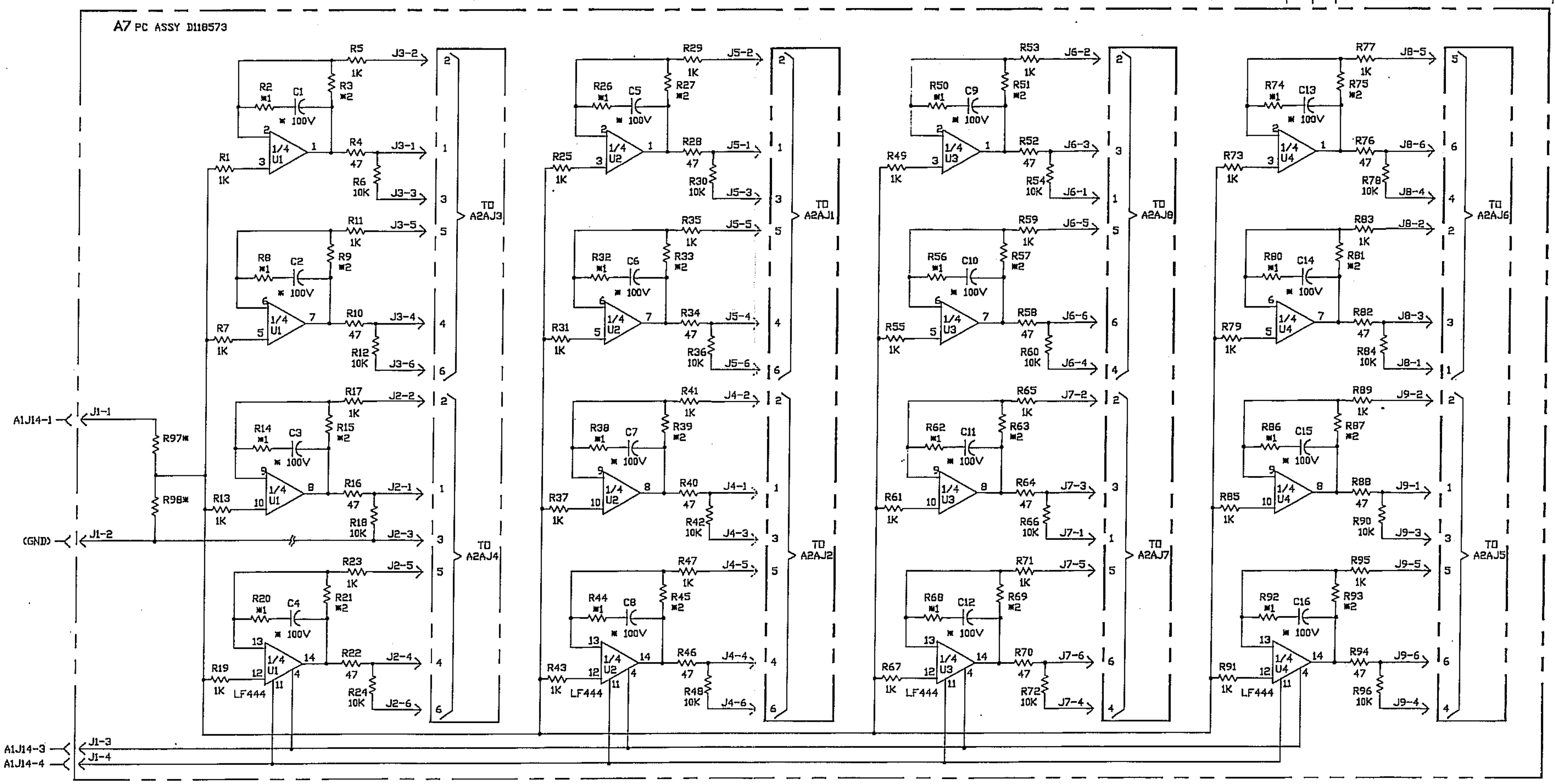


DESIG	DLF 400-200-1500	SPS3715 600-5-1500	SPS3862 400-25-1500
*1	10K	10K	100
*2	1MEG	1MEG	10K
R97	4.7K	4.7K	10K
R98	5.6K	5.6K	39K
C1-C16	.001	.001	.0047

NOTES:

1. UNLESS OTHERWISE SPECIFIED:

   ALL RESISTANCE VALUES ARE IN OHMS, 1/4W, 2%

   ALL CAPACITANCE VALUES ARE IN MICROFARADS

QTY REQD	CODE IDENT NO.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

PARTS LIST

NEXT ASSY	USED ON
SPS3715	
DLF1500	

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO.
DR CROUSE 10 AUG 90
CHK
APPD
APPROVED
BY DIRECTION OF

Transistor Devices Inc
Randolph New Jersey

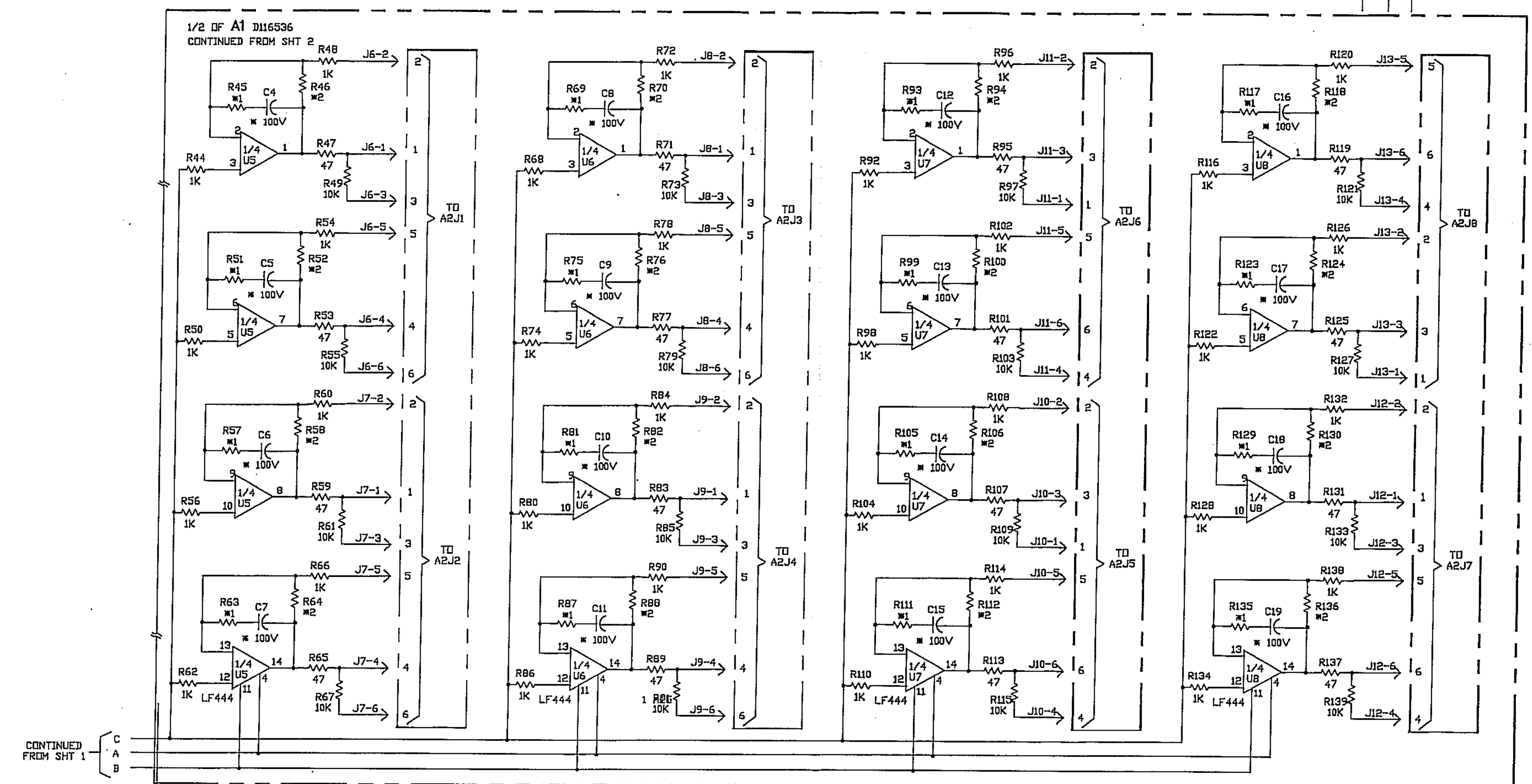
DRAWING TITLE

SCHEMATIC
QUAD SLAVE

SIZE D | CODE IDENT NO. 09004 | DRAWING NO. 121494

SCALE | DLF/QSLAVE | SHEET OF

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APP
	A	ADD SPS3862 AND VALUE TABLE ECN	9-16-91	



DESIG	DLF 400-200-1500	SPS3715 600-5-1500	SPS3716 600-5-750	SPS3862 400-25-1500
*1	10K	10K	10K	100
*2	1 MEG	1 MEG	1 MEG	10K
C4-C19	.001	.001	.001	.0047

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   ALL RESISTANCE VALUES ARE IN OHMS, 1/4W, 2%
   ALL CAPACITANCE VALUES ARE IN MICROFARADS

	SPS3862
	SPS3716
	SPS3715
	DLF1500
	DLF750
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

QTY REQD	CODE IDENT NO.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

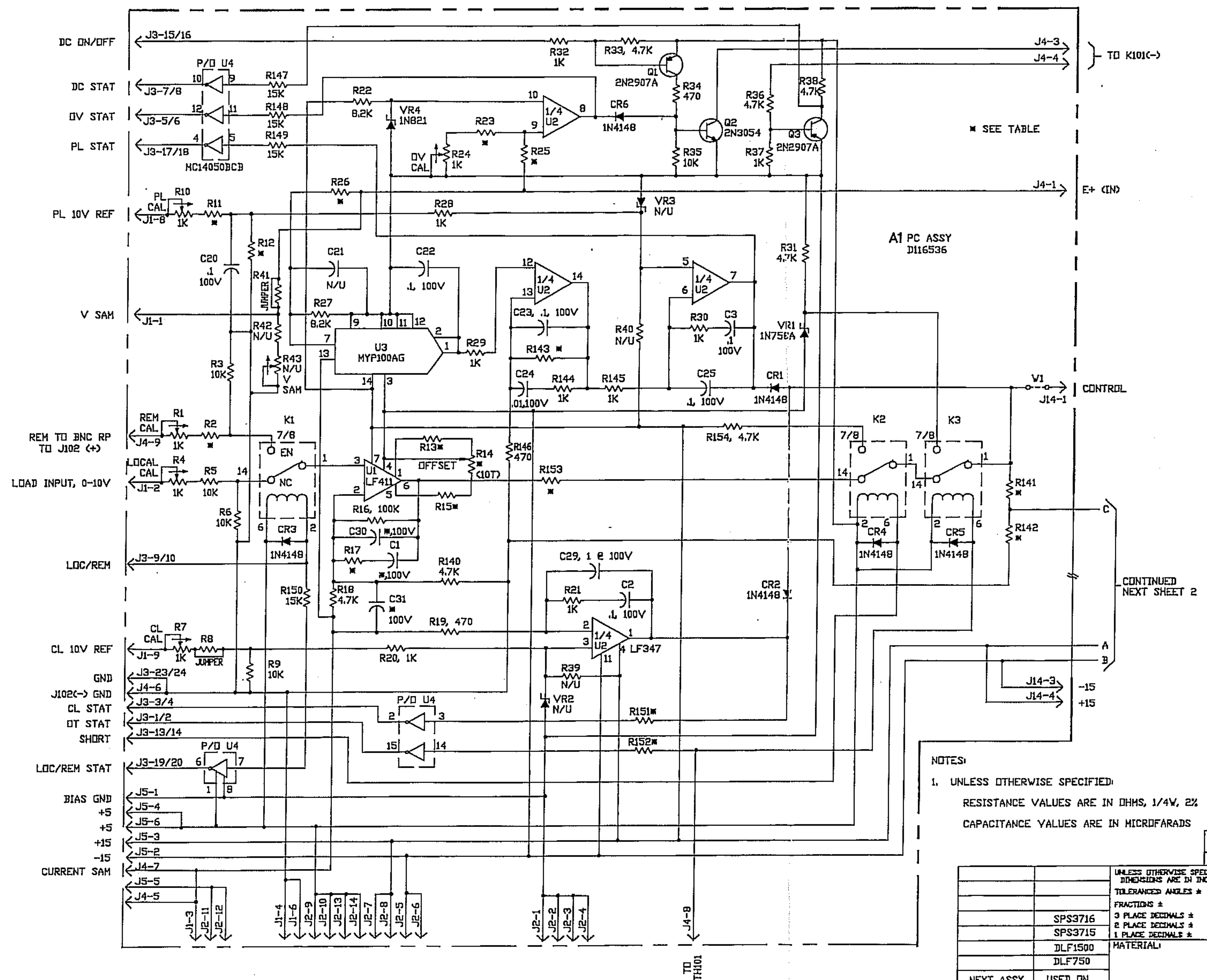
PARTS LIST

CONTR NO.
DR CROUSE 9 MAY 90
CHK
APPD
APPROVED
BY DIRECTION OF

Transistor Devices Inc
Randolph New Jersey

DRAWING TITLE
SCHEMATIC
QUAD MASTER

SIZE D | CODE IDENT NO. 09004 | DRAWING NO. 121488
SCALE | DLF/A1QUAD80 | SHEET 2 OF 2



NOTES:

1. UNLESS OTHERWISE SPECIFIED:

   RESISTANCE VALUES ARE IN OHMS, 1/4W, 2%

   CAPACITANCE VALUES ARE IN MICROFARADS

DESIG	DLF 400-100-750	DLF 400-200-1500	SPS3716 600-5-750	SPS3715 600-5-1500	SPS3862 400-25-1500
R2	9.1K	7.5K	10K	10K	9.1K
R11	2.7K	2.7K	2K	2K	2.7K
R12	10K	10K	15K	15K	10K
R13	10K	10K	15K	15K	100K
R14	5K	5K	5K	5K	20K
R15	10K	10K	15K	15K	JUMPER
R16	–	100K	–	–	100K
R17	10K	2.2K	10K	2.2K	220
R23	5.6K	5.6K	6.2K	6.2K	5.6K
R25	390K	390K	680K	680K	390K
R26	390K	390K	680K 1/2W	680K 1/2W	390K
R141	4.7K	4.7K	4.7K	4.7K	10K
R142	390K	4.7K	4.7K	4.7K	39K
R143	27K	27K	2K	750	2.7K
R151	15K	15K	15K	15K	6.8K
R152	15K	15K	15K	15K	6.8K
R153	100K	100K	100K	100K	47K
C1	.0022	.0015	.0022	.22	.0068
C30	–	–	.022	.001	–
C31	–	–	.01	–	–

REVISIONS

ZONE	REV	DESCRIPTION	DATE
	A	ADD SPS3862 TO TABLE OF VALUES ECN	9-16-91

PARTS LIST

QTY REQD	CODE IDENT NO.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION

NEXT ASSY	USED ON
	SPS3716
	SPS3715
	DLF1500
	DLF750

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO.
DR REI CROUSE 18 MAY 90
CHK
APPD
APPROVED
BY DIRECTION OF

Transistor Devices Inc, Randolph, New Jersey

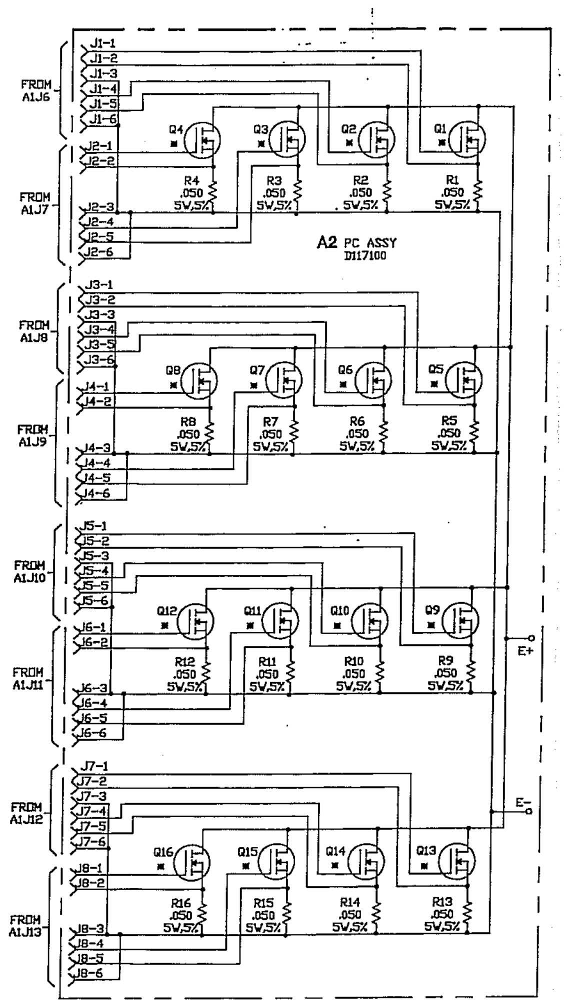
DRAWING TITLE

SCHEMATIC

MAIN REGULATOR

SIZE D | CODE IDENT NO. 09004 | DRAWING NO. 121488

SCALE | DLF/A1REG09D | SHEET 1



* SEE TABLE

UNIT RATING	PART NO. Q1 THRU Q16
100V	IRF250
400V	2N6770-2
600V	902-RAN

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   ALL RESISTANCE VALUES ARE IN OHMS, 1/4W, 2%
   ALL CAPACITANCE VALUES ARE IN MICROFARADS

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPD

QTY REQD	CODE IDENT NO.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.

PARTS LIST

NEXT ASSY	USED ON
	SPS3716
	SPS3715
	DLF1500
	DLF750

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES: ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

CONTR NO.
DR CROUSE 8 NOV 90
CHK
APPD
APPROVED
BY DIRECTION OF

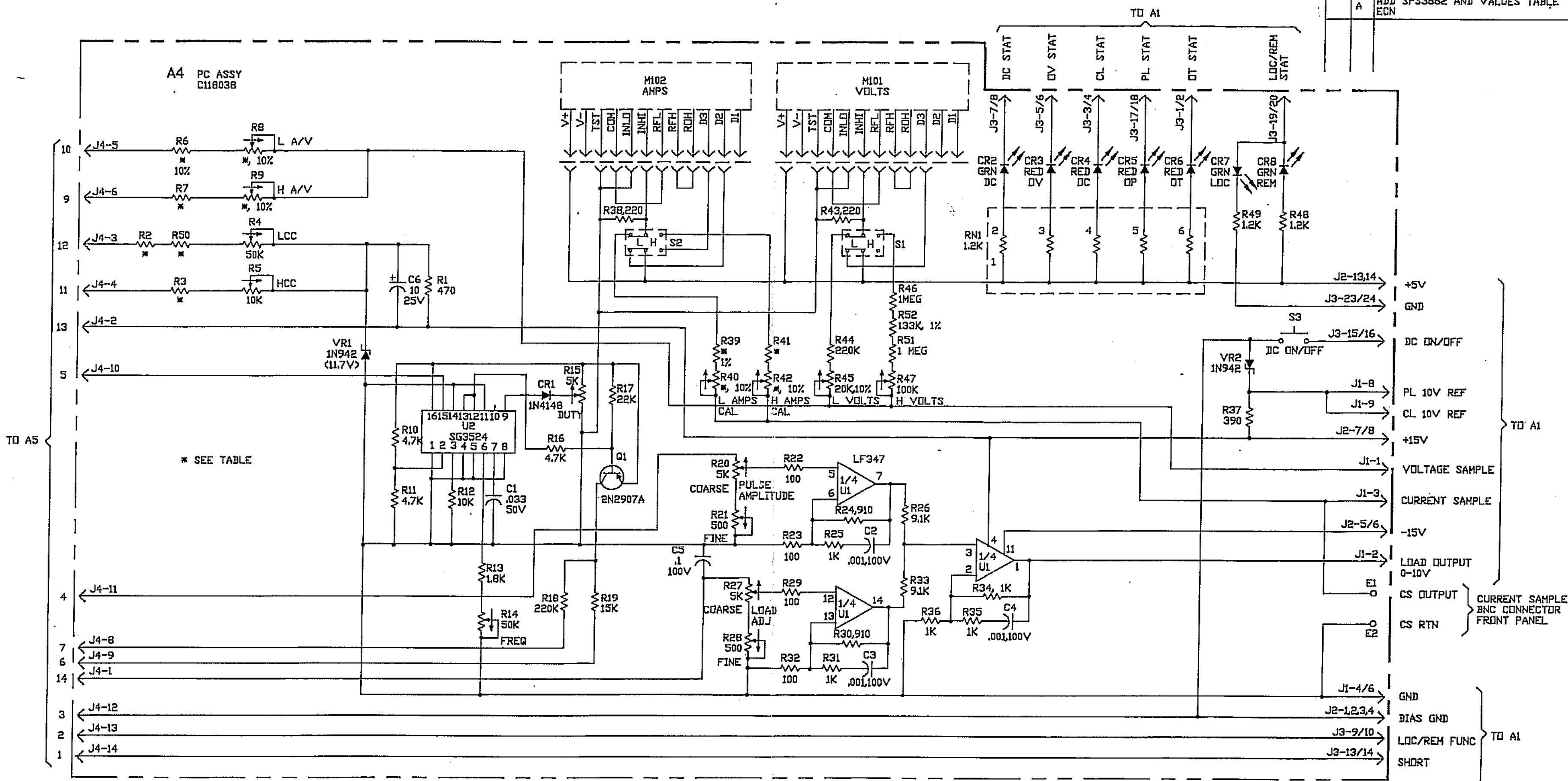
Transistor Devices Inc
Randolph New Jersey

DRAWING TITLE
SCHEMATIC
POWER REGULATOR

SIZE D | CODE IDENT NO. 09004 | DRAWING NO. 121489

SCALE | DLF/PWRBRD | SHEET OF

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	A
	A	ADD SPS3862 AND VALUES TABLE ECN	9-17-91	



DESIG	DLF 400V	SPS3715 600-5-1500	SPS3715 600-5-1500	SPS3862 400-25-1500
R2	470K	470K	470K	560K
R3	47K	47K	47K	47K
R6	100K	2.2MEG	2.2MEG	220K 1W
R7	**9.4K	220K 2W	220K 2W	16.5K
R8	50K	100K	100K	50K
R9	1K	100K	100K	5K
R39	1.96K	3.9K	3.9K	8.2K
R40	200	1K	1K	500
R41	20K	39K	39K	82K
R42	2K	10K	10K	10K
R50	30K	30K	30K	10K

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   RESISTANCE VALUES ARE IN OHMS, 1/4W, 2%
   CAPACITANCE VALUES ARE IN MICROFARADS

** VALUE = 2X4.7K, 6.5W, 1% = 9.4K

	SPS3862
	SPS3716
	SPS3715
	DLF4000
	DLF1500
	DLF750
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ANGLES ±
FRACTIONS ±
3 PLACE DECIMALS ±
2 PLACE DECIMALS ±
1 PLACE DECIMALS ±
MATERIAL:

QTY REQD	CODE IDENT NO.	PART NO. OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION

PARTS LIST

CONTR NO.
DR REI CROUSE 4 JUN 90
CHK
APPD
APPROVED
BY DIRECTION OF

Transistor Devices Inc
Randolph New Jersey

DRAWING TITLE
SCHEMATIC
CONTROLS

SIZE D | CODE IDENT NO. 09004 | DRAWING NO. 121491
SCALE | DLF/CONTROL1 | SHEET OF