TM 11-6625-3069-13-2

POWER SUPPLY TESTER

P/N: 11047-001
FOR AIRBORNE POWER SUPPLY (APS)
P/N: 99022-001A
NSN: 6130-01-496-5020
March 15, 2007

Tester Manufactured by
EG&G POWER SYSTEMS
1 AEROVISTA PARK
SAN LUIS OBISPO, CA 93401
Airborne Power Supply
Manufactured by
Blackhawk Management Corporation
1324 Wyckoff Road
Wall Township, NJ 07753-6800

*This manual supersedes TM 11-6625-3069-13-2, dated 05 September 1984, including all changes.

HEADQUARTERS, DEPARTMENT OF THE ARMY

15 MARCH 2007

TABLE OF CONTENTS

FIGURE LIST

TABLE LIST

1.0 **GENERAL**

1.1 DESCRIPTION

Airborne Power Supply Test Set, P/N 11047-001, is a bench top or rack mount instrument intended to be used for field maintenance of Airborne Power Supply, PIN 99022-001.

The tester contains fixed loads for each for the ten buses of the power supply and has the capability of dynamically loading any of the ten buses one at a time.

The tester also has the capability of providing an overvoltage or overcurrent to a selected bus.

Bus current and voltage are monitored by front panel digital voltage and current meters.

1.2 SPECIFICATIONS

Input Power: 28 Volts DC, 50 Amps maximum (Tester consumes 250 milliamps maximum).

Three phase 120/208 volt, 400 hertz, 50 amps maximum (Tester uses 100 volt amperes maximum).

Output Power: Power is supplied to the power supply from the input power sources via a special Cable Assembly (Figure 1, Tables 1 and 2, Cable Assembly, P/N 11401-001).

Operating Temperature Range: 0 to 50 degrees centigrade.

Warm-up Time: One minute (for readings with specified accuracy).

Loading Accuracy: Plus or minus 5%.

Voltage and Current Meter Reading Accuracy: Plus or minus 2%.

Mechanical: Weight: 45 pounds maximum

Dimensions: Capable of being mounted in a standard 19-inch rack (refer to Figure 2, Installation Control Drawing)

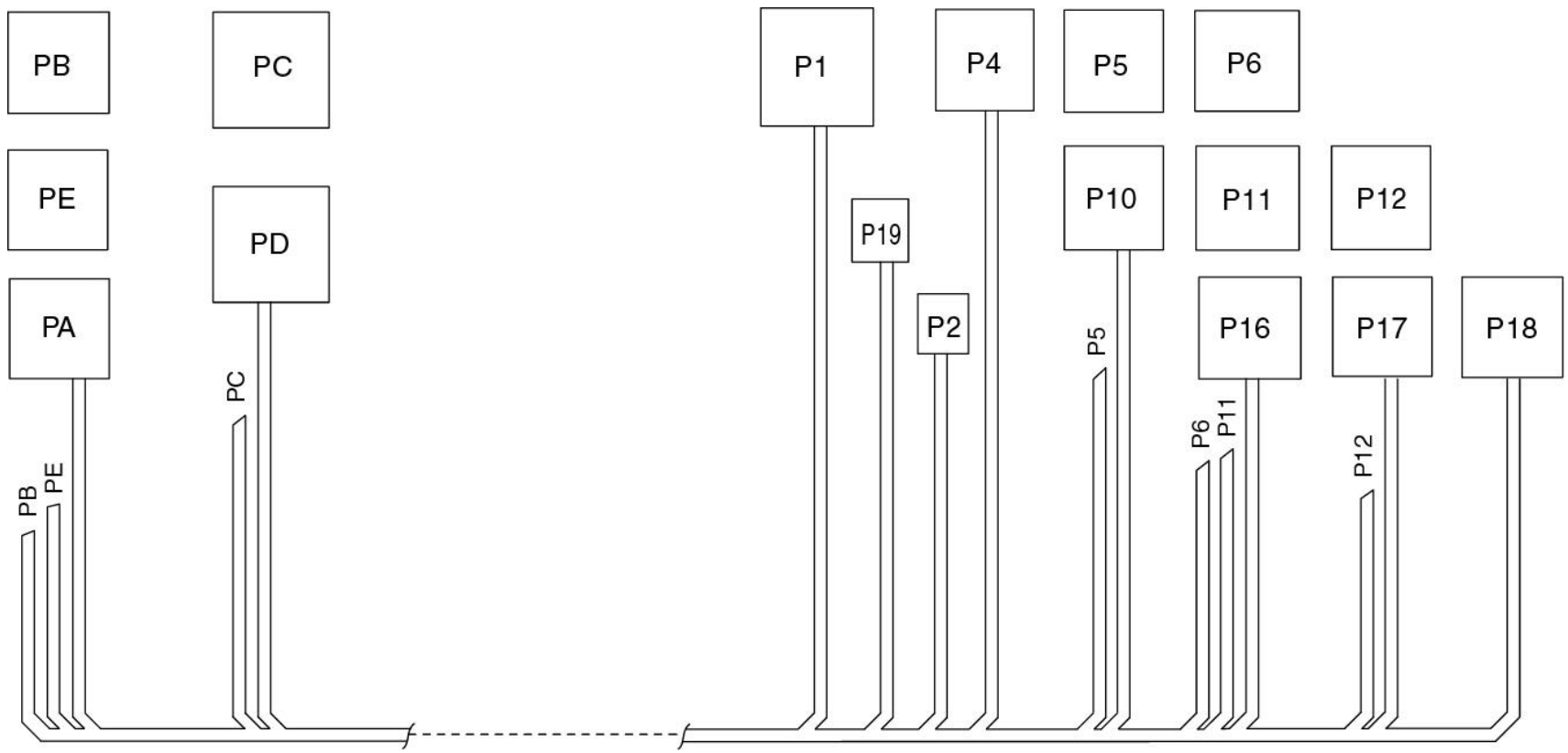

Figure 1. Cable Assembly Block Diagram, P/N 11401-001

Table 1. Cable Assembly – Parts List
PL11404-001

Item No.	Qty.	Meas.	Manufacturer's Part or Identifying No.	Nomenclature or Description
1	Ref		WL11404-001	Wire List (Reference)
2	15	EA	MS3367-4	Cable Ties, 4 in.
3	15	EA	MS3367-5	Cable Ties, 5 in.
4	1	EA	MS3106A24-9P	Connector; PA
5	1	EA	MS3106A18-20P	Connector; PB
6	2	EA	MS3106A28-12S	Connector; PC, P D
7	1	EA	MS3106A22-14S	Connector; PE
8	1	EA	MS3106A24-12S	Connector; P1
9	1	EA	MS27473E12F8S	Connector; P2
10	6	EA	MS27473E20F16P	Connector; P4, P5, P6, P10, P11, P12
11	3	EA	MS27473E20F16PA	Connector; P16, P17, P18
12	1	EA	MS27473E12F98P	Connector; P19
13	1	EA	MS3057-10A-W/B	Clamp (PB)
14	1	EA	MS3057-12A-W/B	Clamp (PE)
15	4	EA	MS3057-16A-W/B	Clamp (P1, PA, PC, PD)
16	10	FT	MIL-W-16878D TYPE-D	Wire, 8 Gauge
17	250	FT		Wire, 16 Gauge, WHT, TEFZEL
18	125	FT	MIL-W-16878D TYPE-B	Wire, 20 Gauge, WHT

Table 2. CABLE ASSEMBLY – WIRE LIST
WL11404-001

FROM	TO	WIRE SIZE (A WG)	COLOR CODE	REMARKS
P4-A	PC-A	16	WHT	BUS 1P + 5
P4-B	PC-B	16	WHT	BUS 1G + 5
P4-C	PC-C	16	WHT	BUS 1P + 5
P4-D	PC-D	16	WHT	BUS 1G + 5
P4-E	PC-E	16	WHT	BUS 1P + 5
P4-F	PC-F	16	WHT	BUS 1G + 5
P4-J	PC-L	16	WHT	BUS 5P + 15
P4-K	PC-M	16	WHT	BUS 5G + 15
P4-L	PC-V	16	WHT	BUS 9P - 15
P4-M	PC-W	16	WHT	BUS 9G - 15
P4-R	PC-J	16	WHT	BUS 8P + 36
P4-S	PC-K	16	WHT	BUS 8G + 36
P5-A	PC-G	16	WHT	BUS 1P + 5
P5-B	PC-H	16	WHT	BUS 1G + 5
P5-J	PC-N	16	WHT	BUS 5P + 15
P5-K	PC-P	16	WHT	BUS 5G + 15
P5-L	PC-X	16	WHT	BUS 9P - 15
P5-M	PC-¥	16	WHT	BUS 9G - 15
P6-J	PE-E	20	WHT	BUS 5 (+15) SENSE
P6-R	PE-H	20	WHT	BUS 8 (+36) SENSE
P6-A	PE-A	20	WHT	BUS 1 (+5) SENSE
P6-G	PE-K	20	WHT	BUS 10 (-5) SENSE
P6-L	PE-J	20	WHT	BUS 9 (+15) SENSE
P10-A	PD-A	16	WHT	BUS 2P + 5
P10-B	PD-B	16	WHT	BUS 2G + 5
P10-C	PD-C	16	WHT	BUS 2P + 5
P10-D	PD-D	16	WHT	BUS 2G + 5
P10-E	PD-E	16	WHT	BUS 2P + 5
P10-F	PD-F	16	WHT	BUS 2G + 5
P10-G	PD-6	16	WHT	BUS 10P - 5.2
P10-H	PD-d	16	WHT	BUS 10G - 5.2
P10-J	PC-R	16	WHT	BUS 6P + 15
P10-K	PC-S	16	WHT	BUS 6G + 15
P11-A	PD-G	16	WHT	BUS 2P + 5
P11-B	PD-H	16	WHT	BUS 2G + 5
P11-J	PC-T	16	WHT	BUS 6P + 15
Pl1-K	PC-U	16	WHT	BUS 6G + 15
P12-A	PE-B	20	WHT	BUS 2 (+5) SENSE
P12-J	PE-F	20	WHT	BUS 6 (+15) SENSE
P16-A	PD-T	16	WHT	BUS 3P + 5
P16-B	PD-U	16	WHT	BUS 3G + 5
P16-C	PD-V	16	WHT	BUS 3P + 5
P16-D	PD-W	16	WHT	BUS 3G + 5

Table 2. CABLE ASSEMBLY – WIRE LIST - Continued
WL11404-001

FROM	TO	WIRE SIZE (A WG)	COLOR CODE	REMARKS
P16-E	PD-X	16	WHT	BUS 3P + 5
P16-F	PD-Y	16	WHT	BUS 3G + 5
P16-G	PD-J	16	WHT	BUS 4P + 5
P16-H	PD-K	16	WHT	BUS 4G + 5
P16-J	PC-Z	16	WHT	BUS 7P + 15
P16-K	PC-a	16	WHT	BUS 7G + 15
P16-R	PD-L	16	WHT	BUS 4P + 5
P16-S	PD-M	16	WHT	BUS 4G + 5
P17-A	PD-Z	16	WHT	BUS 3P + 5
P17-B	PD-a	16	WHT	BUS 3G + 5
P17-G	PD-N	16	WHT	BUS 4P + 5
P17-H	PD-P	16	WHT	BUS 4G + 5
P17-J	PC-b	16	WHT	BUS 7P + 15
P17-K	PC-d	16	WHT	BUS 7G + 15
P17-R	PD-R	16	WHT	BUS 4P + 5
P17-S	PD-S	16	WHT	BUS 4G + 5
P18-R	PE-D	20	WHT	BUS 4 (+5) SENSE
P18-C	PE-C	20	WHT	BUS 3 (+5) SENSE
P18-J	PE-G	20	WHT	BUS 7 (+15)SENSE
P19-A	PE-R	20	WHT	FAULT
P19-G	PE-L	20	WHT	CMN RTN
P19-H	PE-P	20	WHT	OVER TEMP
P19-J	PE-N	20	WHT	HIGH TEMP
P19-K	PE-M	20	WHT	REMOTE SHUTOFF
P1-A	PA-A	8	WHT	+ 28V INPUT
P1-C	PA-B	8	WHT	28V RTN
P2-A	PB-A	20	WHT	115 VAC 400 Hz ØA
P2-B	PB-B	20	WHT	115 VAC 400 Hz ØA
P2-C	PB-C	20	WHT	115 VAC 400 Hz ØA
P2-D	PB-D	20	WHT	NEUTRAL
P2-E	PB-E	20	WHT	GROUND

2.0 **PANEL LAYOUT AND CONTROLS**

2.1 FRONT PANEL

Front panel controls are defined by Figure 2, Detail Nomenclature, P/N 11428-001.

2.2 REAR PANEL

Input power is supplied by means of connectors mounted on the rear panel. Description and location are defined in Figure 3, Installation Control Drawing.

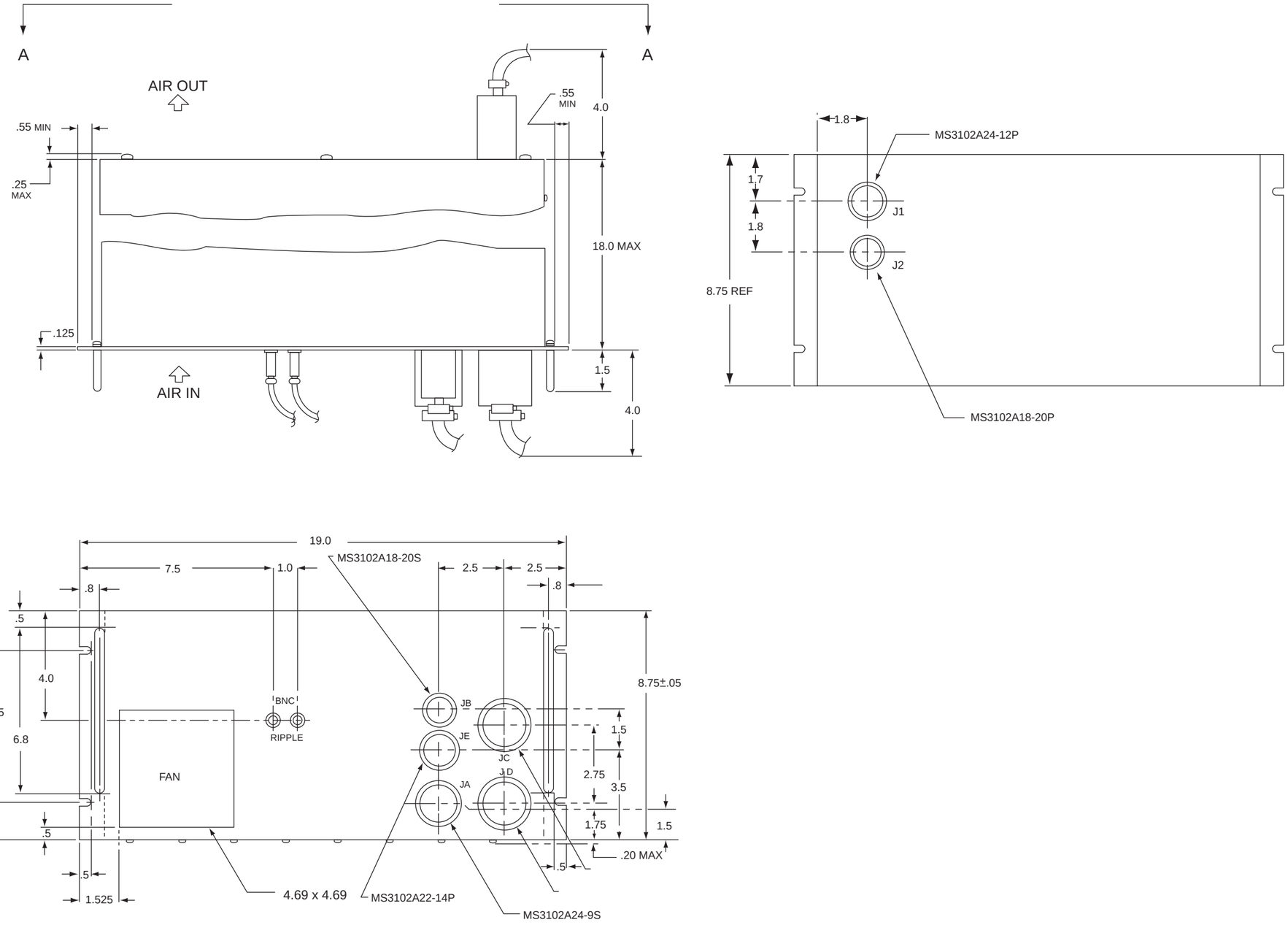

Figure 2. Installation Control Drawing
Test Set PS 99022, P/N 11426-001

Control	Reference Designator	Function/Description
28 Volts	CB1	50 amp 2 pole circuit breaker that interrupts the 28 volt input power.
400 Hertz	CB2	5 amp 3 pole circuit breaker that interrupts the 120/208 3-Pphase 400 Hz input power.
JA	JA	Output 28 volt power to the power supply being tested.
JB	JB	Output 400 Hz power to the power supply being tested.
JC	JC	Bus 1, 5, 6, 7, 8, and 9 power from the power supply being tested.
JD	JD	Bus 2, 3, 4, and 10 power from the power supply being tested.
JE	JE	Bus sense lines directed to the tester voltmeter - also a sense for return, inhibit, and fault signals from the power supply being tested.
Bus Select Switch	S1	Selects the bus to be tested.
Bus Select Indicators	DS1-10	Verifies position of S1.
START Switch	S3	Momentarily depressing this switch initiates testing.
STOP Switch	S2	Stops the test immediately when momentarily depressed.
TIMER CONT Switch	S4	Selects a 10 second test or a continuous test time.
IN TEST	DS14	Lights when test is in progress.
OVER CURRENT Select Switch	S6	When in ON position allows adjustable current loading on selected bus.
Current Adjust	R37	Adjust the current loading on the selected bus up to 120% of full load.
OVER VOLTAGE Select Switch	S7	When in ON position allows a voltage to he applied to the selected bus to test the overvoltage protection of the power supply.
OVER VOLTAGE Adjust	R38	Adjust the voltage applied to the selected bus when in overvoltage test mode.
REMOTE INHIBIT Switch	S5	Turns off the power supply under test when placed in the up position.
HIGH TEMP Indicator	DS11	Lights when power supply high temp sensor is activated.
OVER TEMP Indicator	DS12	Lights when power supply overtemp sensor is activated.
FAULT Indicator	DS13	Lights when power supply remote fault signal is activated.
RIPPLE Indicator	J3 & J4	2 BNC jacks used to differentially measure AC ripple on the power supply under test.
VOLTS Meter	M1	Meter that measures the output voltage of the selected bus via sense lines received from JE.
AMPS Meter	M2	Meter that measures the current in the selected bus.

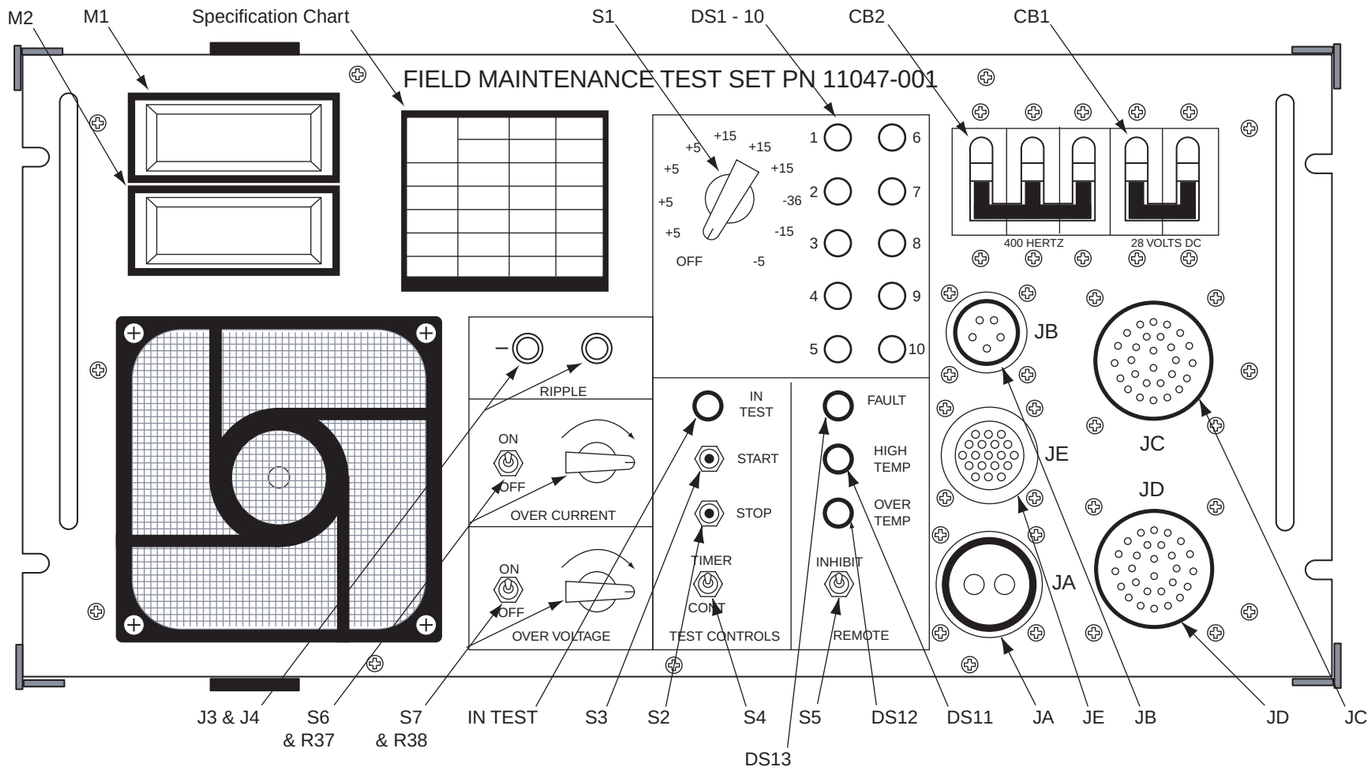

Figure 3. Detailed Nomenclature, Power Supply Tester, P/N 11428-001

3.0 **OPERATION**

3.1 INSTALLATION

With both tester circuit breakers placed in the **OFF** position, connect the incoming power to J1 and J2 located on the rear panel (see Figure 3, Installation Control Drawing, P/N 11426-001). Connect the special interface cable assembly between the tester and the power supply. Power will be supplied to the tester and to the power supply when the tester's circuit breakers are placed in the **ON** position. Both the 28 volt and the 400 hertz power must be available for the tester to operate.

Connect the Airborne Power Supply (APS) to the Test Set (PN:11047 -001) as follows:

W1 Cable:	PA to JA on Test Set
	P1 to J1 on APS
W2 Cable:	PB to JB on Test Set
	P2 to J2 on APS
W3 Cable:	PC to JC on Test Set
	PD to JD on Test Set
	P3 to J4 on APS
	P4 to J5 on APS
	P5 to J10 on APS
	P6 to J11 on APS
	P8 to J17 on APS
W4 Cable:	PE to JE on Test Set
	P2 to J6 on APS
	P3 to J12 on APS
	P4 to J18 on APS
	P7 to J16 on APS

To connect the digital multimeter (DMM) to the Test Set, a BNC(M) to BNC(M) cable and a BNC dual banana adaptor are required.

First connect the BNC dual banana plug adapter into meter, then connect one end of BNC cable to banana plug adaptor and the other end to J3 on Test Set.

3.2 GENERAL DESCRIPTION

The tester operates in three basic modes:

A. Rated Load Operation
B. Overload Operation
C. Overvoltage Operation

Operation in any of these modes is on one of the ten buses selected by the **BUS SELECT** switch. The operator selects the bus to be tested and depresses the **START** switch. Depressing the **STOP** switch immediately interrupts the test. Refer to Section 5 for a description of the Overcurrent and Overvoltage modes of operation.

3.2.1 Description of RATED LOAD TEST

For this test the **OVERCURRENT** and **OVERVOLTAGE** switches must be in the **OFF** position. The bus to be tested is selected by the **BUS SELECT** switch. The selected bus voltage and current are

monitored by the front panel meters. Before pressing the **START** switch the operator should note the current and voltage readings. Internal fixed resistance loads are applied to all buses. Fixed bus loads are as follows:

Plus 5 Volts	3.5 Amps
Plus 15 Volts	1.5 Amps
Plus 36 volts	0.2 Amps
Minus 15 Volts	1.5 Amps
Minus 5 Volts	2.5 Volts

Load testing is initiated by depressing the **START** switch and will continue until the **STOP** switch is depressed or the internal timer times out (approximately 10 seconds). Continuous operation is allowed in rated load testing only. This is accomplished by placing S4 in the **CONT** position.

3.2.2 Description of RIPPLE MEASUREMENTS:

Two methods maybe used for taking this measurement. One method is to connect 2 BNC-BNC cables between the 2 BNC connectors located on the front panel of the test set and a 5 MHz Oscilloscope with a differential measurement mode. This method allows for differentially measuring the AC ripple and noise on the selected power supply bus.

The next method is to use a Voltmeter (Meterman 34XR True RMS or Equivalent) by connecting a BNC cable to a banana plug or similar adapter that allows the meter leads to be attached. This method allows the VRMS to be measured for each Bus.

All readings must be equal to or less than values listed below:

Bus 1-4 50 mVpp or 0.03535 VRMS
Bus 5-7 150 mVpp or 0.10605 VRMS
Bus 8 360 mVpp or 0.25452 VRMS
Bus 9 150 mVpp or 0.10605 VRMS
Bus 10 50 mVpp or 0.03535 VRMS

4.0 THEORY OF OPERATION

4.1 SYSTEM

In the description to follow, reference is made to Figure 4, Power Supply Tester Block Diagram P/N 11400-001, and Figure 5, Top Assembly Schematic, P/N 11402-001.

The basic function of the tester is to test the individual power supply cards of the Airborne Power Supply, PIN 99022-001. At the same time the tester provides a small amount of load current on all the busses at all times. This fixed load is 10% for all busses, except the minus five bus (bus 10) which is loaded to 25%.

The power to the power supply is accepted by rear panel connectors and is passed through circuit breakers to connectors on the tester's front panel. A special cable assembly connects the tester to the power supply.

Ten (10) double pole relays provide isolation and switching to the single active load, an NPN power transistor. The control board is operated from an isolated power supply and provides the base drive to the active load. Double pole relays are used so that the proper polarity can be switched to the power resistor.

Current is controlled in the power transistor by a feedback scheme in which the voltage across emitter resistors (R30 and R31 of the schematic) is feedback and compared to a precision reference voltage. The active load comes on at a rate of approximately 100 milliseconds (from 10% to maximum).

Precision shunts are used in each bus and are switched to the digital current meter by the **BUS SELECTOR** switch. The digital voltmeter measures the voltage of the selected bus from sense lines directed to the meter by the **BUS SELECTOR** switch. These sense lines carry no load current and are connected via the cable assemblies to the connectors of the power supply under test.

The power supply can provide continuous rated load testing of a bus; but for Overload test and the Overvoltage test an internal timer interrupts testing after approximately 10 seconds. If desired, the timer mode can also be used for Rated Load testing.

The Overvoltage test is accomplished by providing a secondary source of power capable of overriding the fixed loads. To prevent excessive voltages the maximum input is limited depending upon the position of the **BUS SELECTOR** switch.

4.2 CONTROL BOARD

In the description to follow, reference is made to Figure 6, Control Board Schematic, P/N 11404-001.

The control board accepts signals and power from components of the main assembly and provides the following primary outputs:

1. Relay drive power (J6 pin 9).
2. Base drive signal for dynamic load transistor (J4 pin 2).
3. Power and control signals to current and voltage meter (J5).
4. Overvoltage power to buses (J6 pin 13)

Bus Selection Circuitry:

J1 receives a positive 28 volts on pins 1 through 10 corresponding to the bus selected by the position of **BUS SELECTOR** switch of the top assembly. Pin 11 of J1 is the 28V return, and is isolated from the logic ground of the Control Board. The 28 volt power is transmitted to one side of relays of the top assembly by J2 of the Control Board. Diodes of U17 and U18 are used to isolate the relays and prevent more than one relay being energized at a time.

Consider the selection of **BUS 1** (+5 volts). Positive 28 volts is received at pin 1 of J1 and provides 28 Volts minus one diode drop to pin 1 of J2 (supplying power to one side of the control coil of K1 of the top assembly). The other side of the control coil of all relays of the top assembly is fed from pin 9 of J6. Thus when pin 9 of J6 is pulled to the 28 volt return by Q3 the selected relay will be energized.

Q3 is energized when the optocoupler U13 is unenergized (i.e., when pin 2 of U2 is high). This is the **IN TEST** mode and the lamp designated IN TEST on the front panel is also energized by Q3. The set-reset binary U1 provides the start or stop test control. When pin 10 of U1 is low, pin 2 of U2 will be high, thus energizing Q3.

When power is first turned on to the Tester, pin 10 of U1 comes up in the "1" mode -- Q3 off. The binary can be set to the IN TEST mode by momentarily depressing the **START** switch on the front panel which is input to the Control Board on pin 1 of J6. The binary is set to the STOP mode by depressing the **STOP** switch on the front panel which is input on P6 pin 3.

The binary is also set to the STOP mode by time out to the timer composed of R23, C6, CR7, R38 and one section of U1. When C6 charges to a level above the logic "1" level of U1, then pin 9 of U1 goes low, setting the binary back to the STOP state (U1 pin 10 high). The binary is also set to this state by the **OVERVOLTAGE** or **OVERCURRENT** control switches being placed to the on position. These signals, received on pins 8 and 11 of J6, momentarily force pin 12 of U1 to a logical low state. The binary can also be forced to the STOP mode when Q7 is energized due to an Overcurrent at pin 13 of J6. The last condition in which the binary is forced to the STOP mode is when the **BUS SELECTOR** switch is moved to another bus position. This is accomplished by Q1 and Q2 and associated circuitry.

The dynamic load transistor located external from the Control Board receives its base drive from Q4 though pin 2 of J4. It is driven from an error amplifier that receives a "request" current on pin 12 (U4) and a feedback signal from a current sense resistor (R30 and R31) located on the top assembly. The "request" is determined by the selection of the bus, which in turn energizes one of the optocouplers U8-U12. The energized optocoupler drives a switch (U5) which drives one of five resistors R1-R5. Under the Rated Load test 8.0 Volts appears at pin 5 of J6 and feeds the resistor network through R6.

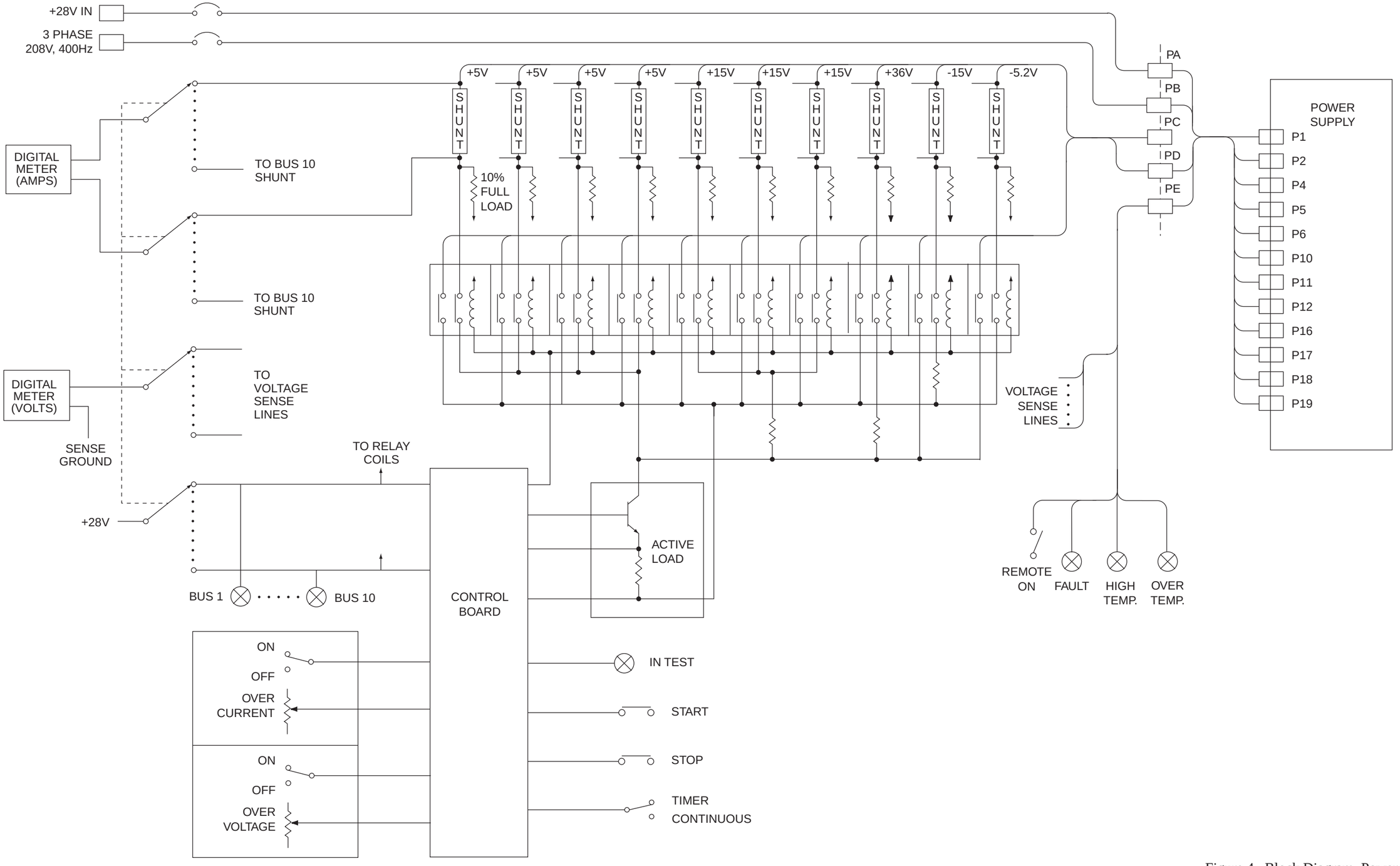

Figure 4. Block Diagram, Power Supply Tester, P/N 11400-001

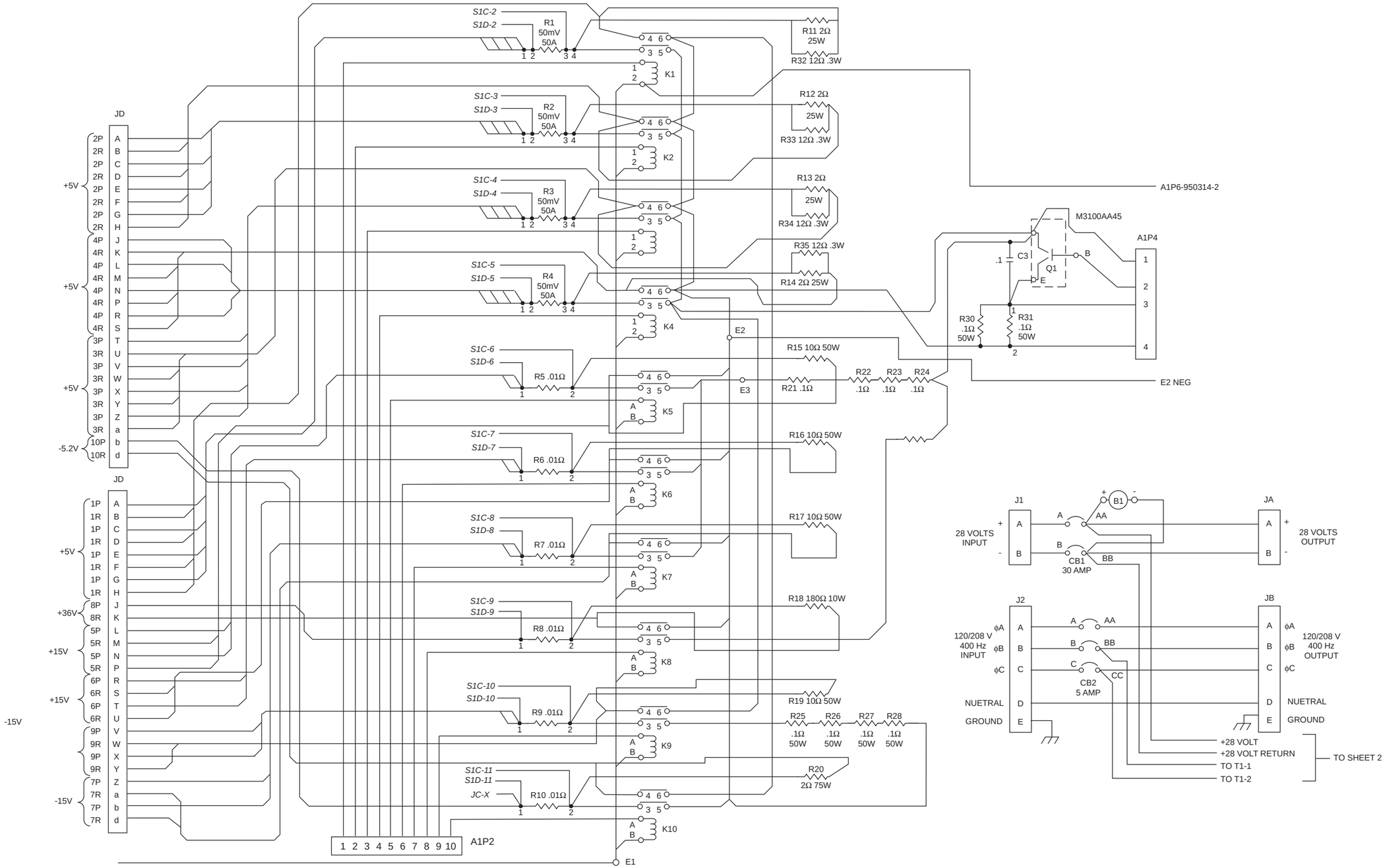

Figure 5a. Top Assembly Schematic, Wiring Diagram, P/N 11402-001 (Sheet 1 of 2)

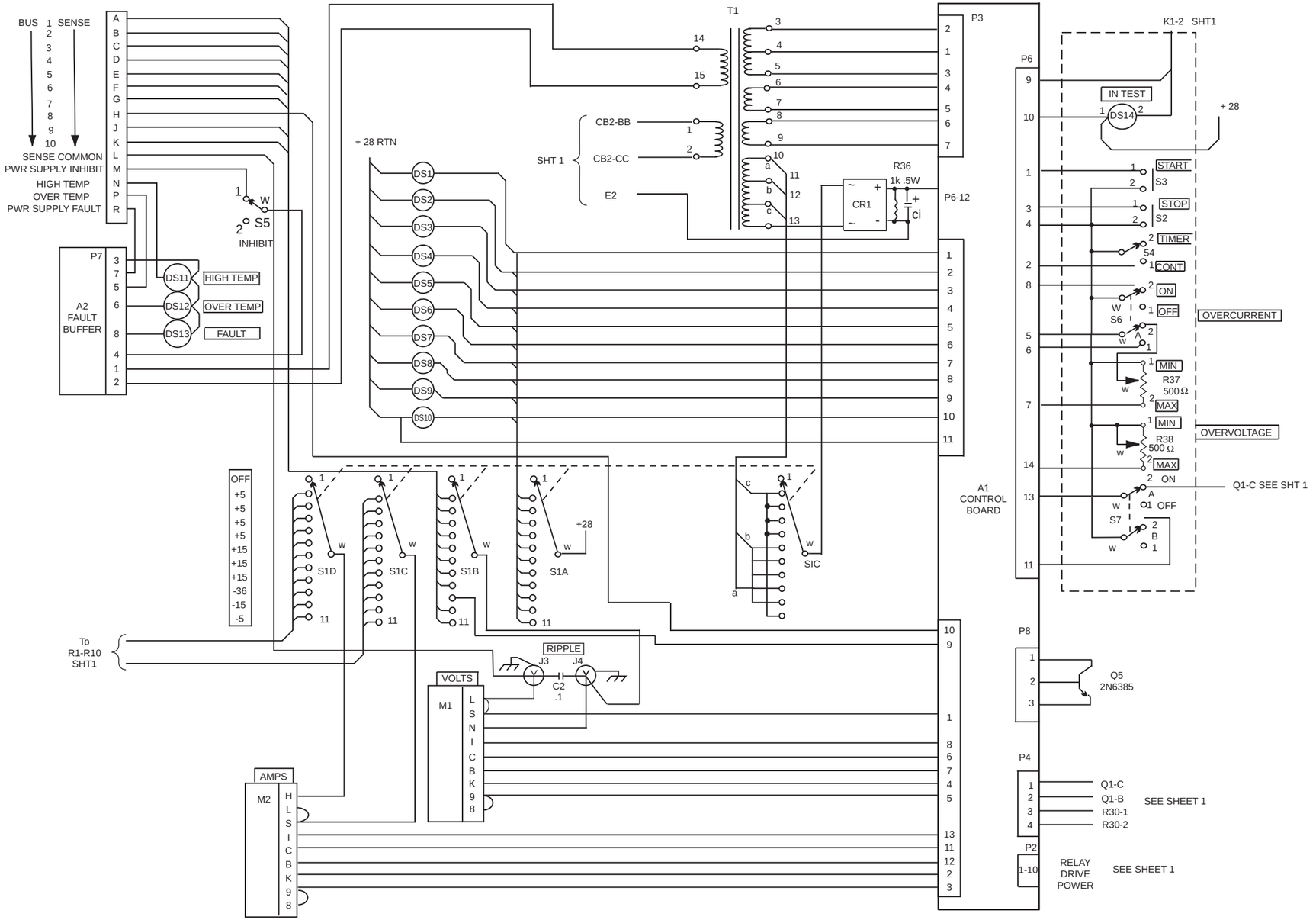

Figure 5b. Top Assembly Schematic, Wiring Diagram, P/N 11402-001 (Shet 2 of 2)

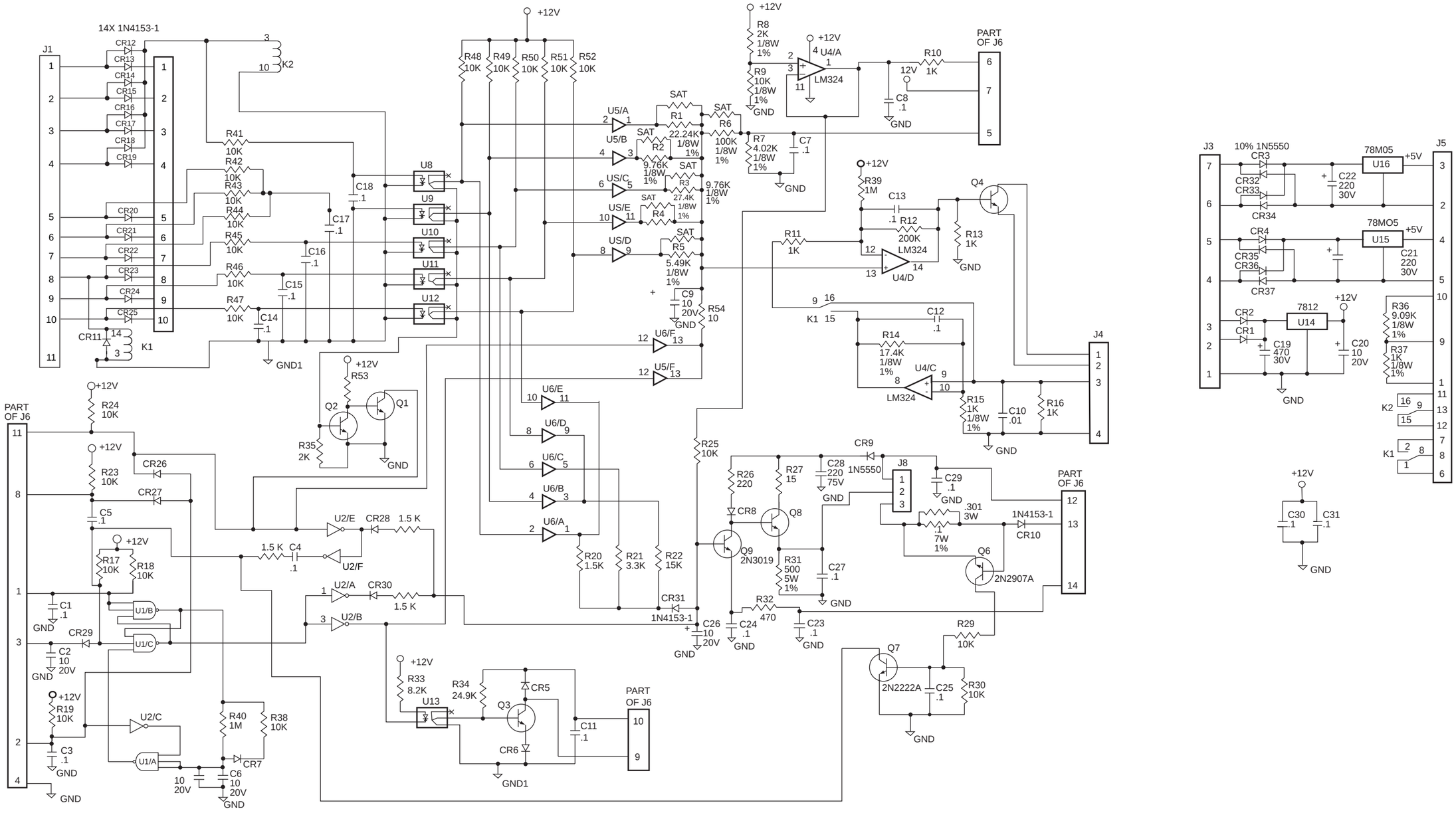

Figure 6. Schematic, Control Board
P/N 11401-001

The voltage divider is made up of R6 and one of the resistors R1 through R5. When in the Overcurrent test mode the voltage at pin 5 of J4 is variable up to 10.0 Volts.

When Bus 8 is selected (plus 36 volts), K1 is energized, transferring the feedback current sample from pin 3 of J4 to the pin 8 of U4 via the relay contacts of K1. This is done because the current sample voltage requires amplifying before feeding into the comparator. The relay provides a secondary function of changing the decimal point on the voltmeter (pins 6, 7, and 8 of J5). Resistors R36 and R37, through pins 1, 9, and 10 of J5 are used to divide the 36 Volt sense voltage by 10.

Overvoltage Tests:

Q5, Q8, Q9 and Q10 and associated components is a variable gain voltage amplifier. Gain is controlled by the resistance in the emitter of Q9. Pin 14 of J6 is connected to a potentiometer located on the front panel.

The voltage on the base of Q9 provides a limit on the maximum voltage allowed on the output and is selected by the resistor network composed of R20, R21, and R22 along with U6 and R25. When not in the Overvoltage mode the voltage at the base of Q9 is held low by U2 pin 10. The voltage amplifier receives an unregulated voltage on pin 12 of J6 t hat changes level as a function of the **BUS SELECTION** switch.

Regulators and Meter Controls:

U15 and U16 are five Volt regulators providing power for the voltage and current meters. U14 is a precision voltage regulator that provides logic power. Its output is also used to provide a reference for the voltage and current requests. K2 is energized only when buses 1 through 4 are selected. Its relay contacts provide the decimal point selection for the current meter.

4.3 FAULT BUFFER

In the description to follow, reference is made to Figure 7, Fault Buffer Schematic Diagram.

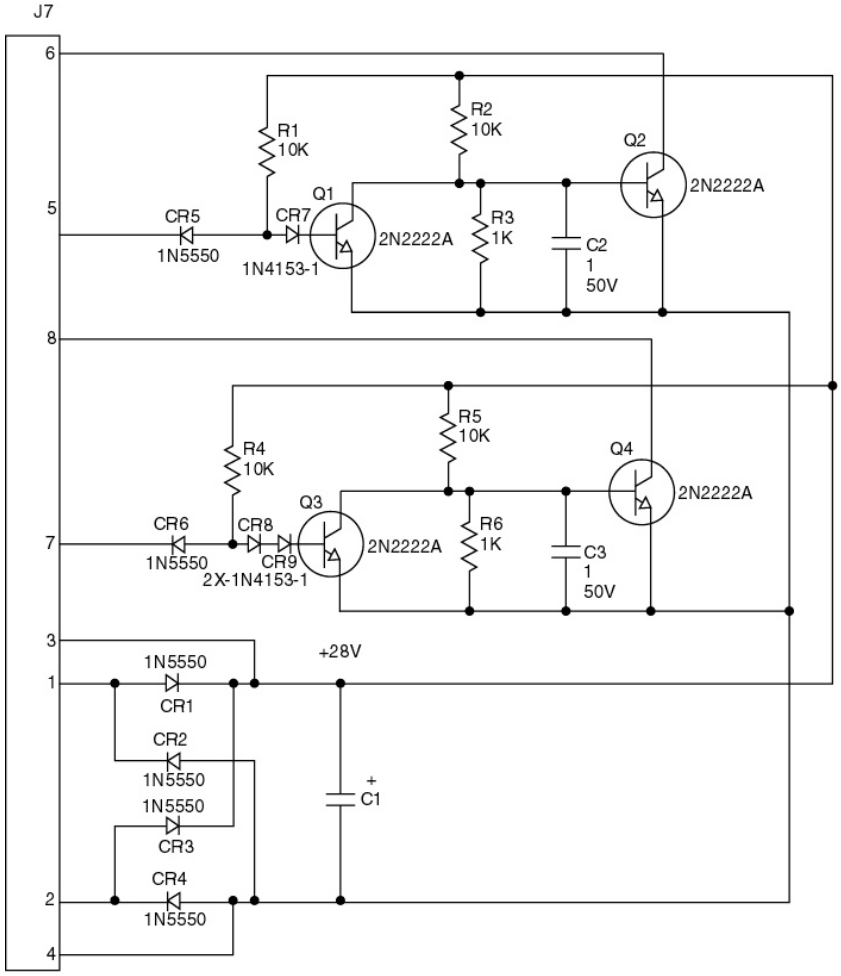

Figure 7. Fault Buffer Schematic Diagram

The fault buffer circuit senses the OVER TEMP and FAULT signals of the Airborne Power Supply and drives the corresponding lamps on the front panel of the Power Supply Tester.

With no signal or a high signal on pin 5 of J7, R1 will bias Q1 to a saturated state, thus biasing Q2 to a cutoff state, this not allowing current to flow through the front panel OVER TEMP lamp, DS11 of the top assembly. When a low signal is applied to pin 5 of J7, Q1 will be biased to a cutoff state, thus allowing R2 to bias Q2 to the saturated state and thus illuminating DS11 on the front panel.

The operation of the **FAULT** lamp, DS13 of the top assembly, is identical to that of the **OVER TEMP** lamp, except that R4, R5, Q3, and Q4 are used in place of R1, R2, Q1 and Q2.

The fault buffer circuit gets its power from the power transformer, T1 of the top assembly. The AC voltage is rectified by CR1 - CR4, thus creating an unregulated 28V power bus. The 28V bus also supplies power to the **HIGH TEMP**, **OVER TEMP**, and **FAULT** lamps, DS11-DS13 of the top assembly.

4.4 RECOMMENDED SPARE PARTS

The following is a list of parts recommended for quick repair of the tester.

Description	Part Number	Manufacturer
Control Board	D6690-101	EG&G Power Systems
Fault Buffer	D6700-101	EG&G Power Systems
Relay	PRD7GYO24	Potter & Brumfield
Relay	18732C200	Midtex
Fan	MD2482	Rotron
Lamp	900-104X-082CL	Littlefuse
Lamp	900-104X-082RT	Littlefuse
Voltmeter	PM-349-20volt	Non-Linear Systems
Voltmeter	PM-349-20mvolt	Non-Linear Systems
Transistor	MJ100AA45	Motorola
Transistor	JAN2N6385	

5.0 **TROUBLESHOOTING AND FAULT ISOLATION**

5.1 OVERCURRENT OPERATION

Place the **OVERCURRENT** control switch to the **ON** position. If any test is in process, the test will terminate. Turn the adjustment control fully counterclockwise, select desired Bus using S1, and then depress the **START** switch. Current loading of the selected bus is now under the operator's control by means of the adjust control potentiometer. By turning the potentiometer clockwise, loading up to 120% of rated load can be obtained and the proper operation of the current limit function of the power supply under test can be verified. Testing is terminated by depressing the **STOP** switch or after the timer times out. It should be noted that during this test the Voltage should decrease and the Current will increase.

NOTE

In Overcurrent and Overvoltage mode, the position of S4 is ignored and the test will stop automatically after time out.

An internal solid state load applies the rated load to the selected bus at a controlled rate (approximately 100 milliseconds from minimum to rated). While in testing mode, the **IN TEST** lamp will be on. The operator should consult the specification chart located on the front panel and verify that the proper output voltage and current do exist while the **IN TEST** lamp is on.

5.2 OVERVOLTAGE OPERATION

Place the **OVERVOLTAGE** control switch in the **ON** position, verify that the **OVERCURRENT** control switch is in the **OFF** position, and turn the adjustment control to the full counterclockwise position. Next select the desired Bus using S1, and then depress the **START** switch and slowly turn the adjustment potentiometer clockwise. The bus voltage should increase until the power supply **FAULT** lamp comes on. Note that the Fault light may come on for the +15 Volt Buses and the -15 Volt Buses.

5.3 REMOTE FUNCTIONS

The power supply under test can be turned on or off by the 28V DC circuit breaker which provides a grounding signal back to the power supply. The lamps designated **FAULT**, **HIGH TEMP**, and **OVER TEMP** are activated by signals derived from J19 of the power supply under test.

APPENDIX A FINAL ACCEPTANCE TEST

Table A-1. Rated Load Test Procedure (Reference Figure 3)

	Controls And Switches	Switch Settings	Notes and Comments	Test Set Indicators	Indicators Current Reading	Fault Indications
			VERIFY BOTH SETS OF LED on the UUT are illuminated, if not, refer to Tech Manual for troubleshoot procedures (TM11-6130-442-13-3 Airborne Power Supply)			
STEP 1 Initial settings	CB1	ON		DS1	OFF	
	CB2	ON		DS2	OFF	
	S1	OFF		DS3	OFF	
	S2	N/A		DS4	OFF	
	S3	N/A		DS5	OFF	
	S4	TIME		DS6	OFF	
	S5	ON (DOWN)		DS7	OFF	
	S6	OFF		DS8	OFF	
	S7	OFF		DS9	OFF	
	R37	FULLY CC		DS10	OFF	
	R38	FULLY CC		DS11	OFF	
				DS12	OFF	
				DS13	OFF	
				DS14	OFF	
				M1*	0	
				M2*	0	
	J3		CONNECT DMM TO J3 PLACE IN AC MODE			
STEP 2			**Allow Unit to run for a minimum of 1 Minute prior to proceeding.**			
	S1	1 (+5)	Note that DS1 is on showing BUS 1 Selected	DS1	ON	
				M1*	5	
				M2*	3.5	
	S3	PUSH ONCE		DS1	ON	Fault Light DS13 Lights
			While IN TEST IS LIT	M1*	4.75 to 5.25	Voltage out of Range
			While IN TEST IS LIT	M2*	35 AMPS	Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		35.35 millivolts	Above allowed range
STEP 3						
	S1	2 (+5)	Note that DS2 is on showing BUS 2 Selected	DS2	ON	
				M1*	5	
				M2*	3.5	
	S3	PUSH ONCE		DS2	ON	Fault Light DS13 Lights
			While IN TEST IS LIT	M1*	4.75 to 5.25	Voltage out of Range
			While IN TEST IS LIT	M2*	35 AMPS	Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		35.35 millivolts	Above allowed range

Table A-1. Rated Load Test Procedure (Reference Figure 3) - Continued

	Controls And Switches	Switch Settings	Notes and Comments	Test Set Indicators	Indicators Current Reading	Fault Indications
STEP 4						
	S1	3 (+5)	Note that DS3 is on showing BUS 3 Selected	DS3	ON	
				M1*	5	
				M2*	3.5	
	S3	PUSH ONCE		DS3	ON	Fault Light DS13 Lights
			While IN TEST IS LIT	M1*	4.75 to 5.25	Voltage out of Range
			While IN TEST IS LIT	M2*	35 AMPS	Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		35.35 millivolts	Above allowed range
STEP 5						
	S1	4 (+5)	Note that DS4 is on showing BUS 4 Selected	DS4	ON	
				M1*	5	
				M2*	3.5	
	S3	PUSH ONCE		DS4	ON	Fault Light DS13 Lights
			While IN TEST IS LIT	M1*	4.75 to 5.25	Voltage out of Range
			While IN TEST IS LIT	M2*	35 AMPS	Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		35.35 millivolts	Above allowed range
STEP 6						
	S1	5 (+15)	Note that DS5 is on showing BUS 5 Selected	DS5	ON	
				M1*	15	
				M2*	1.5	
	S3	PUSH ONCE		DS5	ON	Fault Light DS13 Lights
			While IN TEST IS LIT	M1*	14.25 to 15.75	Voltage out of Range
			While IN TEST IS LIT	M2*	15 AMPS	Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		106.05 millivolts	Above allowed range

Table A-1. Rated Load Test Procedure (Reference Figure 3) - Continued

	Controls And Switches	Switch Settings	Notes and Comments	Test Set Indicators	Indicators Current Reading	Fault Indications
STEP 7						
	S1	6 (+15)	Note that DS6 is on showing BUS 6 Selected	DS6	ON	
				M1*	15	
				M2*	1.5	
	S3	PUSH ONCE		DS6	ON	Fault Light DS13 Lights
			While IN TEST IS LIT	M1*	14.25 to 15.75	Voltage out of Range
			While IN TEST IS LIT	M2*	15 AMPS	Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		106.05 millivolts	Above allowed range
STEP 8						
	S1	7 (+15)	Note that DS7 is on showing BUS 7 Selected	DS7	ON	
				M1*	15	
				M2*	1.5	
	S3	PUSH ONCE		DS7	ON	Fault Light DS13 Lights
			While IN TEST IS LIT	M1*	14.25 to 15.75	Voltage out of Range
			While IN TEST IS LIT	M2*	15 AMPS	Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		106.05 millivolts	Above allowed range
STEP 9						
	S1	8 (-36)	Note that DS8 is on showing BUS 8 Selected	DS8	ON	
				M1*	36	
				M2*	0.2	
	S3	PUSH ONCE		DS8	ON	Fault Light DS13 Lights
			While IN TEST IS LIT	M1*	34.56 to 37.8	Voltage out of Range
			While IN TEST IS LIT	M2*	2 AMPS	Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		254.52 millivolts	Above allowed range

Table A-1. Rated Load Test Procedure (Reference Figure 3) - Continued

	Controls And Switches	Switch Settings	Notes and Comments	Test Set Indicators	Indicators Current Reading	Fault Indications
STEP 10						
	S1	9 (-15)	Note that DS9 is on showing BUS 9 Selected	DS9	ON	
				M1*	-15	
				M2*	1.5	
	S3	PUSH ONCE		DS9	ON	Fault Light DS13 Lights
			While IN TEST IS LIT	M1*	-14.25 to -15.75	Voltage out of Range
			While IN TEST IS LIT	M2*	15 AMPS	Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		106.05 millivolts	Above allowed range
STEP 11	S1	10 (-5)	Note that DS10 is on showing BUS 10 Selected	DS10	ON	
				M1*	-5.2	
				M2*	2.5	
	S3	PUSH ONCE		DS10	ON	
			While IN TEST IS LIT	M1*	-4.75 to -5.25	Fault Light DS13 Lights
			While IN TEST IS LIT	M2*	10 AMPS	Voltage out of Range
						Current out of Range
	DMM		READ DMM TO VERIFY RIPPLE IS EQUAL TO OR BELOW		35.35 millivolts	Above allowed range
STEP 12 END TEST	CB1	ON		DS1	OFF	
	CB2	ON		DS2	OFF	
	S1	OFF		DS3	OFF	
	S2	N/A		DS4	OFF	
	S3	N/A		DS5	OFF	
	S4	TIME		DS6	OFF	
	S5	ON (DOWN)		DS7	OFF	
	S6	OFF		DS8	OFF	
	S7	OFF		DS9	OFF	
	R37	FULLY CC		DS10	OFF	
	R38	FULLY CC		DS11	OFF	
				DS12	OFF	
				DS13	OFF	
				DS14	OFF	
				M1*	0	
				M2*	0	

***Meters have a +/- 2% Measurement Accuracy**

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