

REV.

68A9950

GENERAL ELECTRIC COMPANY

TITLE

68A9950

CONT ON SH 5 SH NO 4

272 WATT AC-DC POWER MODULE SPECIFICATION

CONT ON SH 5 SH NO 4

FIRST MADE FOR

STD DWG - ADDITIONS OR CHANGES TO BE MADE ONLY BY STANDARDS ENGINEERING IN DSO.

REVISION

272W AC-DC POWER MODULE SPECIFICATION1. AC INPUT1.1. NOMINAL VOLTAGE

115/230 Vac. Either input line can be externally grounded or floated. AC input voltage is selected by moving one jumper. The jumper is located on the power supply. It is a plug-type jumper. No soldering or clipping of wire is required to change the jumper position. The jumper is located conveniently for easy access so that it may be changed in the field. The power supply is shipped with the jumper in the 115V position, and the unit is clearly marked to indicate this and that the jumper must be moved to the alternate position for 230V operation. Both jumper positions are clearly and permanently labeled on the power supply.

1.2. INPUT VOLTAGE

90-132/180-264 Vac

1.3. FREQUENCY

47-63 Hz

1.4. IN-RUSH CURRENT

For units that have been off for more than 0.5 hrs., the maximum inrush current is less than 50A peak.

1.5. TURN-ON DELAY

Less than or equal to 1sec, after application of AC power

1.6. INPUT PROTECTION

Field replaceable fuse. 230 Vac applied to a unit configured for 115 Vac will not overvoltage any of the outputs, or cause damage to the power module other than blowing the input protection fuse.

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LOC CONT ON SH 5 SH NO 4

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68A9950		TITLE		CONT ON SH. 6 SH NO. 5	
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CONT. ON SH. 6 SH NO. 5		STD DWG - ADDITIONS OR CHANGES TO BE MADE ONLY BY STANDARDS ENGINEERING IN DSD		REVISION	
2. DC OUTPUT				CORRECTED SPELLING WNC 9/20/88 REVISED 2.3.2, 2.4 3/18/88 R/25/88	
2.1. NOMINAL VOLTAGE/RATED CURRENT LOAD AT 55C				2	
2.1.1. Output #1: +5V, 40A forced-air-cooled, 20A natural convection				1	
2.1.2. Output #2: +12V, 3A (8A peak, 50ms, disk drive starting load) forced-air-cooled, 1A natural convection					
2.1.3. Output #3: -12V, 3A forced-air-cooled, 1A natural convection					
2.2. RATED OUTPUT POWER					
2.2.1. 272W at 55C, 100 LFM forced air					
2.2.2. 100W at 55C, natural convection. Derate linearly 2% per degree above 55C to 70C.					
2.3. TOTAL REGULATION (LINE, LOAD, TEMPERATURE)					
2.3.1. Output #1: +/-1% maximum, 0 to 100% rated load, up to 1000uF load capacitance					
2.3.2. Outputs #2,#3: +/-5% maximum, with minimum 2A load on output #1.					
2.4. MINIMUM LOADING REQUIREMENTS					
For outputs #2 and #3 to maintain regulation up to 100% of their forced-air current rating, output #1 needs a minimum 2A load current. Outputs #2 and #3 will be out of regulation when output #1 has less than a 2A load.					
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2.5. RIPPLE AND NOISE

Less than or equal to 1% p-p of nominal output voltage (20 MHz bandwidth). See Figure 4 on sheet 6A.

2.6. TRANSIENT RESPONSE (OUTPUT #1 ONLY)

2.6.1. With two supplies operating in parallel, with a total load of 40A, one supply can be disabled and enabled and the load voltage will not deviate more than 5%, and will recover to within 1% of steady-state in less than 5.0ms. See Figure 5 on sheet 6B.

2.6.2. With two supplies operating in parallel, with a total load of 40A, a step load change of 50uF and 5A will not cause the load voltage to deviate more than 5%, and will recover to within 1% of steady-state in less than 5.0ms. See Figure 6 on sheet 6C.

2.6.3. No overshoot on turn on or turn off.

2.7. HOLD-UP TIME

The output #1 voltage remains above 4.75V for more than 11.5 ms after input power is removed (all outputs at rated continuous load, over full input voltage range).

2.8. OVERVOLTAGE PROTECTION

In the event that output #1 exceeds 6.00V to 6.55V, or outputs #2 or #3 exceed 13V to 15V the inverter is shut down. The inverter remains latched off until AC input power is recycled or the inverter shutdown switch is recycled.

2.9. OVERLOAD PROTECTION

2.9.1. Constant current limit on all outputs between 105-115% of full rated load.

2.9.2. Red LED on front panel is on when any output is in current limit, and is labeled "CUR LIM".

2.9.3. Time delay on output #2 to allow for 8A peak, is 50ms max on power-up and during normal supply operation. This will accommodate floppy disk drive starting currents.

REVISION

2	REVISED 2.9.3. 8/25/88
1	REVISED 2.9.3. 7/26/88
4	REVISED 2.6.1, 2.6.2, 2.6.3, 2.9.3, 2.9.4, 2.9.5, 2.9.6, 2.9.7, 2.9.8, 2.9.9, 2.9.10, 2.9.11, 2.9.12, 2.9.13, 2.9.14, 2.9.15, 2.9.16, 2.9.17, 2.9.18, 2.9.19, 2.9.20, 2.9.21, 2.9.22, 2.9.23, 2.9.24, 2.9.25, 2.9.26, 2.9.27, 2.9.28, 2.9.29, 2.9.30, 2.9.31, 2.9.32, 2.9.33, 2.9.34, 2.9.35, 2.9.36, 2.9.37, 2.9.38, 2.9.39, 2.9.40, 2.9.41, 2.9.42, 2.9.43, 2.9.44, 2.9.45, 2.9.46, 2.9.47, 2.9.48, 2.9.49, 2.9.50, 2.9.51, 2.9.52, 2.9.53, 2.9.54, 2.9.55, 2.9.56, 2.9.57, 2.9.58, 2.9.59, 2.9.60, 2.9.61, 2.9.62, 2.9.63, 2.9.64, 2.9.65, 2.9.66, 2.9.67, 2.9.68, 2.9.69, 2.9.70, 2.9.71, 2.9.72, 2.9.73, 2.9.74, 2.9.75, 2.9.76, 2.9.77, 2.9.78, 2.9.79, 2.9.80, 2.9.81, 2.9.82, 2.9.83, 2.9.84, 2.9.85, 2.9.86, 2.9.87, 2.9.88, 2.9.89, 2.9.90, 2.9.91, 2.9.92, 2.9.93, 2.9.94, 2.9.95, 2.9.96, 2.9.97, 2.9.98, 2.9.99, 2.9.100

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<p>FIGURE 4</p> <p>RIPPLE AND NOISE MEASURED AT THE LOAD USING TEST CIRCUIT BELOW.</p>		
NOTES:		
1. POWER SUPPLY IS CONNECTED TO THE LOAD WITH AN 18-INCH CORD-TIED WIRING HARNESS.		
2. POLARIZED CAPACITORS ARE TANTALUM ELECTROLYTIC DIELECTRIC.		
3. NONPOLARIZED CAPACITORS ARE CERAMIC DIELECTRIC.		
4. CAPACITOR VALUES ARE MAXIMUMS.		
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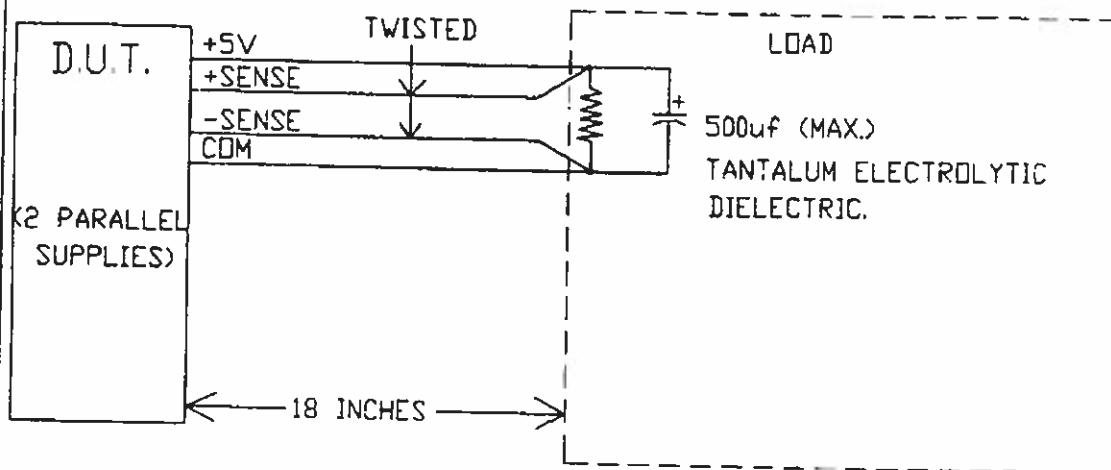
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FIGURE 5

TRANSIENT VOLTAGE IS MEASURED AT THE LOAD USING THE CIRCUIT BELOW.



NOTES

1. POWER SUPPLY IS CONNECTED TO THE LOAD WITH AN 18-INCH CORD-TIED WIRING HARNESS.

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CONT ON SH.

7

SH NO.

6C

272 WATT AC-DC POWER MODULE SPECIFICATION

CONT. ON SH.

7

SH NO.

6C

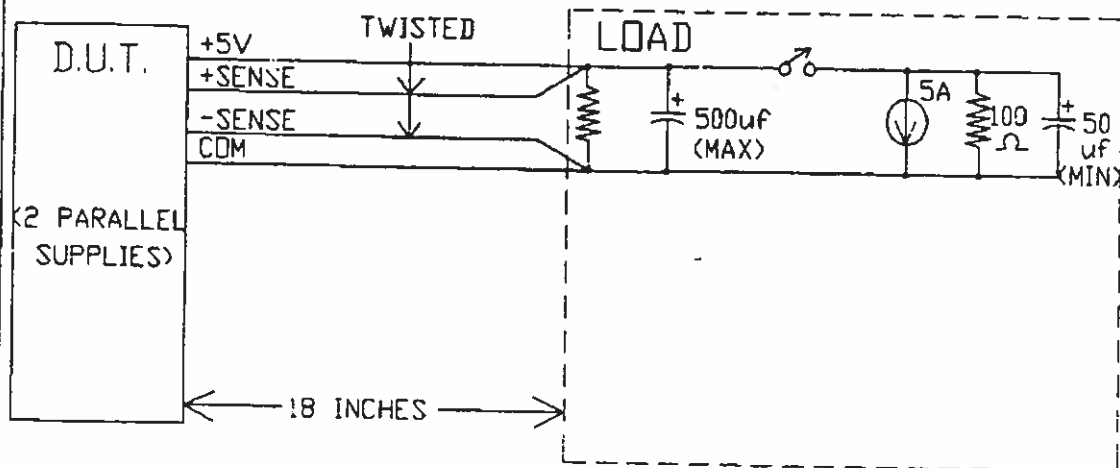
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FIGURE 6

TRANSIENT VOLTAGE IS MEASURED AT THE LOAD USING THE CIRCUIT BELOW.



NOTES:

1. POWER SUPPLY IS CONNECTED TO THE LOAD WITH AN 18-INCH CORD-TIED WIRING HARNESS.
2. CAPACITORS ARE TANTALUM ELECTROLYTIC DIELECTRIC.

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STD DWG - ADDITIONS OR CHANGES TO BE MADE ONLY BY STANDARDS ENGINEERING IN DSD			
<p>2.10. THERMAL PROTECTION</p> <p>When the thermal limit is reached, the inverter is shut down and remains latched off until the thermal sensor has cooled down and reset, and AC input power is recycled or the inverter shutdown switch is recycled. Protection is activated by sensing semiconductor junction overtemperature, not ambient overtemperature.</p> <p>2.11. REMOTE SENSE (OUTPUT #1 ONLY)</p> <p>Remote sense connections used in remote mode assure all specifications, and will compensate at least a 0.5V drop in output wiring. Internal local sensing is provided in case external sense leads are not connected.</p> <p>2.12. PARALLEL OPERATION</p> <p>Equivalent voltage outputs may be externally wired in parallel. Output #1 load current will be shared equally (+/-5%) by paralleled outputs. Outputs #2 and #3 do not share current, and the total load current should not exceed the rating of a single supply. Exceeding the 3A limit could result in forcing one of the supplies into current limit. In an N+1 redundant parallel configuration, a failed supply will not affect the output voltages of the remaining supplies, except in the case of an overvoltage, which shuts down the offending supply and may also shut down the other parallel supplies.</p> <p>2.13. HOT REPLACEMENT</p> <p>A failed parallel unit can be removed with its inverter disabled, and a new unit plugged in with AC power on and inverter enabled, and output #1 load voltage remains in the range +/-5% of nominal, and output voltages #2, #3 remain in the range +/-10% of nominal, with respect to output power common.</p> <p>2.14. AC LINE VOLTAGE NOTCH</p> <p>AC input notch of 0V for 2ms will not cause any output to lose regulation or activate AC loss or power supply fault signals.</p>			
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STD DWG - ADDITIONS OR CHANGES TO BE MADE ONLY BY STANDARDS ENGINEERING IN DSE		REVISION <div style="border: 1px solid black; padding: 5px;"> 1. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. </div>
<div style="border: 1px solid black; padding: 10px;"> <h3 style="margin: 0;">3. MONITORING AND CONTROL</h3> <h4 style="margin: 10px 0;">3.1. AC POWER LOSS</h4> <p style="margin: 5px 0;">An isolated NPN transistor (collector and emitter are brought out) turns off when input voltage is less than minimum (90Vrms or 180Vrms) for more than one-quarter cycle (5ms). The transistor turns off at least 6.5ms before output #1 load voltage falls below 4.75V (the end of hold-up time).</p> <h4 style="margin: 10px 0;">3.2. POWER SUPPLY FAULT</h4> <p style="margin: 5px 0;">An isolated NPN transistor (collector and emitter are brought out) turns off when the inverter is not switching. This signal also turns off a green LED on the front panel, labeled "DC ON".</p> <h4 style="margin: 10px 0;">3.3. INHIBIT</h4> <p style="margin: 5px 0;">A front panel short-actuator toggle switch turns the inverter on or off. The up position is labeled "ON" and enables the inverter. The down position is labeled "OFF" and disables the inverter.</p> <h4 style="margin: 10px 0;">3.4. TEST POINTS</h4> <p style="margin: 5px 0;">Test points for the following output voltages (top-to-bottom): +SENSE, +12v, -12v, -SENSE are accessible from the front, and are labeled "+5", "+12", "-12", "COM", respectively. They are 0.080" tip jacks, no silver, with 10K ohm series isolation resistors in the +5, +12, and -12 lines; COM does not have an isolation resistor. To prevent shorting a test point to the front cover when inserting a test probe, an insulating sleeve that extends through the card-front cover shall be provided.</p> <h3 style="margin: 10px 0;">4. ISOLATION</h3> <h4 style="margin: 10px 0;">4.1. Isolation should provide 1200V rms from input to chassis, 500V rms output to chassis simultaneously providing 3750V rms input to output for one minute per IEC380.</h4> <h4 style="margin: 10px 0;">4.2. All heat sinks connected to the safety cover are electrically isolated.</h4> <h4 style="margin: 10px 0;">4.3. Insulation will be provided where needed to protect against shorting to the front panel of an adjacent power supply and against electrical shock while plugging or unplugging the module from a card rack. The insulating material will be resistant to failure caused by puncturing and abrasion.</h4> </div>		
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<p><u>5. ENVIRONMENTAL</u></p> <p>5.1. OPERATING AMBIENT</p> <p>0 to 55C</p> <p>5.2. SHIPPING AND STORAGE AMBIENT</p> <p>-40C to +80C</p> <p>5.3. THERMAL SHOCK</p> <p>+/-5 deg C per minute, non-condensing</p> <p>5.4. AMBIENT TEMPERATURE TRANSIENT</p> <p>+/-15 deg C per hour, non-condensing</p> <p>5.5. ALTITUDE</p> <p>5.5.1. Operating: to 6000 ft above m.s.l.</p> <p>5.5.2. Shipping: to 45,000 ft above m.s.l.</p> <p>5.6. VIBRATION</p> <p>5.6.1. Designed to pass the following operating vibration tests:</p> <p>5.6.1.1. Vertical axis - Single amplitude vibration displacement profile from 10 mils at 16 Hz to 1 mil at 50 Hz corresponding to a constant level of 0.25G. Constant single amplitude vibration displacement of 10 mils between the frequencies of 4 to 15 Hz corresponding to G loads for 0.02 G to 0.25 G.</p> <p>5.6.1.2. Transverse axis - One half of verticle axis displacements.</p>		REVISION REVISED 5.2. 5.6.1 REWORKED 5.6.1.2
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272 WATT AC-DC POWER MODULE SPECIFICATION

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5.6.2. Designed to pass the following shipping vibration test
(in vendor shipping container): 72 hours at 0.3 G rms with
occasional 1.1 G peaks between frequencies of 4 and 16 Hz.

5.7. OPERATING AND STORAGE HUMIDITY

5 to 95% rh non-condensing.

REVISION

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