



Descriptive and Test Report

MASTER CONTRACT: 188668

REPORT: 1350343

PROJECT: 1350343

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PRODUCTS

CLASS 5311 03 - POWER SUPPLIES - Component Type

CLASS 5311 83 - POWER SUPPLIES - Component Type - CERTIFIED TO U.S. STANDARDS

Component type power supplies intended for use with Information Technology and Business Equipment where the suitability of the combination is to be determined by the Canadian Standards Association.

<u>PART</u>	<u>MODEL NO.</u>	<u>INPUT RATING</u>	<u>OUTPUT RATING</u>
PART A	FSP200-50SNV	115/230V, 6/3A, 60/50Hz	Level 3, rated +3.3V/16.7A, +5V/16A, +12V/10A, +5Vsb/2A, -12V/0.5A, -5V/0.3A(Optional) +5V & +3.3V= 118W max Total 200W max
PART B	FSP150-50SNV	115/230V, 6/3A, 60/50Hz	Level 3, rated +3.3V/12A, +5V/10A, +12V/4A, +5Vsb/2A, -12V/0.3A, -5V/0.2A(Optional) Total 150W max

Notes:

1. STANDARD CSA 60950/UL 60950 DESIGN MANUAL, VERSION 1.6 (ISSUED WITH 188668-1350343) IS AND INTEGRAL PART OF THIS REPORT.

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MARKINGS

- (a) Method of Marking: CSA Accepted and UL Recognized Adhesive Nameplate.
- (b) Information on the Nameplate: Per CSA60950/UL 60950 Design Manual (Ver. 1.6).

ALTERATIONS

Markings are as described above.

FACTORY TESTS

- (a) Production-Line Dielectric Voltage-Withstand Test:
As described in the Design Manual for grounded units up to 250V ac and for safety isolation transformers in power supplies.
- (b) Production-Line Earthing-Continuity Test: As described in Design Manual.

DESCRIPTION

Notes:

- (a) This unit is considered to operate under the conditions of:
 - i. Pollution Degree 2: Not sealed, not subject to dust, dirt, condensation.
 - ii. Equipment mobility; For Building-in type equipment.
 - iii. Classes of equipment; Class I equipment (grounded).
 - iv. Connection to the supply; pluggable equipment Type A, detachable power cord.
 - v. Max. ambient: 50 deg. C for all models.
- (b) Approval codes:
 - C = CSA Certified and suitable for the application.
 - C* = CSA Certified with the CSA Monogram on the component and suitable for the application.
 - CA = CSA Component Acceptance suitable for the application.
 - UL = UL Listed and suitable for the application.
 - UR = UL Recognized and suitable for the application.
- (c) A "+" prefix denotes that an alternative equivalent component with the same min required approval may be used.
- (d) This unit contains no operator access areas and operator's manual does not instruct the operator to gain access within the enclosure, or imply that access is required.

PART A: Models FSP200-50SNV. Refer to Figs 1 to 6, Ill. 1 for Schematic).

General: The subject models are component type, switching power supply provided with metal enclosure, consisting of primary and ELV components. (See Ills. 2, 3 for component layout).

1. Enclosure: Sheet steel, min 0.6mm thick. Overall 124.30 by 100.45 by 64.00 mm. Two halves secured together by screws. Provided ventilation opening as below:

Rear side: Numerous slot openings provided on rear side, each measured max. 24.50 mm by 2.60 mm, distributed over the rear chassis.

Fan vent opening: Measured 57 by 57 mm opening provided on front chassis. Consists of 8 concentric slot rings, each ring measured 5 mm wide; and 8 outer concentric openings, each opening measured max. 8.4 mm wide and 4 circular openings in the middle, each opening measured 4 mm OD.

2. +Power Supply Cord Set: Optional (Labelled*, UL), the power cord is Certified, No 18/3 AWG, min Type SVT, max 4.5m long. Terminates in a moulded-on CSA Type 5-15P or 6-15P (for 120V ac or 240V ac applications respectively) attachment plug cap at one end; the other end terminates in a moulded-on IEC Type CEE-22 female connector body.
3. +Appliance Inlet: (C* or UR), 'Supercom', P/N SC-9, rated 250V ac, 10A, provided with solder terminals, properly wired to maintain polarity. Secured through a suitable sized opening in the enclosure front by screws or snap-fit into enclosure with the Ground lead (yellow/green No 18 AWG) terminated to a screw lug which is an integral part of the chassis sized No 3 screw.

Grounding: The green or green/yellow insulated grounding conductor of the power supply cord terminates singly in a crimp type, closed loop connector, secured to stud on the enclosure by a min No 6 (M3.5), plated or non-ferrous threaded screw and lockwasher; screw engages min of twice the pitch of the screw thread.

Note: The IEC 417 No 5019 grounding symbol is marked in a permanent manner, adjacent to the ground screw.

4. +Voltage Selector Switch: (Optional) (C* or UR), rated 125/250V ac, min 6/3A. Secured by screws in a suitable size opening in the enclosure. Located in the neutral side of the AC supply.

Note: "115V" and "230V" are marked in a permanent manner on the voltage selector switch.

5. +Power Switch: (Optional) (C* or UR), rated 125/250V ac, min 6/3A, breaks both lines of the AC supply, secured through a suitable sized opening in the enclosure by snap-fit or screws into enclosure.
6. DC Fan: (C* or UR or CUR), provided with 6cm fan. Consists of plastic frame and winding cover, flammability rated 94V-1. Direction of airflow is outward, secured to the front side of the unit. See table below for alternative manufacturer, type and rating.

Manufacturer	Type	Rating
Protechnic	MGA6012MS-A15	12V, 0.16A, 15.21CFM
Protechnic	MGA6012MB-A15	12V, 0.16A, 15.21CFM
Protechnic	MGA6012MS	12V, 0.12A, 15.26CFM
Protechnic	MGA6012HS	12V, 0.16A, 17.48CFM
Protechnic	MGA6012XS	12V, 0.19A, 19.57CFM
Protechnic	MGA6012MB	12V, 0.12A, 15.26CFM
Protechnic	MGA6012HB	12V, 0.16A, 17.48CFM
Protechnic	MGA6012XB	12V, 0.16A, 15.21CFM
Protechnic	MGT6012MB-A15	12V, 0.16A, 15.21CFM
Protechnic	MGT6012MS-A15	12V, 0.19A, 19.57CFM
Adda	AD0612HB-D71GL	12V, 0.13A, 16.6CFM
Delta	AFB0612HB	12V, 0.1A, 15.4CFM
Delta	AFB0612HHB	12V, 0.1A, 17.3CFM
Dynaeon	DF1206BA	12V, 0.2A, 19CFM
Yate Loon	D60SH-12B	12V, 0.16A, 21CFM
Yate Loon	D60BH-12B	12V, 0.16A, 21CFM

7. Filter Board –SELV rated only. Construction and spacings are as described in Design Manual and shown in Ill. 2, overall approx. 170mm by 40mm , 1.6mm thick, perpendicularly secured to main board by soldering, the following components are secured through the pwb by soldering rated 94V-0.

8. Fuse (F1): C* or UL or Semko Approved to IEC Std No 127, rated F5A, 250V. Alternative and type as below:

<u>Manufacturer</u>	<u>Type</u>
Walter	FAP
Conquer	PBP, PTP

9. Thermistor (TH1): Rated 5 ohms, min. 4 A.

10. Across-the-Line Capacitor (CX1, CX2A): (Optional) (C* or UR) CX1 rated min 250V, max 0.33uF. CX2A rated min 250V, max 0.1uF.

11. Bleeder Resistor (R1): Rated 1M Ω , 1/4 W.

12. Inductor (FL1, FL3): (Optional), 'SPI', P/N 8TA00001 (=41-000-026) (Ills. 4 to 7)
Identifying Marks: Manufacturer ID and P/N as above.
Construction: Open type.
Core: Ferrite, dim 25.4 mm by 19.4 mm by 6.3 mm thick.
Bobbin: Shinkong Synthetic, Type T102G30, min 0.71mm thick, flammability rated min. 94V-2.
Insulation: min. 130°C
Winding Material: Enamelled copper wire.
Winding Construction see Ills. 4 to 7 for detail.
13. Inductor (FL2): (Optional) 'SPI', P/N 8LM00234. (Ills 8 to 10)
Construction: Open type.
Core: Ferrite, toroidal, dim 17.5mm OD, by 9.40mm ID, 4.83mm wide.
Insulation: min. 125°C.
Mounting: Windings are secured through the PWB by solder.
Winding Material: Polyurethane enamelled copper wire.
Wire Size see Ills. 8 to 10 for details.
Provided with Tubing around the body.
14. Main Printed Wiring Board: UL, Construction and spacings are as described in Design Manual and shown in Ills 2; overall approx 120.25 mm by 80.10 mm , min. 1.6 mm thick, secured to the enclosure by screws on metal tab of enclosure.
15. Across-the-Line Capacitor (CX2): (Optional) (C* or UR) rated min 250V, max 0.1uF.
16. Line-to-Ground Capacitors (CY1, CY2, CY3): (Optional), (C* or UR), rated min. 250V ac, max 4700 pF.
17. Choke (SWL): (Optional) 'SPI', P/N 8LM00235. (Ills. 11 to 13)
Construction: Open type.
Core: Ferrite, toroidal, dim 9.53mm OD, by 5.21mm ID, 3.25mm wide.
Insulation: min. 105°C.
Mounting: Windings are secured through the PWB by solder.
Winding Material: Polyurethane enamelled copper wire.
Wire Size see Ills. 11 to 13 for details.
Provided with Tubing around the body.
18. Bridge Rectifier (BD1): rated min. 600V rms, min 4A.
19. Storage Capacitors (C3, C4): Electrolytic type, rated 200V, min 470 uF, min 85°C.
20. +Varistors (M1, M2): (C* or UR), rated 150V ac, 200V dc.
21. +Switching Transistors (Q1, Q2): Rated min 400V, min 7A. Secured by a screw to a floating heatsink. Insulation may be provided between transistor body and heatsink by silicone rubber extending beyond transistor body min 2.4mm.

22. Power Transformer (T1): Accepted, 'SPI', P/N 8TG00061 (See Ills. 14 to 18).

Identifying Marks: Manufacturer's name and P/N as above.

Construction: Open type.

Core: Ferrite, dim 35mm by 42.8mm by 11.3mm thick.

Bobbin: Phenolic, 0.71 mm thick, flammability rated min. 94V-2.

Impregnation: Varnish.

Insulation: Class B.

<u>Location</u>	<u>Layers</u>	<u>Material/Thickness (mm)</u>	<u>Total (mm)</u>
Pri-(PI)	-	Bobbin/0.8	0.8
Pri-Sec	3	Polyester Tape/0.05	0.15
Outerwrap	3	Polyester Tape/0.05	0.15

Winding Material: Polyurethane enamelled copper wire.

Winding Construction see Ills. 14 to 18 for details.

23. Transformer (T2): Accepted, 'SPI', P/N 8TC00108. (See Ills. 19 to 23).

Identifying Marks: Manufacturer's name and P/N as above.

Construction: Open type.

Core: Ferrite, dim 16mm by 24.5mm by 5mm thick.

Bobbin: Phenolic, min 0.71mm thick, flammability rated min. 94V-2.

Impregnation: Varnish.

Insulation: Class B.

<u>Location</u>	<u>Layers</u>	<u>Material/Thickness (mm)</u>	<u>Total (mm)</u>
Pri-(PI)	-	Bobbin/0.8	0.8
Pri-Sec	3	Polyester Tape/0.05	0.15
Outerwrap	3	Polyester Tape/0.05	0.15

Winding Material: Polyurethane enamelled copper wire.

Winding Construction see Ills. 19 to 23 for details.

24. Transformer (T3): Accepted, 'SPI', P/N 8TC00109. (See Ills. 24 to 28).

Identifying Marks: Manufacturer's name and P/N as above.

Construction: Open type.

Core: Ferrite, dim 16mm by 24.4mm by 4.8mm thick.

Bobbin: Phenolic, min 0.71mm thick, flammability rated min. 94V-2.

Impregnation: Varnish.

Insulation: Class B.

<u>Location</u>	<u>Layers</u>	<u>Material/Thickness (mm)</u>	<u>Total (mm)</u>
Pri-(PI)	-	Bobbin/0.8	0.8
Pri-Sec	3	Polyester Tape/0.05	0.15
Outerwrap	3	Polyester Tape/0.05	0.15

Winding Material: Polyurethane enamelled copper wire.

Winding Construction see Ills. 24 to 28 for details.

25. Heat Sink (HS1) - Finned Aluminium, L-shape, see Ill.29 for dimension details.

26. Heat Sink (HS2) - Finned Aluminium, L-shape, see Ill.30 for dimension details.

27. +Optical Isolation (IC1): (C* or UR). 'Sharp', Part No PC817 or PC123, rated min. 3000V isolation.

28. Choke (L1): (Optional) 'SPI', P/N 8LM00228. (Ills. 31 to 33)

Construction: Open type.

Core: Ferrite, toroidal, dim 23.3mm OD, by 13.7mm ID, 9.95mm wide.

Insulation: min. 130°C.

Mounting: Windings are secured through the PWB by solder.

Winding Material: Polyurethane enamelled copper wire.

Wire Size see Ills. 31 to 33 for details.

29. Fan Control Board - (SEC). See Design Manual. Perpendicularly secured prior to soldering to main printed wiring board. (See Ill. 34 for details)

30. Mylar Sheet: Optional. (C* or UR), min 94V-2 or better (105°C).

Measured overall 122 mm by 90 mm, minimum 0.2 mm thick, provided between the trace side of main PCB and bottom chassis.

Measured overall 60 mm by 50 mm, minimum 0.2 mm thick provided between Filter Board and Chassis.

Measured overall 50 mm by 40 mm, minimum 0.2 mm thick provided between Fan Control Board and Chassis.

PART B: The subject Models FSP150-50SNV are identical to Models FSP200-50SNV in PART A, except output rating and the following:

19. Storage Capacitors (C3, C4): Electrolytic type, rated 200V, min 330 uF, min 85°C.