

File E95463
Project 97ME21618

February 9, 1998

REPORT

on

UNINTERRUPTIBLE POWER SUPPLY EQUIPMENT
FULCRUM: UPS SWITCH

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Billerica, MA 01821

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DESCRIPTION

PRODUCT COVERED:

Listed Accessory SMART - UPS Power Switch, Model SU041, SU042-1, SU042-2, SU042-4, SU045-1, SU043, SU044-1, and SU044-2, SU042X163, SU045X163, SU045x237, SU045X283.

For use with A.P.C. SMART - UPS product, rated to 3000 VA.

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE'S USE):

The products covered by this report are Automatic Power Selector intended for use with A.P.C. SMART - UPS product, for up to 3000 VA. All components are housed in a metal enclosure. Power is brought into and out of this module via Listed power supply cords and Listed receptacles.

ELECTRICAL RATINGS:

Input/Output Ratings:

<u>Model</u>	<u>Volt</u>	<u>Frequency</u>	<u>Plug Type</u>	<u>Max. Current</u>
SU041	120 V	50-60 Hz	15 A x 2	12 A
SU042-1	120 V	50-60 Hz	30 A x 2	24 A
SU042-2	120 V	50-60 Hz	30 A x 2	24 A
SU042-4	120 V	50-60 Hz	30 A x 2	24 A
SU045-1	208 V	50-60 Hz	20 A	16 A
SU043	230 V	50-60 Hz	IEC 320	8 A
SU044-1	230 V	50-60 Hz	IEC 320	16 A
SU044-2	230 V	50-60 Hz	IEC 320	16 A
SU042X163	120 V	50-60 Hz	20 A x 2	16 A
SU045X163	208 V	50-60 Hz	30 A x 2	16 A
SU045X237	208 V	50-60 Hz	30 A x 2	24 A
SU045X283	220-240 V	50-60 Hz	30 A x 2	24 A

MODEL DIFFERENCES:

Model SU042-2 is the base model. Model SU042-1 is similar to Model SU041 except for the circuit breaker that is employed in SU042-1 and maximum current (output) rating and plug type.

Model SU042-2 is similar to Model SU042-1 except for maximum current (output) ratings and plug type and does not employ a circuit breaker and output voltage is via a power supply cord.

Model SU042-4 is identical to Model SU042-2 except that the output has a set of six NEMA 5-20R receptacles mounted to the chassis. Whereas the Model SU042-1 has a single duplex receptacle, the Model SU042-4 has three duplex receptacles. There are two 15 A circuit breakers, one protects a single duplex outlet while the other protects the remaining two duplex outlets.

Model SU045-1 is similar to Model SU041 except that it is rated 208 V with 300 V MOV's, has higher current ratings, equipped with two cord sets terminated with L6-20 receptacles in place of the 5-15 duplex outlet and alternative vendors for the transformer.

Model SU042X163 is similar to Model SU042-2 except that it has lower current ratings and is equipped with cordsets terminated with Type L5-20 plugs and *receptacles. The Model SU042X163 is equipped with a black bezel.

Model SU045X163 is similar to the Model SU045 except that it is equipped with cordsets terminated with L6-30 plugs and receptacles. The Model SU045X163 is *equipped with a black gray bezel.

Model SU045X237 is similar to Model SU045-1 except it has a higher current rating and is equipped with cordsets terminated with L6-30 plugs.

Model SU045X283 is similar to Model SU045X163 except that the unit will have a 220-240 Vac input, rather than a 208 Vac input.

MANUFACTURER: See Section General.

CONSTRUCTION DETAILS:

General - For details of construction, refer to the Section General and to the following photographs and their associated descriptive indices.

Corrosion Protection - All ferrous metal parts are plated.

Mechanical Assembly - All components are secured in place by means of screws, nuts and lockwashers; screws and threaded holes or inserts; cut-outs with locking tabs; rivets, solder connections made mechanically secure prior to soldering or by tie wraps and cable ties in such a manner as to prevent rotation about the mounting axis.

Internal Wiring - All wiring shall be Listed or Recognized (AVLV2), rated 300 V, 80°C, PVC, TFE, PTFE, FEP, or neoprene insulated, or shall be surface-marked "VW-1". All solder connections are mechanically secured prior to soldering.

Marking - Identification is located on exterior of enclosure and contains Listee's name, and/or file number, model number and electrical rating.

Plastic Parts - Unless otherwise noted, made of Recognized Component plastic (QMFZ2), with flammability rating of 94HB or better.

Dimensions - All dimensions are approx. unless specified as max or min.

Printed Wiring Boards - Unless otherwise noted, Recognized Component printed wiring boards (ZPMV2), with flammability rating of 94V-1 or better.

SMART - UPS POWER SWITCH

FIG. 1 (M98-00904)

General - Fig. 1 shows a front/top/right side view of the SMART-UPS Power Switch.

1. Enclosure - Constructed from sheet steel 1.04 mm thick. Two piece construction. Held together with screws. Overall dimensions are approx. 430 mm by 230 mm by 45 mm. All sides of the panels are smooth and well-rounded.
2. Ventilation Opening - None provided.
3. Connectors - Located in low voltage.

FIG. 2 (M98-00905)

General - Fig. 2 shows an overall rear and top view of the unit.

1. Receptacles - (APC 770-0055) Listed or R/C duplex type (RTRT, RTRT2). One provided. Rated 15 A, 125 V. Provided on Model SU041.
2. Receptacles - (APC 770-0079) Listed or R/C duplex NEMA 5-20 T-type (RTRT, RTRT2). One provided. Rated 20 A, 125 V. Provided on Model SU042.
3. Circuit Breaker - (APC 530-0039) R/C (QVNU2), rated 120 V ac, 15 A. Provided on Model SU042-1. Not provided on 230 V models.
4. Cordset - (APC 650-0037). R/C Type SJT, 14 AWG 3 conductor, terminated with a NEMA 5-15P plug. Provided on Model SU041.
- *5. Cordset - (APC 650-0053). R/C Type SJ, 12 AWG 3 conductor, terminated with a NEMA L5-30P plug. Provided on Model SU042.
6. Cordset - (APC 650-0053A). R/C Type SJ, 10 AWG 3 conductor, terminated with a NEMA L5-30P plug. Provided on Model **SU042-2 and** SU042-4.
7. Cordset - (**APC 650-0056A**). R/C Type SJ, 12 AWG 3 conductor, terminated with a NEMA L5-30R receptacle. Provided on Model SU042-2.
8. Cordset - (APC 650-0082). R/C Type SJ, 12 AWG 3 conductor, terminated with a NEMA L6-20P plug. Provided on Model SU045-1.
9. Cordset - (APC 650-0083). R/C Type SJ, 12 AWG 3 conductor, terminated with a NEMA L6-20R receptacle. Provided on Model SU045-1.
10. Cordset - (APC 650-0096). R/C Type SJT, 12 AWG 3 conductor, terminated with a NEMA type L5-20P plug. Provided on Model SU042X163.
11. Cordset - (APC 650-0114). R/C Type SJ, 12 AWG 3 conductor, terminated with a NEMA type L5-20R receptacle. Provided on Model SU042X163.
12. Cordset - (APC 650-0138). R/C Type SJ, 12 AWG 3 conductor, terminated with a NEMA type L6-30 receptacle. Provided on Model SU042X163.
13. Strain Relief - (APC652-07N2). R/C (NYV2) Model SR-7N-2, (Heyco Molding Products). Provided on Model SU041.
- *14. Strain Relief - (APC652-07W2). R/C (NYV2) Model SR-7W-2, (Heyco Molding Products). Provided on Model SU042-1, SU045-1, SU045X163, SU045X237.
15. Cordset - (APC 650-0219). Listed Type SJ, 10 AWG 3 conductor, terminated with a NEMA type L6-30P plug. 2 provided on Model SU045X237.
16. Cordset - (APC 650-0218). Listed Type SJ, 12 AWG 3 conductor, terminated with a NEMA type L6-20R receptacle. 2 provided on Model SU045X237.
17. Circuit Breaker - (APC 530-0067, -0067A) Listed, two provided. Rated 240 V ac, 20 A. Provided on Model SU045X237.

18. Circuit Breaker - (APC 530-0227) Listed, two provided. Rated 240 V ac, 15 A. Provided on Model SU042-4.

19. **Strain Relief - (APC652-SR8N). R/C (NYYV2) Model SR-8N, (Heyco Molding Products). Provided on Model SU042-2 and SU042-4.**

FIG. 3 (M98-00906)

General - Fig. 3 shows an overall internal view of the unit.

1. Printed Circuit Board - (APC 640-0422). R/C (ZPMV2), rated 105°C, 94V-0. (APC 640-0745), R/C (ZPMV2), rated 105°C, 94V-0 for Model SU045X237.
2. Earthing - Green/yellow or green conductor of power supply cord terminates in closed-loop, double crimp-type connector. Secured to chassis enclosure with dedicated threaded post or screw, nut and lockwasher. Bonding conductors may be stacked above earthing connector if separated from it by nut and lockwasher. Earthing conductor longer than other conductors of power supply cord when secured or otherwise positioned so as to be subjected to strain last. Earthing symbol provided adjacent to termination; see Section General, Earthing Symbol and Markings. Sheath of incoming power cord extends min 7.5 mm beyond beyond cord anchorage. Grounding provided via ac inlet on 230 V models only.
3. Transformer (T2, T3)-(APC430-0040) - R/C (XPTQ2), Class B (130°C), insulation system.

Alternate: (APC-430-0041) for 208 V use only Magnetek model VPP36-280 Recognized Component Class B(130°C). Eastar 430-0041 Recognized Insulation System Class B (130°C).

Alternate - (APC 430-0025A) for 208 V use only Eastar 430-0025 Recognized Insulation System Class B (130°C). Leader LS-A449-PT1, Recognized Insulation System Class B (130°C).

4. Transformer (T1, T4) - R/C (XPTQ2), by Eastar , Class B (130°C), Type 430-0029A. Open type construction. Core: stacked sheet metal bobbin. Overall 2 in. by 3-1/2 in. by 9/16 in. Coil: copper magnet wire wound on bobbin. Bobbin: split bobbin.
5. Relays (Ry2, Ry4) - (APC 450-0029) R/C (NRNT2) Type HAT 901 Series, by Hasco Components Int'l. Corp., Part No. HAT901CSDC24-1. Rated 120 V ac/1 hp. Contact, 24 V dc coil. 87 m watt coil power.
6. Capacitor (C56) - R/C (FOKY2) by Okaya, Model F1772-510-2000, rated 250 V ac, 1.0 µF, or equivalent.
7. Capacitor (C58, C57)-(APC 232-0334) - R/C (FOKY2), rated 250 V ac SHX2, 330 nF.
8. Varistor (M2-M7) - (APC 380-1501), R/C (XUHT2) 150 V, 20/18 mm.

Alternate: (APC-380-0001) for 208 V use only. Recognized Component 300 V 20 mm.
9. SNMP Adaptor Box - 2 provided. Constructed from R/C (QMFZ2), 1/16 in. thick, rated 5 V.
- *10. Relays - 2 Provided in Model SU045X283. (APC 450-0024) R/O (NLDX2) coil rated 24 V dc, contacts rated 25A, 250 V ac. (Omron Corp., G7L-2A-TUB-CB). Secured to mounting bracket with screws.

CONCLUSION

Samples of the products covered by this Report have been found to comply with the requirements covering the class and the products are judged to be eligible for Listing and Follow-Up Service. The manufacturer is authorized to use the Laboratories' Mark on such products which comply with the Follow-up Service Procedure and any other applicable requirements of Underwriters Laboratories Inc. Only those products which properly bear the Laboratories' Mark are considered as Listed by Underwriters Laboratories Inc.

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