

File E182560
SR# 594012

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REPORT

ON

COMPONENT - POWER SUPPLIES, MEDICAL AND DENTAL

ASTEC INTERNATIONAL LTD PHILIPPINES BRANCH
QUEZON CITY, METRO MANILA 1110, PH

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DESCRIPTION

PRODUCT COVERED:

USR, CNR Switching Power Supply, Model NLP65 or NLP65C-9905, -9908, -9910, -9912, -9915, -9920, -9924, and -9929, may be followed by any three alphanumeric characters.

ELECTRICAL RATINGS:

Model	Input			Output, (dc)		
	V	A	Hz	V	A(max)	A(fan)
NLP65-9905	100-240	1.8-1.0	50/60	5	10.0	12.0
NLP65-9908	100-240	1.8-1.0	50/60	5 12 -12	7.0 2.5 0.65	8.0 3.0 0.8
NLP65-9910	100-240	1.8-1.0	50/60	5 15 -15	7.0 2.2 0.65	8.0 2.5 0.8
NLP65-9912	100-240	1.8-1.0	50/60	12	5.4	6.5
NLP65-9915	100-240	1.8-1.0	50/60	15	4.4	5.3
NLP65-9920	100-240	1.8-1.0	50/60	5 24	7.0 2.0	8.0 2.0
NLP65-9924, NLP65-9912N02	100-240	1.8-1.0	50/60	24	2.7	3.5
NLP65-9929	100-240	1.8-1.0	50/60	5 12	7.0 2.5	8.0 3.0
NLP65-9912N01	100-240	1.8-1.0	50/60	12	5.4	6.5
NLP65C-9905	100-240	1.8-1.0	50/60	5	10.0	12.0
NLP65C-9908	100-240	1.8-1.0	50/60	5 12 -12	7.5 2.5 0.65	8.0 3.0 0.8
NLP65C-9910	100-240	1.8-1.0	50/60	5 15 -15	7.5 2.2 0.65	8.0 2.5 0.8
NLP65C-9912	100-240	1.8-1.0	50/60	12	5.4	6.5

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NLP65C-9915	100-240	1.8-1.0	50/60	15	4.4	5.3
NLP65C-9920	100-240	1.8-1.0	50/60	5	7.0	8.0
				24	2.0	2.0
NLP65C-9924	100-240	1.8-1.0	50/60	24	2.7	3.5
NLP65C-9929	100-240	1.8-1.0	50/60	5	7.0	8.0
				12	2.5	3.0

***TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):**

Use - For use only in (or with) complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

Special Considerations - The following items are considerations that were used when evaluating this product.

USR indicates investigation to the U.S. Standard for Medical Electrical Equipment, Part I: General Requirements for Safety, UL **60601-1, 1st Edition.**

CNR indicates investigation to the Canadian Standard for Medical Electrical Equipment, Part I: General Requirements for Safety, CAN/CSA-**C22.2 No. 601.1-M90.**

The component was submitted by the manufacturer for use in a maximum air ambient of 50°C.

The equipment is:

for building in, Class I (earthed) or Class II (no earth) NLP65C Series.

The heat sink in the primary is not grounded.

Conditions of Acceptability - When installed in the end-product, consideration shall be given to the following:

1. *This component has been judged on the basis of the required spacings in the Standard for Medical Electrical Equipment, Part I: General Requirements for Safety, UL **60601-1**, which would cover the component itself if submitted for Listing.
2. The products were tested on a 20 A branch circuit. If used on a branch circuit greater than this, additional testing may be necessary.
3. These power supplies have only been evaluated for non-patient connected circuits.
4. The power supplies shall be connected to protective earth by a suitable mating connector to Tab, J2. In addition, the mounting for the two holes, which have a ground pad, shall consist of a starwasher between the underside of the Printed Wiring Board and the metal standoff, and a compression-type washer between the top-side of the Printed Wiring Board and the screwhead. Capacitors, C15 and C28, are connected between secondary circuits and ground.
5. Overcurrent protection shall be provided in the neutral in the end-product. The power supplies only provide a 3.15 A fuse in the line.
6. The input and output connectors are suitable for factory wiring only.
7. Magnetic devices (e.g. transformer, inductor) T2 employs an (OBJY3), electrical insulation system designated Class F.
8. The maximum primary to earth working voltage present is 266 Vrms. The Electric Strength Tests, and Clearance and Creepage Distance requirements in the end-product shall be based on this value.
9. A suitable Electrical and Fire enclosure shall be provided.
10. The need for fuse replacement marking and electrical ratings shall be determined in the end-product. Fuse is marked "F1" and manufacturer's bill of materials indicates the electrical ratings.

For testing at A (fan) loads, a 20 cfm fan was positioned measured 30.5 cm (12 in.) from the input or output connector side of the Printed Wiring Board. The direction of the airflow was toward the supply.
12. For Models NLP65-9908, -9910, and -9929: The maximum continuous output power shall not exceed 62.5 W with convection cooling.
13. For Model NLP65-9920: The maximum continuous output power shall not exceed 65 W with convection cooling.

For all multiple output models: The maximum continuous output power shall not exceed 75 W with forced air cooling described in Item 11.

15. Leakage Current and Temperature Tests should be repeated in the end-product.
16. Capacitor C29 and C30 shall be Type "KH of Murata Mfg. Co., 220 pF and 470 pF respectively.
17. Capacitor C28 shall be Type "KX" of Murata Mfg. Co., 220 pF.
18. Creepage and clearance distance shall be maintained across the C29 and C29 terminals across the PCB. (8 mm and 5 mm respectively)
19. All wire on the PCB shall be mechanical secured and soldered.

CONSTRUCTION DETAILS:

See Section General for additional details.

Corrosion Protection - Parts of the corrosion-resistant material or plated or painted as corrosion protection.

Electrical Tubing and Sleeving - R/C (YDPU2) and/or (UZFT2), rated 300 V, 105°C minimum.

Marking - Recognized Company's name or file number, and model designation are provided on label or are ink-stamped or stenciled on printed wiring board.

Mechanical Electrical Connections - For electrical connections, internal wiring and leads of transformers and components are provided with crimp-on terminals such as closed loop, spade-type with upturned ends, quick connect with integral detent or locking-type, or are mechanically secured and soldered.

Printed Wiring Board - Unless otherwise specified, all boards are R/C (ZPMV2), suitable for the solder time and temperature used by the manufacturer, and having a minimum flame rating of 94V-0, a minimum CTI rating of 100 V and an operating temperature rating of at least 105°C. See Section General for details. General appearance of trace layouts same as in ILLS. 2 and 3.

Segregation - Insulated conductors of different circuits are provided with spacings as specified in this Report, unless both circuits are insulated for the highest voltage involved. Insulated conductors are positively maintained away from bare-live parts of different circuits, sharp edges, and heat-producing components.

Soldered Connections - All connections are mechanically secured before soldering.

Tolerances - Unless specified otherwise, all indicated dimensions are nominal.

Model Differences - All models are identical, except for output ratings, transformer outputs, and associated secondary circuits. NLP65C Series are Class II equipment as per IEC 60601-1, protective earth is not provided.

Engineering References -

- ILL. 1 - Isolation Diagram.
- ILL. 2 - Control PWB layout.
- ILL. 3 - Main PWB layout.
- ILL. 4 - Construction Details of transformer (T1).
- ILL. 5 - Installation Manual.

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