

DESCRIPTION

PRODUCT COVERED:

USL/cUL - Open type, Switching Power Supply DRB100-24-1-xyz, where x, y and z can be any alphanumeric character or blank and is non safety relevant information.

GENERAL:

The device is an open type AC/DC Switching Power Supply intended to be used in industrial control applications for DIN-Rail mounting (building-in), permanent connected (field wired) and for use in a pollution degree 2 environment (Controlled Environment).

RATINGS:

Model	Voltage Rated (Vac)	Input		Freq. (Hz)	Output (DC)	
		Voltage Rated (Vdc)	Current (A)		Voltage (V dc)	Current (A)
DRB100-24-1-xyz	100-240	N/A	1.8	50/60	24-28	4.2-3.6

Maximum surrounding air temperature for 100% load: 55°C

Maximum surrounding air temperature for 50% load: >50-70°C.

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

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

USL: Indicates investigation to the U.S. Standard UL 508, 17th Ed.

CNL: Indicates investigation to the CAN/CSA C22.2 No. 107.1-01, 3rd Ed.

Note: USL = United States Standards - Listed.
CNL = Canadian Standards - Listed

The model have been evaluated to UL 508, 17th Edition including revisions through and including March 19th, 2013 and CAN/CSA C22.2 No. 107.1-01, 3rd Edition, dated September 2001, reaffirmed 2011, for spacing and acceptability for use in an ambient of pollution degree 2 and maximum surrounding air temperature as shown in the rating section above

The equipment is for building in, permanently connected (field wired).

CONSTRUCTION DETAILS:

The product shall be constructed in accordance with the following description.

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

Corrosion Protection - All ferrous metal parts are suitably protected against corrosion by painting, plating or the equivalent.

Printed Wiring Boards - Recognized Component printed wiring board (ZPMV2/8) suitable for direct support of live parts according to UL 796 or with a CTI greater than 175, rated 130°C min., unless specified elsewhere in this report, may be coated with any coating. Refer to R/C Directory for dwell time and solder temperature limitations unless specified otherwise.

SPACINGS AT FIELD WIRING TERMINALS:

Minimum spacings at field wiring terminals for pollution degree 2 environment:

- with reference to Table 36.1 of UL 508, column B, Seventeenth Edition, for more unfavorable pollution degree 3 and device having limited ratings: min. 1.6 mm through air and min. 3.2 mm over surface
- with reference to Table 6 of CSA C22.2 No. 107.1-01, Third Edition: min. 2.4 mm, except min. 6.4 mm between opposite polarity terminals

Spacings (USL) - The minimum spacings are determined based on pollution degree 2 in accordance with UL 508 Section 36, table 36.1, devices having limited ratings. Evaluation of spacings not required for secondary circuits, Limited Voltage Circuits, with respect to UL 508, table 32.0.

DRB100-24-1 secondary circuit considered as Limited Voltage Circuits. Spacings have not been evaluated for secondary circuits.

Table 36.1, minimum spacings for devices having limited ratings:

Potential involved in volt rms ac or dc		51-300
Between any uninsulated live part and an uninsulated live part of opposite polarity, uninsulated grounded part other than the enclosure, or exposed metal part	Through air (mm)	1.6
	Over surface (mm)	3.2

Control of overvoltage is achieved by varistor (MOV) mounted after fuse, considered in compliance with UL 840 section 8.2a, Table 8.1, 9.1 and 9.2, and, CAN/CSA C22.2 No. 107.1-01, Table 8.

Spacings after varistor (controlled overvoltage) - The minimum spacings are determined based on UL 840, 3rd edition, with respect to UL 508 section 39.1 and 39.4.

UL 840, Table 8.1, minimum clearances

Phase-to-ground rated system voltage, Over Voltage Category III	Rated Impulse Withstand Voltage peak, kV	Clearance (mm)
N/A	1.5 (Varistor)	0.5 mm

Rated Impulse Withstand Voltage 1.5 kV peak achieved by approved Varistor type V10471U, subjected to 21 surges of a 6kV/3kA combination waveform and Nominal Discharge Current 2.0 kA. The component is in compliance with UL 840, section 8.4.2, Table 8.2.

UL 840, Table 9.1 and 9.2 (PWB's, except PWB's MG IIIb), minimum creepages

Operating voltage, volts ac rms or dc	Creepage <CTI 175 (IIIb) (Table 9.1)	Creepage PWB, ≥CTI 175 (IIIa) (Table 9.2)
250 (+)	2.5 mm	1.0 mm
800 (++)	8.0 mm	4.0 mm

(+) Voltage considered on terminal block. Rated supply is 240Vac.

(++) Voltage considered on switching transformer T1 primary to earth and primary to secondary.

Maximum working voltage T1 observed on model DRB100-24-1:

372 Vrms/536 Vpk measured between PRI/PE; 368 Vrms/584 Vpk between PRI/SEC.

Spacings between traces of different potential on Printed Wiring Board, except traces between primary and secondary circuit, have been evaluated and considered in compliance with UL 508 section 36.12.

Spacings (CNL) - The minimum spacings are determined based on controlled environments in accordance with CAN/CSA C22.2 No. 107.1-01.

Spacings between bare live parts of opposite polarity and between bare live parts and non-current carrying metal parts other than enclosure were evaluated in accordance with CAN/CSA C22.2 No. 107.1-01, table 6.

Table 6, minimum spacings for Power Supplies used in controlled environment:

Potential involved, Volts		Between bare live parts of opposite polarity and between bare live parts and non-current carrying metal parts other than enclosure	
V ac rms	V ac peak or dc	Through air (mm)	Over surface (mm)
Over 150 to 300	Over 212.1 to 424.2	2.4	2.4
Over 300 to 600	Over 424.2 to 848.4	9.5	12.7

Spacings on Printed Wiring Boards were evaluated in accordance with CAN/CSA C22.2 No. 107.1-01, table 8. Spacings are not specified for secondary circuits, supplied by a transformer winding for which the output voltage does not exceed 100 V.

Table 8, minimum spacings on Printed Circuit Boards used in controlled environment (limited transients), uncoated:

Potential involved, Volts		Conductor spacings on Printed Circuit Boards, limited transients (mm)
Volts, ac rms or dc	V ac peak	
250 (+)	N/A	1.0
800 (++)	N/A	4.0

(+) Voltage considered on terminal block. Rated supply is 240Vac.

(++) Voltage considered on switching transformer T1 primary and primary to secondary.

Maximum working voltage T1 observed on model DRB100-24-1:

372 Vrms/536 Vpk measured between PRI/PE; 368 Vrms/584 Vpk between PRI/SEC.

Spacings after varistor (overvoltage protective device) - The minimum spacings on Printed Circuit Boards were evaluated in accordance with CAN/CSA C22.2 No. 107.1-01, table 8 (limited transients). For spacings other than Printed Circuit Boards table 6 is still applicable.

Spacings between traces of different potential on Printed Wiring Board, except traces between primary and secondary circuit, have been evaluated and considered in compliance with CAN/CSA C22.2 No. 107.1-01 section 4.17.3.

MARKINGS:

Markings on the unit:

Listee's name or trademark or file number

Model designation

Electrical ratings

Instruction manual reference and surrounding air temperature

Each Unit is marked with the UL Listing Mark

The month and year of manufacture shall also be marked. Date coding, serial numbers, or equivalent means may be used.

Markings in the instruction manual:

Maximum surrounding temperature as described in the rating section of this report may be provided

Specification of environment pollution degree 2 (Controlled Environment)

Field Wiring Terminal Markings - Wiring terminals shall be marked to indicate the proper connections for power supply and load, or a wiring diagram coded to the terminal marking shall be securely attached to the device, and "Use Copper Conductors Only, 75°C" or equivalent. This marking could be located adjacent to the terminal or on the wiring diagram.