CSA INTERNATIONAL

Certificate of Compliance

Certificate: 2174217 **Master Contract:** 181564

Project: 2174217 **Date Issued:** 2009/05/27

Issued to: **Delta Electronics (Thailand) Public Co., Ltd.**
909 Soi 9 Moo 4 Pattana 1 Rd
Bangpoo Industrial Estate E.P.Z.
Tambol Phraksa
Amphur Muang, Samut Prakan 10280
Thailand
Attention: Ms. Kedsuda Veerasirikul

The products listed below are eligible to bear the CSA Mark shown

Issued by: Rob Hempstock, AScT

Authorized by: Lindsay Clark, Product Group Manager

PRODUCTS

CLASS 5311 03 - POWER SUPPLIES - Component Type

DIN Rail Power Supply, component type, Model DRP012V060W1XX (where X can be 0-1, a-z, A-Z or blank); permanently connected, intended for use in a controlled environment, rated as follows:

Model: DRP012V060W1XX

Input: 100-240 V ac, 1.5 A, 50-60 Hz

.

CSA INTERNATIONAL

Certificate:	2174217	**Master Contract:**	181564
Project:	2174217	**Date Issued:**	2009/05/27

Output: 12 V dc, 5.0 A, 60 W

Notes:

1. The wiring terminals are not intended for Field wiring.

2. The above power supply has been evaluated in an ambient of 50°C @ 100% power, 60°C @ 75% power, 70°C @ 50% power, and 80°C @ 10% power.

3. The above power supply is certified only as a component for use in other equipment, where the suitability of the combination is to be determined in the end product.

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 0-M91 - General Requirements - Canadian Electrical Code - Part II

CSA-C22.2 No. 0.4-04 - Bonding of Electrical Equipment

CSA-C22.2 No. 107.1-01 - General Use Power Supplies

CSA INTERNATIONAL

Descriptive Report and Test Results

MASTER CONTRACT: 181564
REPORT: 2174217
PROJECT: 2174217

Edition 1: May 27, 2009; Project 2174217 - Vancouver
Issued by Rob Hempstock, AScT.

Contents:

PRODUCTS

CLASS 5311 03 - POWER SUPPLIES – Component Type

DIN Rail Power Supply, component type, Model DRP012V060W1XX (where X can be 0-1, a-z, A-Z or blank); permanently connected, intended for use in a controlled environment, rated as follows:

Model	Input			Output		
	Volts (V ac)	Amps (A)	Freq (Hz)	Volts (V dc)	Amps (A)	Power (W)
DRP012V060W1XX	100-240	1.5	50-60	12	5.0	60

Notes:

1. The wiring terminals are not intended for Field wiring.
2. The above power supply has been evaluated in an ambient of 50°C @ 100% power, 60°C @ 75% power, 70°C @ 50% power, and 80°C @ 10% power.
3. The above power supply is certified only as a component for use in other equipment, where the suitability of the combination is to be determined in the end product.

13799 Commerce Parkway, Richmond, BC, Canada V6V 2N9
Telephone: 604.273.4581 1.800.463.6727 Fax: 604.244.6600 www.csa-international.org

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 0-M91 - General Requirements - Canadian Electrical Code - Part II
CSA-C22.2 No. 0.4-04 - Bonding of Electrical Equipment
CSA-C22.2 No. 107.1-01 - General Use Power Supplies

MARKINGS

The following markings appear on the enclosure in a permanent and visible manner (i.e. silk-screening, permanent ink stamping, on adhesive labels that appear on the CSA List of Accepted Adhesive Nameplates, or by other permanent method:

(1) Submittor's name and/or CSA file number "181564"
(2) Model designation
(3) Complete electrical Input (V, A, Hz, VA or W)
(4) Complete electrical Output (V, A, Hz [if applicable], VA or W)
(5) Date code or date-traceable serial number
(6) The CSA Monogram
(7) The AC terminals are identified (L, N, and ground)
(8) The DC positive and negative terminals are identified by the symbols “+” and “-” or equivalent
(9) Caution. Refer to installation manual or equivalent.

(10) The installation and operating manuals contain the following:
- Complete instructions for mounting (orientation), installing and operating the equipment.
- Environmental and maximum ambient conditions, including de-rating information for operation in elevated ambients.
- Details of the AC and DC overcurrent protection and disconnects required to be provided as part of the installation.

(11) Caution wording:
CAUTION: "FOR USE IN A CONTROLLED ENVIRONMENT"
CAUTION: "WIRING TERMINALS ARE NOT INTENDED FOR FIELD WIRING"

Note: Jurisdictions in Canada may require the markings in above to also be in French. It is the responsibility of the Customer to provide bilingual markings, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities. It is the responsibility of the Customer to determine this requirement and have bilingual wording added to the "Markings".

ALTERATIONS

1. The markings are as above.

FACTORY TESTS

1. The equipment at the conclusion of manufacture and before shipment, shall withstand for one min, without breakdown, the application of the following ac potentials:

   (a) 1000V for equipment rated 250V or less, and 1000V plus twice rated voltage for equipment rated at more than 250V between low voltage live parts and the enclosure if such circuits leave or enter the enclosure;

2. A transformer, shall withstand for one min without breakdown, the application of an ac potential of l000V plus twice the max voltage of the winding applied between each winding and all other windings, the core, and the enclosure; except that if the max voltage of a winding does not exceed 30V, the test voltage may be reduced to 500V ac for that winding. Ungrounded metallic shields are to be treated as windings when performing these dielectric strength tests.

   Notes:

   1. As an alternative, potentials 20 percent higher may be applied for one second.

   2. Where it is more convenient to do so, the dielectric strength tests may be made by applying a direct current voltage instead of an ac voltage, provided that the voltage used is 1.414 times the values specified above.

   3. Capacitors in the secondary circuit may be disconnected during the dielectric strength tests

   4. Transformer manufacturer's agreement to perform Test No 2 will be acceptable. Also, this test shall be waived on certified transformers.

   Warning: The factory test(s) specified may present a hazard of injury to personnel and/or property, and should only be performed by persons knowledgeable of such hazards and under conditions designed to minimize the possibility of injury.

INTRODUCTION

A representative sample of the subject product was examined and is described in the body of this report. Unless specifically stated otherwise, the following general definitions, terminology and construction details apply:

Asterisk: In "Certified*" or "NRTL Recognized*" the asterisk denotes that the CSA Monogram or UL Component Recognition or Listing Mark appears on the component being described.

"INT" Components: The phrases "INT" indicate that the component being described may be replaced by one having the same mechanical configuration and the same or better ratings specified, electrical spacings, and equivalent CSA and NRTL approval status.

Low-Voltage, Limited Energy Circuit: A circuit involving an alternating voltage of not more than 30 Vrms (42.4 V peak) or a direct voltage of not more than 42.4 volts.

Dimensions: (dim) All dimensions specified are approximations only. Unless stated otherwise, the least significant digit is uncertain by plus or minus one unit.

Internal Wiring: All primary, Sec and grounding circuit conductors are certified, Type TEW, TR 64, TR-32, AWM SR-PVC or AWM XL-PVC, rated min. 90ºC, 300 V ac. All wiring is suitably routed and secured away from sharp edges and moving parts to prevent chafing of the insulation. Alternatively, addition insulation is provided where the wiring passes over sharp edges and through holes.

ELV Wiring: All non-certified conductors and connectors in ELV sec circuits have insulation materials with a flammability rating of 94V-2 or better or are made of PVC, TFE, PTFE, FEP or Neoprene and are routed and mechanically secured away from contacting all primary circuitry.

Crimp Connectors: All crimp-type connectors used in primary, SEC and grounding circuits are certified and appropriately sized for the gauge of conductors used, rated min. 90ºC, 250 V ac.

Connectors: All connectors used in primary and SEC circuits are certified, appropriately sized for the number and gauge of conductors used.

Printed Wiring Boards (PWB): All PWBs are made of paper phenolic, paper epoxy or glass epoxy, min. 1.6 mm thick, flammability rated 94V-0, rated min. 130C, with a CTI of 175 min and NRTL Recognized.

Spacing: All spacings between primary terminals and ground, and between other bare live parts and ground, conform to Table 6 of CSA Std. 107.1-01. Spacing on printed wiring boards conform to 'Not Limited Uncoated Spacing' as found in Table 8.

Bonding: All accessible metal parts liable to become energized are acceptably connected together, and to the grounding means, by straps and or conductors, bolts, screws and star washers (to ensure surface coating penetration), in conformance to Clause 3.4 of CSA Standard C22.2 No. 0.4.

DESCRIPTION

Model DRP012V060W1XX:

1. Enclosure Chassis: Accepted
   - Material: Aluminum or steel
   - Dimensions: Shaped as shown, overall 122 mm x 102 mm x 32 mm, 1.5 mm thick.
   - Openings: Hexagonal ventilation openings on top, bottom, and side of enclosure, 6.5 mm diameter.
   - Mounting: Spring latch
   - Remarks: Refer to Attachment 4 for details.

2. Input Terminal Connector (CN1): NRTL Recognized
   - Manufacturer: 'Dinkle'
   - Manuf. P/N: DT-5C
   - Rating: 300Vac, 10A
   - Mounting: Mounted through enclosure and secured to Connector PWB by solder.

3. Output Terminal Block (CN2): NRTL Recognized
   - Manufacturer: 'Dinkle'
   - Manuf. P/N: DT-5C
   - Rating: 300Vac, 10A
   - Mounting: Mounted through enclosure and secured to Connector PWB by solder.

4. Insulation Barrier: NRTL Recognized
   Manufacturer: 'Formex, Div. of Illinois Tool Works Inc., Formerly Fastex, Div. of Illinois tool Works Inc.'
   Manuf. P/N: Formex GK-17
   Flammability: 94-V0
   Rating: Passed 3000V Dielectric Strength Test
   Dimensions: Refer to Attachment 4 for details.
   Remarks: Provided between Chassis and PWB to meet spacings.

5. PWB (EOE11010159): NRTL Recognized
   Material: As described in Introduction above.
   Dimensions: Overall 112 mm x 96 mm x 1.6 mm thickness
   Mounting: Secured to chassis by 5 machine screws.
   Remarks: Insulation barrier, Item 4, is provided between chassis and connector PWB to meet spacings.

The following components are mounted to the PWB by soldering, unless otherwise stated:

a. Fuse (F1): CSA Certified, NRTL Recognized*
   Manufacturer: 'Bell Fuse Inc.'
   Manuf. P/N: 5HT/5HTP
   Type: T
   Ratings: T3.15AH, 250Vac
   Remarks: Enclosed inside a heat shrink tube, rated VW-1, 105C min, 0.4 mm thick.

   Alternate: CSA Certified, NRTL Recognized*
   Manufacturer: 'Littelfuse Inc.'
   Manuf. P/N: 215
   Type: T
   Ratings: T3.15AH, 250Vac
   Remarks: Enclosed inside a heat shrink tube, rated VW-1, 105C min, 0.4 mm thick.

   Alternate: CSA Certified, NRTL Recognized*
   Manufacturer: 'Schurter'
   Manuf. P/N: SPT
   Type: T
   Ratings: T3.15AH, 250Vac, 300Vdc
   Remarks: Enclosed inside a heat shrink tube

b. Varistor (Z1): CSA Certified*, NRTL Recognized*
   Manufacturer: 'Littelfuse Inc.'
   Manuf. P/N: V300LA20A
   Ratings: 300 V ac
   Remarks: Enclosed inside a heat shrink tube, rated VW-1, 105C min, 0.4 mm thick.

   Alternate: CSA Certified*, NRTL Recognized*
   Manufacturer: 'Littelfuse Inc.'
   Manuf. P/N: V320LA20A
   Ratings: 320 V ac
   Remarks: Enclosed inside a heat shrink tube, rated VW-1, 105C min, 0.4 mm thick.

c. Bleeder Resistor (R1A, R1B, R1C):
Manufacturer: 'Various'
Type: Carbon
Ratings: 750k ohm, 1/4W

d. Line-to-Line Capacitor (CX1): CSA Certified*, NRTL Recognized*, INT
Manufacturer: 'Acrotronics'
Manuf. P/N: R.46
Type: X1, film
Ratings: 0.22 uF, 250 V ac, 100C

e. Line Filter (FL1): Accepted
Manufacturer: 'Delta Electronics Inc.'
Manuf. P/N: LFH-TPT7038
Core: Ferrite, Overall dim.: 24.2 mm by 24.2 mm by 4.0 mm
Base: Chang Chun Plastics Co. Ltd., Type T375J (Phenolic), rated V-0, 150C, 0.45 mm thick min.
Bobbin: Nan Ya Plastics Co. Ltd, Type 1403G6 (PBT), rated V-0, 130C, 0.75 mm thick min.
Magnetic Wire: 130C min
Varnish: Polyester
Tape: Poly Tape, 130C
Insulation: 130C
Remarks: Refer to Attachment 5 for construction details.

f. Thermistors (NTC1): CSA Certified*, NRTL Recognized*, INT
Manufacturer: 'Thinking Electronics'
Manuf. P/N: SCK-034
Ratings: 3 ohm min.

g. Line-to-Ground Capacitor (CY1, CY2): CSA Certified*, NRTL Recognized*, INT
Manufacturer: 'Murata'
Manuf. P/N: KX/KH
Type: Y1 or Y2, film
Ratings: 100pF, 250 V ac, 125C

h. Diode Bridge (BD1):
Manufacturer: 'Various'
Rating: 600V, 4A

i. Electrolytic Capacitors (C1):
Manufacturer: 'Various'
Rating: 180uF, 400V, 105C

j. Transformer (T1): Accepted
Manufacturer: 'Delta Electronics Inc.'
Manuf. P/N: MV-TPT8141
Type: Open type construction
Bobbin: Phenolic, 150C, 0.30 mm thick
Core: Ferrite, Overall dim.: 30 mm by 20 mm by 19 mm
Pri. Winding: Polyurethane, 130C
Sec. Winding: TEX-E, Triple insulated wire
Varnish: Polyester
Tape: Poly Tape, 130C
Insulation: Class B
Remarks: Refer to Attachment 5 for construction details.

k. Transistor (Q1):
Manufacturer: 'Various'
Rating: 800V, 11A
Remarks: Secured to Heat Sink 1.

l. Bridging Y-Capacitors (CY3): CSA Certified*, NRTL Recognized*, INT
Manufacturer: 'Murato Co. Ltd'
Manuf. P/N: KX
Type: Y1, film
Ratings: 2200pfF, 250 V ac, 125C
Remarks: Enclosed inside a heat shrink tube, rated VW-1, 105C min, 0.4 mm thick.

m. Opto-couplers (IC550, IC650): CSA Certified*, NRTL Recognized*
Manufacturer: 'Vishay'
Manuf. P/N: System H or J
Ratings: 3000 V ac Isolation

Alternate: CSA Certified*, NRTL Recognized*
Manufacturer: 'Vishay'
Manuf. P/N: TCET1113G
Ratings: 3000 V ac Isolation

Alternate: CSA Certified*, NRTL Recognized*
Manufacturer: 'Sharp Corp'
Manuf. P/N: PC123Y
Ratings: 3000 V ac Isolation

Alternate: CSA Certified*, NRTL Recognized*
Manufacturer: 'NEC'
Manuf. P/N: PS2561BL1-1
Ratings: 3000 V ac Isolation

Alternate: CSA Certified*, NRTL Recognized*
Manufacturer: 'Toshiba'
Manuf. P/N: TLP781F
Ratings: 3000 V ac Isolation

n. Thermistors (NTC601): CSA Certified*, NRTL Recognized*
Manufacturer: 'Thinking Electronic Industrial Co. Ltd.'
Manuf. P/N: TTC-104
Ratings: 100k ohm
Remarks: Secured to HS1

Alternate: CSA Certified*, NRTL Recognized*
Manufacturer: 'Uppermost'
Manuf. P/N: TDC05D410
Ratings: 100k ohm
Remarks: Secured to HS1

o. Diodes (SD350, SD351):
Ratings: 30A, 120V min.
Remarks: Secured to HS2

p. Choke (L350): Accepted
Manufacturer: 'Various'
Type: Wire wound on core.
Core: Ferrite
Winding: 1-2 four turns, 3-4 four turns, Copper wire, 130C min
Rating: 90 uH min.
Overall Dim.: 19 mm OD by 10 mm ID by 12 mm wide including winding
Remarks: Refer to Attachment 5 for construction details.

q. Heat Sink (HS1): Accepted
Manufacturer: 'Various'
Material: Aluminum
Overall Dim.: 93 mm by 21 mm by 2 mm
Remarks: HS1 connected to Primary.

r. Heat Sink (HS2): Accepted
Manufacturer: 'Various'
Material: Aluminum
Overall Dim.: 35 mm by 21 mm by 7 mm
Remarks: HS2 connected to Secondary.

TESTS

Edition: 1 (Project 2174217)

The following tests were successfully performed at Delta Electronics (Thailand), under the CSA Category Program (CPC) and were also witnessed by a CSA representative.

The following clauses refer to CSA C22.2 No 107.1-01 unless other wise noted:

Ratings Test: Clause 6.2.3
Temperature Test: Clause 6.3
Dielectric Strength: Clause 6.5
Insulating Material: Clause 6.19
Abnormal Operation:
Output Overload: Clause 6.6.1d, e
Short Circuit: Clause 6.6.1a
Forced Ventilation (Blocked Vent): Clause 6.6.1b
Component Short-Open Circuit: Clause 6.6.7
Ground Impedance: CSA 0.4

Refer to Attachments 6 & 7 for test details.