



# Certificate of Compliance

**Certificate:** 70128861

**Master Contract:** 229177 (LR 103294)

**Project:** 70128861

**Date Issued:** 2017-04-04

**Issued to:** Murata Power Solutions  
4118 14th Ave  
Markham, Ontario L3R 0J3  
CANADA  
Attention: Mr. Greg Buffet

*The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.*



**Issued by:** *Wei Sheng Wu*  
Wei Sheng Wu

## **PRODUCTS**

CLASS – 5311 11 - POWER SUPPLIES-Component Type (CSA 60950-1-07-2nd Ed)

CLASS – 5311 91 - POWER SUPPLIES-Component Type (UL 60950-1-2nd Ed) Certified to U.S. Stds

Component DC-DC Power Supplies, models D1U54-D-450-12-HxyzC-zzzz

(x = A, B or C; y = 3 or 4; z = any quantity of alpha or numerical characters or blank)

- Input: -48 to -60Vdc, 11.5A

- Output: 450W max. total

Main Output: DC 12V, 37.5A

Standby Output: DC 5Vsb, 2A or DC 12Vsb, 1A or DC 3.3Vsb, 3A

Note:

The subject Component Power Supplies are for use with Information Technology Equipment and Telecommunication Equipment where the suitability of the combination is to be determined.

## **APPLICABLE REQUIREMENTS**

CAN/CSA-C22.2 No. 60950-1-07, Amendment 2:2014 (MOD) - Information Technology Equipment – Safety – Part 1: General Requirements

ANSI/UL Std. No. 60950-1-2014 - Information Technology Equipment – Safety – Part 1: General Requirements



## *Supplement to Certificate of Compliance*

**Certificate:** 70128861

**Master Contract:** 229177 (LR 103294)

*The products listed, including the latest revision described below,  
are eligible to be marked in accordance with the referenced Certificate.*

### **Product Certification History**

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<b>Project</b>	<b>Date</b>	<b>Description</b>
70128861	2017-04-04	Original Certification



# Descriptive Report and Test Results

**MASTER CONTRACT:** 229177

**REPORT:** 70128861

**PROJECT:** 70128861

**Edition 1:** April 4, 2017; Project 70128861 – Toronto  
Issued by Wei Sheng Wu

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Supplement to Certificate of Compliance – Page 1  
Description and Tests - Pages 1 to 12  
Photos – Page 1 to 17 in CB report # CB 229177-70128862

## **PRODUCTS**

CLASS 5311 11 - POWER SUPPLIES - Component Type (CSA 60950-1-07)

CLASS 5311 91 - POWER SUPPLIES - Component Type (UL 60950-1, Second Edition) - Certified to U.S Standards, NRTL Program

Component DC-DC Power Supplies, models D1U54-D-450-12-HxyzzC-zzzz

(x = A, B or C; y = 3 or 4; z = any quantity of alpha or numerical characters or blank)

- Input: -48 to -60Vdc, 11.5A
- Output: 450W max. total  
Main Output: DC 12V, 37.5A  
Standby Output: DC 5Vsb, 2A or DC 12Vsb, 1A or DC 3.3Vsb, 3A

Note:

1. The subject Component Power Supplies are for use with Information Technology Equipment and Telecommunication Equipment where the suitability of the combination is to be determined.

## **APPLICABLE REQUIREMENTS**

CAN/CSA-C22.2 No. 60950-1-07, Amendment 1:2011, Amendment 2:2014 (MOD) - Information Technology Equipment – Safety – Part 1: General Requirements

ANSI/UL Std. No. 60950-1-2014 - Information Technology Equipment – Safety – Part 1: General Requirements

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## MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

### Nameplate adhesive label material approval information:

Manufacturer: Brady

Part No.: B-489

Rating: 125°C for Stainless steel

Approval: cURus (MH17154) - UL969, CSA C22.2 No. 0.15-95

#### PART 1: Minimum Markings:

Marking Method: (For Minimum Markings)

- CSA/UL Approved adhesive nameplate (suitable for the surface to which it is applied).
- Non-metallic self-adhesive nameplate (for components only).

Required Information: (For Minimum Markings)

- The submitter's name and/or Master Contract Number "229177" or CSA File "LR 103294";  
Note: If the file number or Master Contract number are used as the submitter's identification, they shall be located adjacent to the CSA Mark.
- Model or identifying designation;
- Complete electrical rating in volts, hertz and amperes;
- Date of manufacture, serial number or date code traceable to month and year of manufacture;
- The CSA Monogram and an appropriate indicator as applicable;
- For Use in Canada and the U.S.: CSA Monogram with "C/US" or "NRTL/C"

#### PART 2: Additional Markings and Documentation: (Due mainly to safety issues)

- Fuse (Operator Inaccessible): (Cl 1.7.6).

## ALTERATIONS

1. Markings as above appear on each unit.
2. Handle is made of plastic material.
3. Insulator provided between triple insulated wiring and core in main transformer (M701).
4. Capacitor C308 is taped on top face and sleeved with 3.0mm overlap at bottom.
5. Capacitor C308B is taped on top face and sleeved.

## FACTORY TESTS

[X] Production-line Dielectric Voltage-Withstand Test: Cl. 5.2.2

- (a) Only ac values are specified. As an alternative, the equivalent dc voltage (1.414 times the ac voltage) may be used.
- (b) The factory test may be done at existing room temperature.

For Grounded Units (Class I) Rated Up to 60Vdc:

[X] The equipment at the conclusion of manufacture, before shipment, shall withstand for one second, without breakdown, the application of 500V ac between input and output, and between input and exposed non-current-carrying metal parts.

### Transformers:

#### Notes:

1. Transformer manufacturer's written agreement to conduct Dielectric Strength Test on 100 percent production will be acceptable.
2. No additional factory tests are required for Certified\* transformers or transformers in Certified\* power supplies.

### For Safety Isolating Transformers in Grounded or Double Insulated Units:

Each transformer before assembly into the equipment shall be subjected to the following dielectric strength tests for a period of one second, without breakdown:

For units rated up to 60Vdc:

700V ac from primary to SELV secondaries.

350V ac from primary to core (if core is floating or grounded)\*

350V ac from core to SELV/ELV secondaries (if core is floating or grounded).\*

\*Note: If the core is not floating or grounded, but primary (or secondary), then the primary (or secondary) is tied to the core during the test.

Each unit that has a power supply cord with earthing conductor shall be tested, as a routine production-line test, to determine that earthing is provided between the earthing blade or pin of the attachment plug and the accessible dead metal parts of the unit that are likely to become energized.

Any indicating device (an ohmmeter, a battery and buzzer combination or the like) can be used to determine compliance. Only a single test is needed to be made if the accessible metal selected is conductively connected to all other accessible metal.

### 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.

## CONDITIONS OF ACCEPTABILITY

1. The subject component power supply has been judged on the basis of the required spacing (clearance and creepage distances) in the Standard for Information Technology Equipment – Safety – Part 1: General Requirements, CAN/CSA C22.2 No. 60950-1-07, Amendment 1:2011 (MOD), UL 60950-1-2011 2nd Edition and IEC 60950-1 2nd Edition AM1: 2009, sub-clause 2.10 which would cover the component itself, if submitted for end product approval.
2. The subject component power supply is intended for use as a component in Information Technology Equipment in a pollution degree 2 environment.
3. The subject component power supply shall be installed in compliance with the enclosure, mounting, clearances, creepage distances and segregation requirements of the ultimate application.
4. The subject power supply has been evaluated as a component for building-in. A suitable electrical and fire enclosure shall be provided in the end use equipment.
5. The subject component power supply is not intended to be field serviced or repaired. It is intended for factory repair only.
6. Handle is made of plastic material.
7. The subject power supplies have been evaluated for operating ambient of 55°C.
8. The subject DC-DC power supplies have been evaluated for 2000m altitude application for China and 3000m altitude application for the other counties and tropical climatic condition.
9. User instructions in the language of the country of use are to be considered in the end use equipment.
10. The input terminal block has not been evaluated for current interruption purpose.
11. The disconnect device is to be provided by the end use equipment.
12. The supply power source to the subject power supply is to be disconnected before disconnecting the input circuit to the subject power supply.
13. The branch circuit protection is specified as 100A maximum.
14. The insulation system classification of the planar type transformers are as followings:  
Transformer T1 – 130°C PCB Planar transformer (Class A insulation system for abnormal).  
Transformer M1 - 130°C PCB Planar transformer (Class A insulation system for abnormal).
15. The supply source is intended to be a SELV (for 48Vdc) or SELV/TNV-2 (for 60Vdc).
16. Basic insulation, based upon 60Vdc and its highest working voltage, is provided between input circuitry and output circuitry, and between the input circuitry and earthed chassis.
17. For all models, the 3.3V, 5V and 12V auxiliary (standby) outputs have energy < 240VA, thus it is not energy hazard.
18. The output energy level for 12Vdc main output from the subject power supply are greater than 240VA, therefore the 12Vdc main output energy is considered hazardous. The end use equipment is required to provide the proper means to limit its accessibility.
19. The maximum working voltages are listed as followings:  
Between Input and Earth: 72Vrms, 93Vpeak  
Between Input and SELV Output: 72Vrms, 93Vpeak.
20. Measurements for Radio Frequency interference has not been conducted during this evaluation. Compliance with the CISPR requirements is to be determined by the Recognizing NCB.
21. The LED, with wavelength in 400-700nm range, is for functional indication only.
22. Insulator provided between triple insulated wiring and core in main transformer (M701).
23. Capacitor C308 is taped on top face and sleeved with 3.0mm overlap at bottom.
24. Capacitor C308B is taped on top face and sleeved.

**SPECIAL INSTRUCTIONS FOR FIELD SERVICES**

1. Component descriptions marked with either the “(INT)” or “(INT\*)” identifiers may be substituted with other components providing the requirements specified under the notes in the “Description” are complied with.

**COMPONENT SPECIAL PICKUP** [N/A]

1. Component descriptions marked with the identifier “(CT)” are subject to annual pickup and Conformity Testing.

**DESCRIPTION**

Notes:

1. Component Substitution
  - a) Critical components (those identified by mfr name, cat no), which are NOT identified with either "INT" or "INT\*" are not eligible for substitution without evaluation and report updating
  - b) The term "INT" means a "Certified" and/or "Listed" (or a "Recognized" and/or "Accepted") component may be replaced by one "Certified" and/or "Listed" by another certification organization accredited by the appropriate accreditation body or scheme requirements to the correct standard, for the same application; providing the applicable country identifiers are included and requirements in item "d" below are complied with.
  - c) The Term "INT\*" means a "Recognized" and/or "Accepted" component may be replaced by one "Recognized" and/or "Accepted" by another certification organization accredited by the appropriate accreditation body or scheme requirements to the correct standard, for the same application, providing the applicable country identifiers are included, the component is **also** CSA Certified, the requirements in item "d" below are complied with and any "conditions of suitability" for the component (as recorded in this descriptive report) are complied with.
  - d) Components which have been substituted, must be of an equivalent rating, configuration (size, orientation, mounting) and the applicable minimum creepage and clearance distances are to be maintained from live parts to bonded metal parts and secondary parts.
  - e) Substitution of a "Certified" and/or "Listed" component with a component that is "Recognized" or "Accepted" is not permitted without evaluation and report updating.

The subject equipment is a component power supply for use in other ITE.

- (a) Class of Equipment: Class I (grounded).
- (b) Connection to Supply: Terminal Block
- (c) Type of Power System: DC mains
- (d) Mobility: Equipment for building-in
- (e) Weight of Equipment: < 18kg
- (f) Pollution Degree 2: Not sealed, not subject to dust, dirt, condensation.
- (g) Maximum Rated Ambient Temperature: 55°C

## General product information

The subject component power supply is a DC-DC converter intended for use with Information Technology Equipment and Telecommunication Equipment.

In the model designation D1U54-D-450-12-HxyzzC-zzzz:

- The x character stands for standby voltage
  - When x = A, denoting 5V
  - When x = B, denoting 12V
  - When x = C, denoting 3.3V
- The y character stands for airflow direction:
  - When y = 3, denoting airflow from front to back;
  - When y = 4, denoting airflow from back to front.
- The z character stands for option/features not affecting ratings or safety.
  - z = any quantity of alpha or numerical characters or blank
- The C character stands for RoHS compliance status (C)

The subject component power supplies are switch mode with integral fan cooling and housed in metal chassis. An input terminal block is employed for connection to the supply source in the end use equipment. The subject component type power supply has been evaluated to the requirements of IEC60950-1:2005 (2nd edition) with A1:2009, EN 60950-1:2006 (2nd edition) +A11 +A1 +A12, CAN/CSA C22.2 No. 60950-1-07, Amendment 1:2011 (MOD) and ANSI/UL60950-1-2011 second edition.

The DC-DC power supplies provide basic insulation between the input circuitry and the output circuitry, and between the input circuitry and the earthed chassis.

The isolation transformers in the subject power supply provide basic insulation between input and output circuitries.

The subject DC-DC power supplies have been evaluated for 2000m altitude application for China and 3000m altitude application for the other counties and tropical climatic condition.