

UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	DC-DC Converter
Model:	NDQ1300-48S12XXXXXXXXXX (The first or second 'X' represented by B, where B means the model with a baseplate, the others 'X' may be represented by any ASCII character code, number or blank, with no safety impact)
Rating:	Input: 40-60VDC, 38A Max. Output: 12.15VDC, 107A Max. Output power: 1300W Max.
Applicant Name and Address:	ASTEC INTERNATIONAL LTD 16TH FL LU PLAZA 2 WING YIP ST. KWUN TONG KOWLOON HONG KONG

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

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Prepared By: Benny Wong / Project Handler Reviewed By: Tony Yeung / Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

- i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
- ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
- iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

1. Built-in type equipment, suitable enclosure should be provided in end system.
2. When installing the equipment, all requirements of the mentioned standard must be fulfilled.
3. Maximum operating ambient temperature of this equipment is 60°C

Model Differences

N/A

Test Item Particulars

Product group	built-in component
Classification of use by	Ordinary person Instructed person Skilled person
Supply Connection	not mains connected: ES1
Supply tolerance	None
Supply connection – type	built-in component, considered in end system
Considered current rating of protective device	50 A;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC I
Class of equipment	Not Classified
Special installation location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified Tma (°C)	60°C
IP protection class	IPX0
Power systems	not AC mains
Altitude during operation (m)	4000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	Approximately 0.067kg

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 60°C

- The product is intended for use on the following power systems : No direct connection
- Considered current rating of protective device as part of the building installation (A) : built-in component, considered in end system
- The equipment disconnect device is considered to be : Considered in end system
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following product-line tests are conducted for this product : Earthing Continuity, Electric Strength
- The following output circuits are at ES1 energy levels : All outputs
- The following output circuits are at PS3 energy levels : All outputs
- The investigated Pollution Degree is : 2
- The following end-product enclosures are required : Mechanical, Electrical, Fire
- The power supply was evaluated to be used at altitudes up to : 4,000 m
- The converter must be connected to a power source which is insulated from mains by double or reinforced insulation.
- The converter has no in-line fuse, for safety operation, an external approved fast acting fuse 50A, 150Vdc or 250Vac must be employed.
- Forced with 5.0m/s (1000LFM) air velocity for baseplate + 0.7" heatsink was applied from Vin- to Vin+ during testing.
- The converter supplied by ES1 input.

Additional Information

N/A

Additional Standards

The product fulfills the requirements of: N/A

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's or Recognized Company's name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)" (Optional)

Special Instructions to UL Representative

N/A

BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
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BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	All models					
BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
	All models					
BD1.4	Electric Strength Test Component Exemptions – The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test.					
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BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics
N/A	--	--	--	--	--

4.1.2	TABLE: List of critical components					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
Printed Wing Board	Interchangeable	Interchangeable	Rated Min.V-0, min.130°C	ZPMV2	UL	
Transformer T1	Interchangeable	Interchangeable	Rated Min. 130°C, embedded in PWB, see Enclosure ID 04-02 for details.	--	tested with equipment	
Choke L4	Interchangeable	Interchangeable	Rated Min. 130°C, embedded in PWB, see Enclosure ID 04-03 for details.	--	tested with equipment	
Choke L1	ASTEC/ ARTESYN	800-003405-XXXX or 800-003227- XXXX (X can be blank or any alphanumeric character not affecting safety)	Rated Min. 130°C, see Enclosure ID 04-01 for details.	--	tested with equipment	
Alternate	SUPERWORLD	PIAQ series	Rated Min. 130°C, see Enclosure ID 04-01 for details.	--	tested with equipment	
Alternate	BOURNS	SRP7038HCA series	Rated Min. 130°C, see Enclosure ID 04-01 for details.	--	tested with equipment	
Alternate	Interchangeable	Interchangeable	Rated Min. 130°C, see Enclosure ID 04-01 for details.	--	tested with equipment	
Base plate 1 (on the top side)	Interchangeable	Interchangeable	SIZE : min.0.8 x 36.0 x 58.0 mm	--	tested with equipment	
Base plate 2 (on the bottom side)	Interchangeable	Interchangeable	SIZE: min.0.9 x 36.0 x 58.0mm	--	tested with equipment	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	Overall view 1
Photographs	03-02	Overall view 2
Photographs	03-03	Overall view 3
Photographs	03-04	Overall view 4
Photographs	03-05	Overall view 5
Diagrams	04-01	Specification of Choke (L1)
Diagrams	04-02	Specification of Transformer (T1)
Diagrams	04-03	Specification of Choke (L4)
Schematics + PWB	05-01	PCB layout of Main Board
Manuals	06-01	User Manual
Miscellaneous	07-01	Label
Miscellaneous	07-02	Product drawing (unit: mm)