

File E132002  
Project 4788088723

September 07, 2017

REPORT

on

COMPONENT - POWER SUPPLIES FOR USE WITH AUDIO/VIDEO, INFORMATION AND  
COMMUNICATION TECHNOLOGY EQUIPMENT

Astec International Ltd  
KOWLOON, HONG KONG

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<b>UL TEST REPORT AND PROCEDURE</b>	
<b>Standard:</b>	UL 62368-1, 2nd Edition, 2014-12-01 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements) CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
<b>Certification Type:</b>	Recognized Component
<b>CCN:</b>	QQJQ2, QQJQ8 (Component Power Supplies for use in Audio/Video, Information and Communication Technology Equipment)
<b>Complementary Certification CCN</b>	N/A
<b>Product:</b>	DC-DC Converter
<b>Model:</b>	ADO300-48S3V3XXXXXXXXXX, ADO300-48S05XXXXXXXXXX where X may be represented by any ASCII character code, no safety impact.
<b>Rating:</b>	For models ADO300-48S3V3XXXXXXXXXX Input: 36-75VDC, 6.5A MAX Output: 3.3VDC, 60A  For models ADO300-48S05XXXXXXXXXX Input: 36-75VDC, 9.15A Max Output: +5VDC, 60A
<b>Applicant Name and Address:</b>	ASTECH INTERNATIONAL LTD 16TH FL, LU PLAZA, 2 WING YIP ST, KWUN TONNG, 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.

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<b>Supporting Documentation</b>	
The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:	
<p>A. Authorization - The Authorization page may include additional Factory Identification Code markings.</p> <p>B. Generic Inspection Instructions -</p> <ul style="list-style-type: none"> <li>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</li> <li>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</li> </ul> <p>C. Listing Mark/Recognized Component Mark Data Page - 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.</p>	
<b>Product Description</b>	
The equipment is DC-DC Converter, intended for building in as a component used in Audio, Video and information technology equipment. Basic insulation is provided between the input circuit and base plate / output circuit.	
<b>Model Differences</b>	
N/A	
<b>Test Item Particulars (NOT FOR FIELD REPRESENTATIVE'S USE)</b>	
Classification of installation and use by.....:	<input type="checkbox"/> Ordinary person <input checked="" type="checkbox"/> Instructed person <input checked="" type="checkbox"/> Skilled person
Supply Connection.....:	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input checked="" type="checkbox"/> not directly connected to the mains
Equipment mobility.....:	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in <input type="checkbox"/> rack-mounting <input type="checkbox"/> wall-mounted
Over voltage category (OVC) .....	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other: _1500V_
Fundamental Frequency .....	<input type="checkbox"/> 50/60 Hz <input type="checkbox"/> 50 Hz <input type="checkbox"/> 60 Hz <input checked="" type="checkbox"/> DC
Class of equipment .....	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input checked="" type="checkbox"/> Not classified <input type="checkbox"/> Class II with functional earthing
Access location .....	<input checked="" type="checkbox"/> restricted access location <input type="checkbox"/> N/A
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class .....	<input checked="" type="checkbox"/> IP X0 <input type="checkbox"/> IP ____
Tested for IT power systems .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V) .....	<input type="checkbox"/> ____ <input checked="" type="checkbox"/> N/A
Altitude during operation (m) .....	<input type="checkbox"/> Up to 2,000 <input checked="" type="checkbox"/> Up to 5000m
Altitude of test laboratory (m) .....	<input checked="" type="checkbox"/> Less than 2,000 <input type="checkbox"/> Approximately ____
Mass of equipment (kg) .....	Approximate 0.4kg

**Technical Consideration (NOT FOR FIELD REPRESENTATIVE'S USE)**

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 60° C without baseplate & 75° C with baseplate
- The product is intended for use on the following power systems: TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : None
- When perform the heating test for unit with base plate, it should be with external aluminum heat-sink
- For model ADO300-48S3V3XXXXXXXXX min. 58.4 x 23.06 x 13.35mm.
- For model ADO300-48S05XXXXXXXXXX min. 58.4 x 23.06 x 13.35mm.
- The built-in converter has no in-line fuse, for safety operation, and external 10A, 125VDC fast acting fuse for Model ADO300-48S3V3XXXXXXXXXX, ADO300-48S05XXXXXXXXXX must be employed as input fuse before installation.

**Engineering Conditions of Acceptability (NOT FOR FIELD REPRESENTATIVE'S USE)**

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 Production-Line tests are conducted for this product: Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 42.16 Vrms, 115.0 Vpk, DC input-DC output:   75   Vrms,   75   Vpk,
- The following output circuits are at ES1 energy levels: Output circuit
- The following output circuits are at PS3 energy levels: Output circuit
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- Proper bonding to the end-product main protective earthing termination is: Required
- An investigation of the protective bonding terminals has: Been conducted
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105° C): T2 (class F)
- External forced Air Cooling employed with minimum 800LFM airflow, the airflow direction is from Vin- to Vin+.
- The power supply was evaluated to be used at altitudes up to: 5,000 m

**Additional Information**

N/A

**Additional Standard**

The product fulfils the requirements of:

N/A

<b>Markings, instructions and instructional safeguards</b>		
<b>Clause Title</b>	<b>Marking or Instruction Details</b>	
	English	French
62368-1		
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)	

<b>Special Instructions to UL Representative</b>						
For transformer test - When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in Production-Line Testing Requirements be conducted at the component manufacturer.						
<b>Production-Line Testing Requirements</b>						
<b><u>Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.</u></b>						
Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
N/A						
<b><u>Earthing Continuity Test Exemptions - This test is not required for the following models:</u></b>						
--						
<b><u>Electric Strength Test Exemptions - This test is not required for the following models:</u></b>						
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<b><u>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:</u></b>						
--						
<b><u>Sample and Test Specifics for Follow-Up Tests at UL</u></b>						
Model	Component	Material	Test	Sample(s)	Test Specifics	
N/A						

## and Report

4.1.2	TABLE: list of critical components					Pass
Object/part or Description	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
For model ADO300-48S3V3XXXXXXXXXX	--	--	--	--	--	
PCB	Interchangeable	Interchangeable	Rated V-0, Min. 130 degree C	ZPMV2	UL	
Transformer Core (CoreT3)	Interchangeable	Embedded in PCB	Min.130 degree C	--	Tested in product	
Transformer (T2)	Artesyn / Astec	801-007221-XXXX	Provided with Class F Insulation system under E94225, OBJY2, designed 155-10C	XORU3 (E127000)	UL	
Transformer (T2) - Alternate	Day One	800-003125-XXXX	Provided with Class F Insulation system under E94225, OBJY2, designed 155-10C	XORU3 (E127000)	UL	
High Voltage Capacitor (C64)	Johanson	X7R Series	Min. 1500 Vdc	--	Tested in product	
High Voltage Capacitor (C64) - Alternate	HOLY STONE	X7R Series	Min. 1500 Vdc	--	Tested in product	
Base Plate (Optional)	Interchangeable	Interchangeable	Overall dimension Min. 58.4 x 23.06 x 13.35mm	--	Tested in product	
Opto-coupler (U2)	Texas (E181974)	ISO7141 series	Min. 1500 Vdc	FPQU2/8	UL	
Opto-coupler (U2) - Alternate	Silicon (E257455)	Si8641 series	Min. 1500 Vdc	FPQU2/8	UL	
For model ADO300-48S05XXXXXXXXXX	--	--	--	--	--	
PCB	Interchangeable	Interchangeable	Rated V-0, Min. 130 degree C	UL 796, IEC 62368-1	UL, Tested in product.	
Transformer Core (CoreT2)	Interchangeable	Embedded in PCB	Min.130 degree C	IEC62368-1	--, Tested in product.	
Transformer (T2)	Artesyn / Astec	801-007221-XXXX	Provided with Class F Insulation system under E94225, OBJY2, designed 155-10C	IEC62368-1	--, Tested in product.	
Transformer (T2) -	Day One	800-003125-	Provided with Class F	IEC62368-1	--, Tested in	

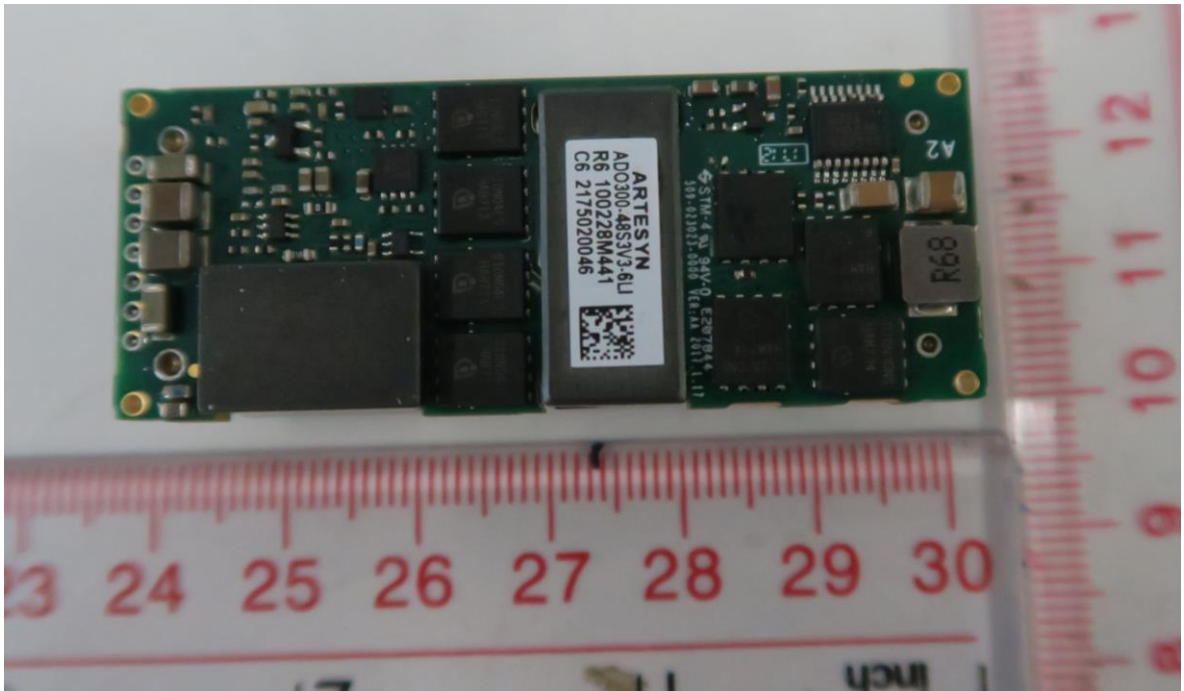
Alternate		XXXX	Insulation system under E94225, OBJY2, designed 155-10C		product.	
High Voltage Capacitor (C64)	Johanson	X7R Series	Min. 1500 Vdc	IEC 62368-1	--, Tested in product.	
High Voltage Capacitor (C64) - Alternate	HOLY STONE	X7R Series	Min. 1500 Vdc	IEC 62368-1	--, Tested in product.	
Base Plate (Optional)	Interchangeable	Interchangeable	Overall dimension Min. 58.4 x 23.06 x 13.35mm	IEC 62368-1	--, Tested in product.	
Opto-coupler (U2)	Texas (E181974)	ISO7320 series	Min. 1500 Vdc	UL 1577, IEC 60747-5-2	UL, VDE	



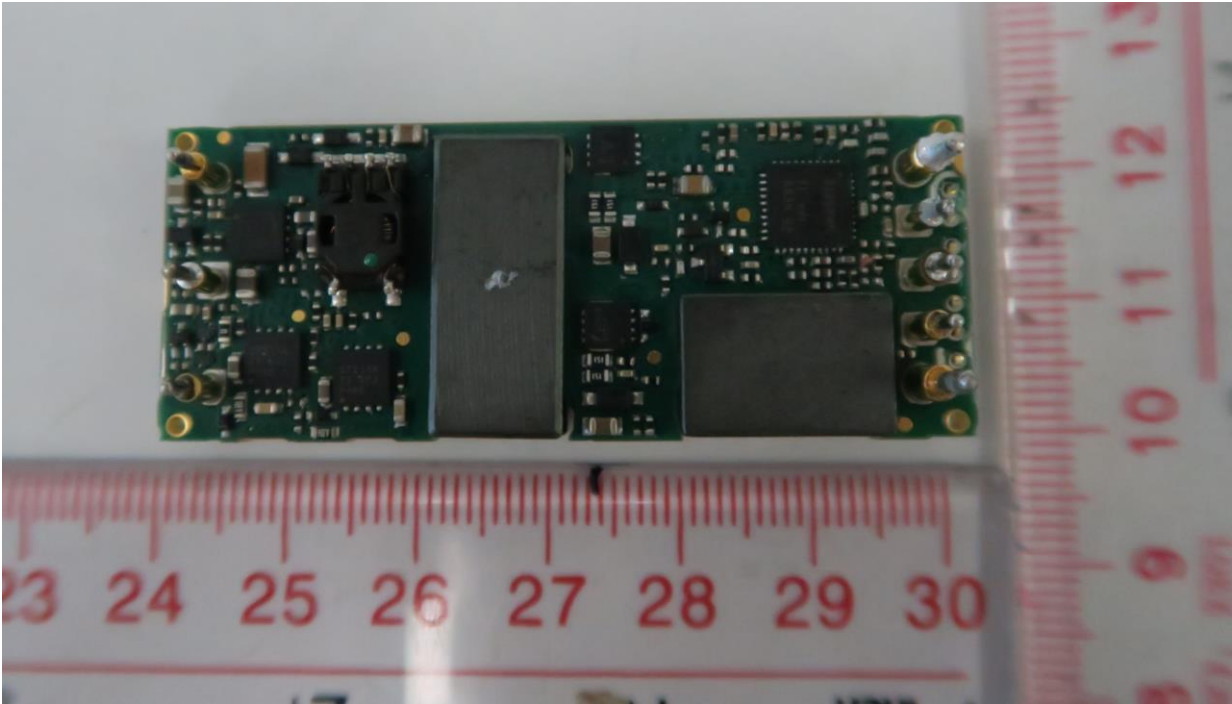
**ENCLOSURES**

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	Outlook View 1, for model ADO300-48S3V3XXXXXXXXXX
Photographs	3-02	Outlook View 2, for model ADO300-48S3V3XXXXXXXXXX
Photographs	3-03	Outlook View 3, for model ADO300-48S3V3XXXXXXXXXX
Photographs	3-04	Outlook View 1, for model ADO300-48S05XXXXXXXXXX
Photographs	3-05	Outlook View 2, for model ADO300-48S05XXXXXXXXXX
Photographs	3-06	Outlook View 3, for model ADO300-48S05XXXXXXXXXX
Diagrams	4-01	Specification of transformer (T2)
Schematics + PWB	5-01	PCB Layout (Component side & solder side) for model ADO300-48S3V3XXXXXXXXXX
Schematics + PWB	5-02	PCB Layout (Component side & solder side) for model ADO300-48S05XXXXXXXXXX
Manuals	6-01	Installation and Operation Instructions for model ADO300-48S3V3XXXXXXXXXX
Manuals	6-02	Installation and Operation Instructions for model ADO300-48S05XXXXXXXXXX

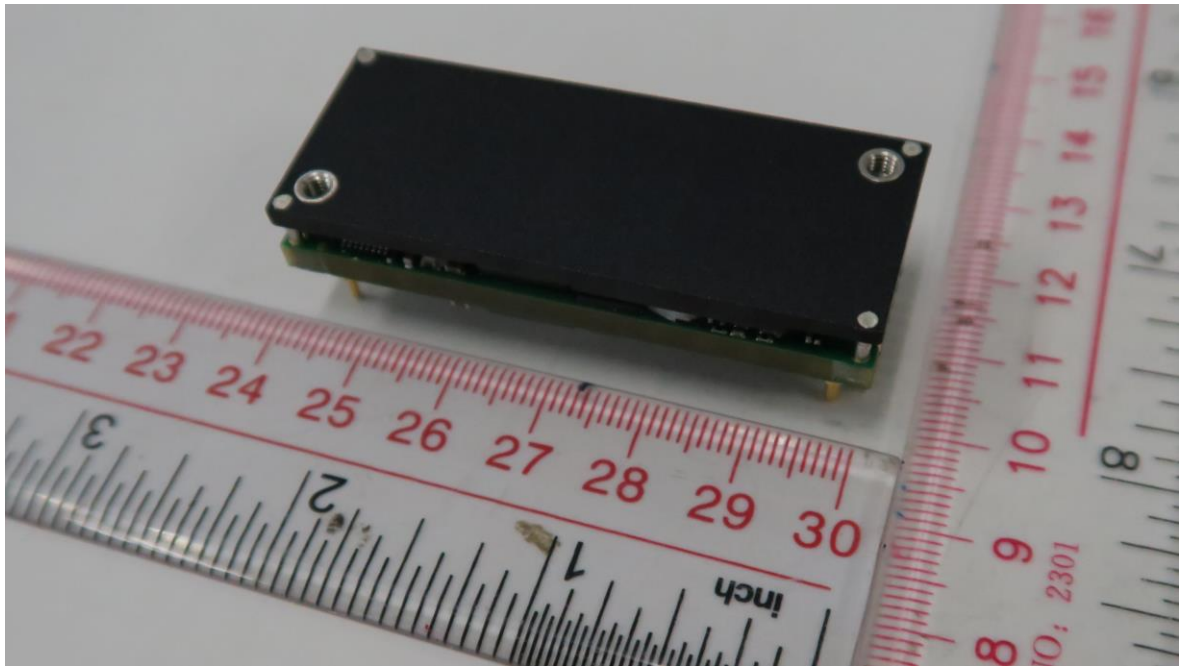
Photographs ID 3-01



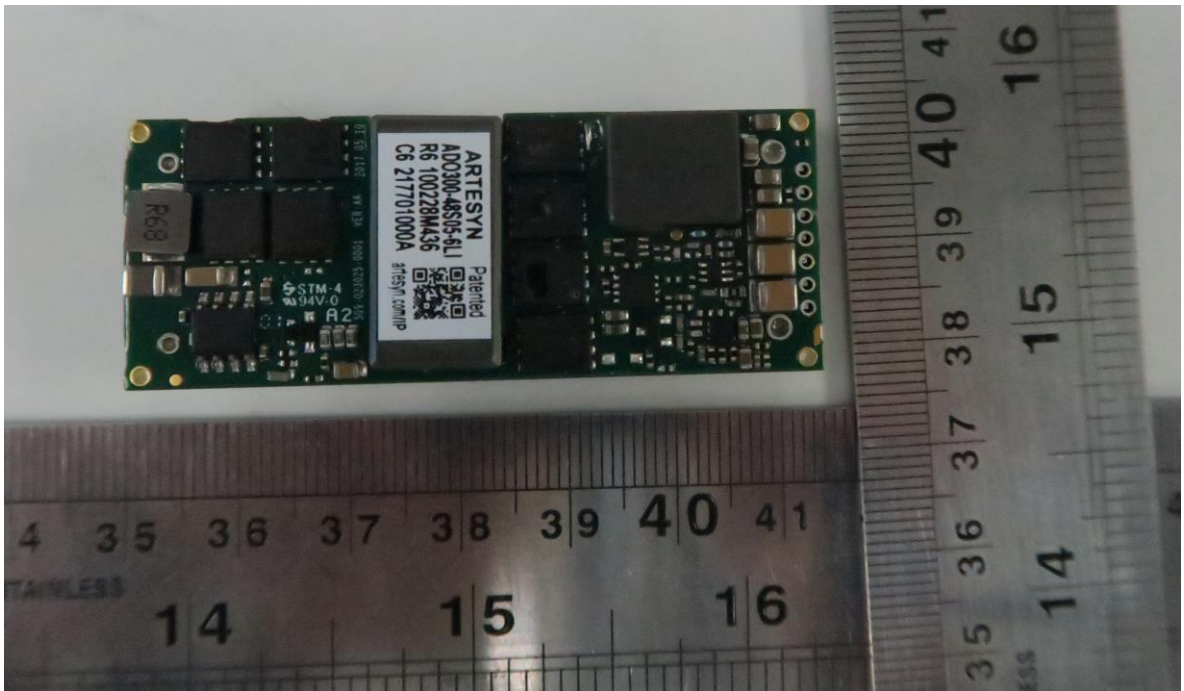
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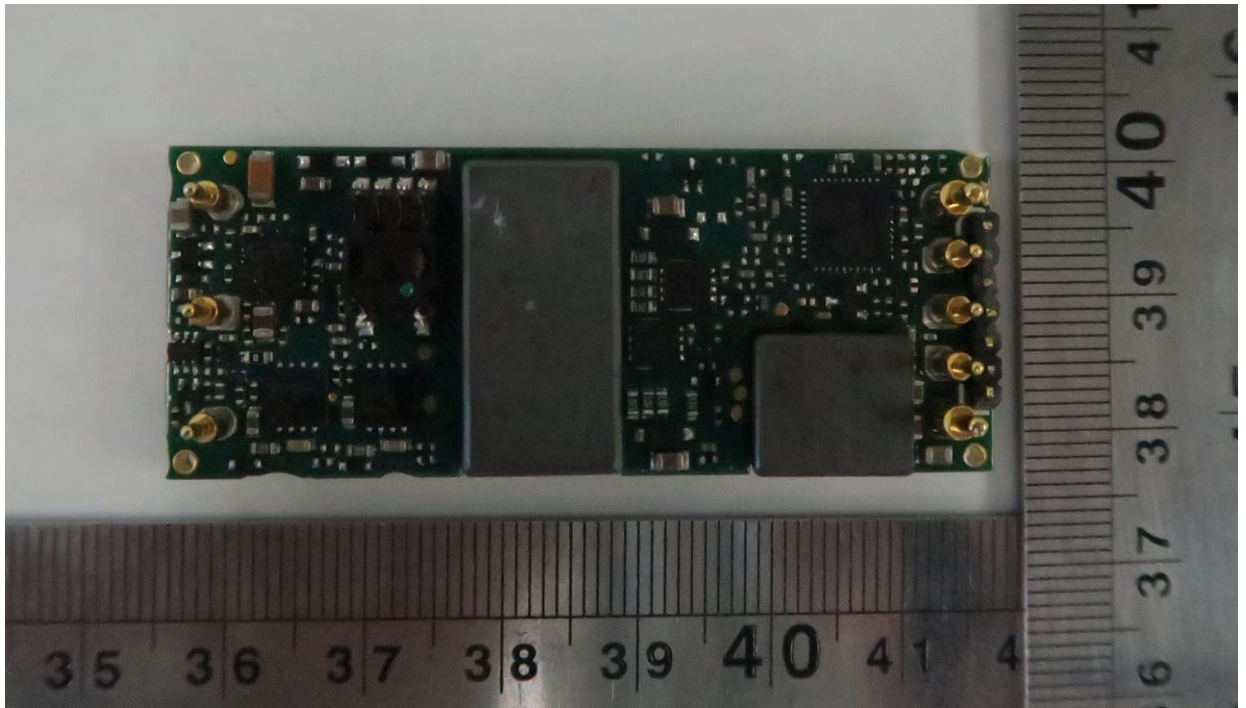
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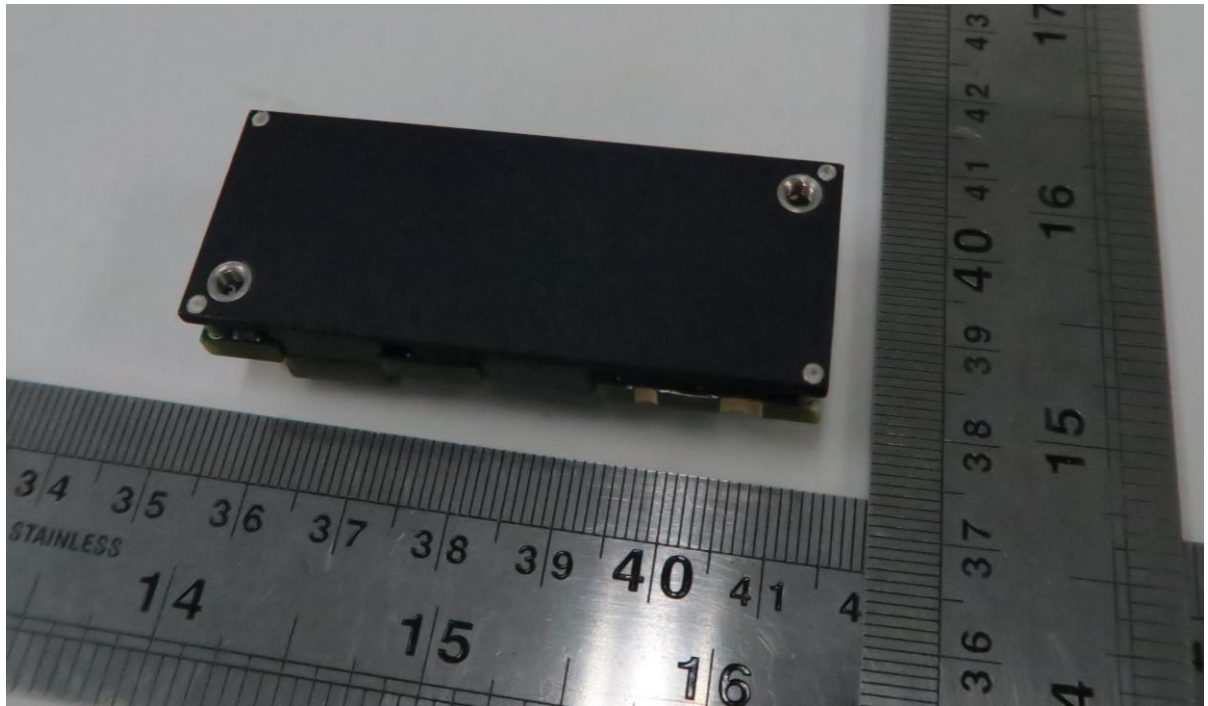
Photographs ID 3-04



Photographs ID 3-05



Photographs ID 3-06



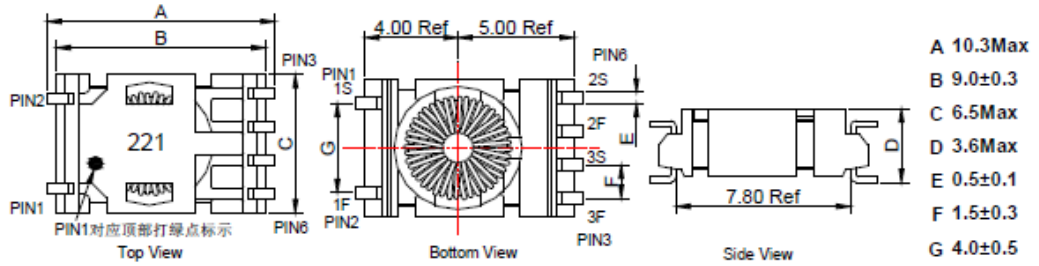
Diagrams ID 4-01

制品规格书

Product Specification

1. 外形尺寸 (单位:mm)

Physical Dimensions UNIT = mm

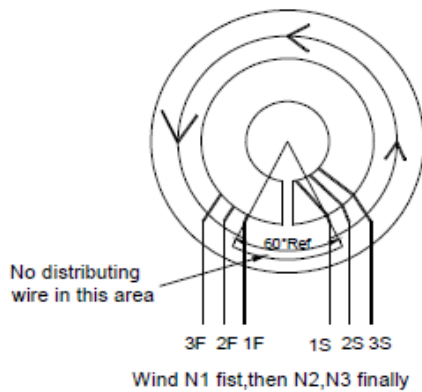


Note:

- (1).产品要打Hi-pot, Hi-pot Marking 点打在PIN1对应骨架顶部上, 用绿点标示。
- (2).此款产品编号为801-007221-0001, 产品印字的内容则为221。
- (3).针脚离平面距离≤0.10mm, 并且上锡光亮, 可焊性好。

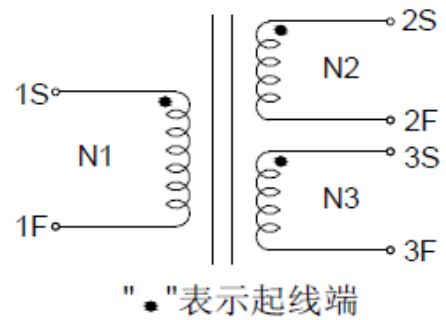
2. 装配示意图

Assembly Diagram



3. 线圈联线图

Schematic





## Diagrams ID 4-01

## 制品规格書

## Product Specification

## 4. 绕制工艺要求

## Winding Process Requirement

线圈名称	起始引脚号	结尾引脚号	导线规格	匝数
N1	1S	1F	φ0.10mm P180	35 Ts
N2	2S	2F	S38A01TX-1.5	23 Ts
N3	3S	3F	S39A01TX-1.5	11 Ts

## 5. UL信息

## UL Information

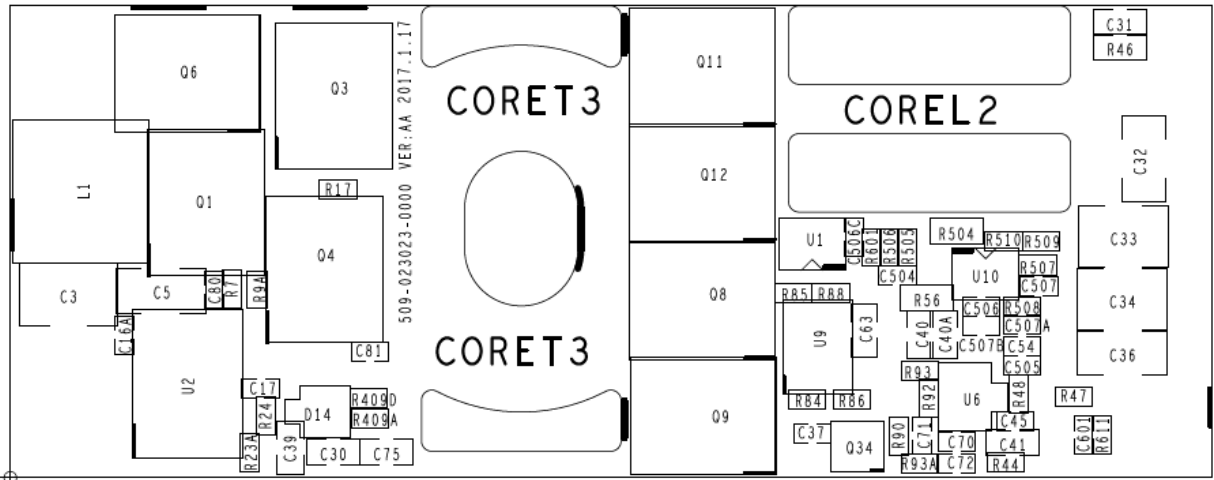
OWNER	TYPE	TEMP.CLASS	UL.No.
ASTECC	System 155-10C	CLASS 155(F)	E94225

## 6. 电气特性

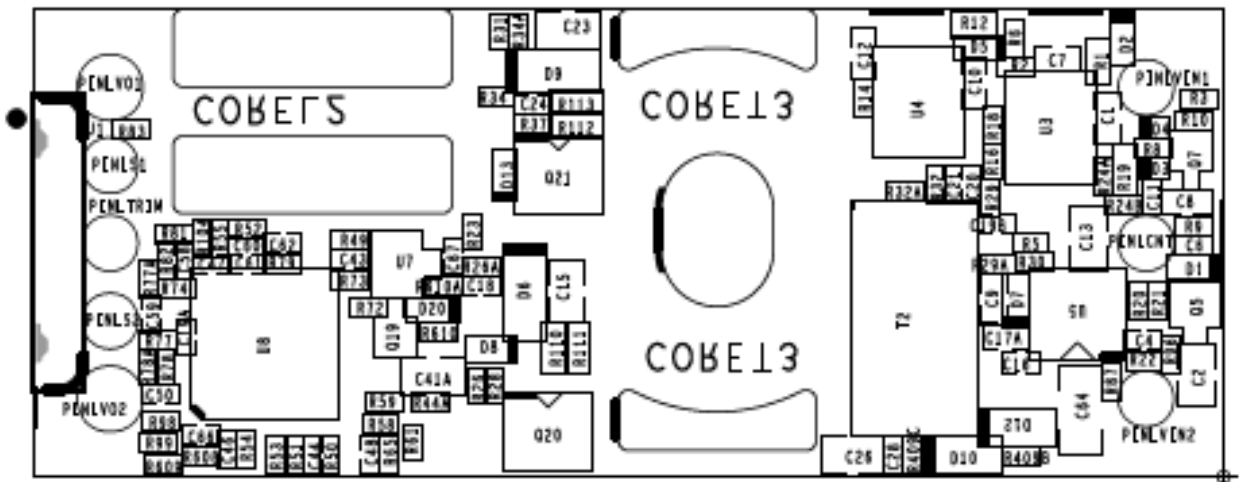
## Electrical Characteristics

NO.	名称	测量端	测量值	测试条件	标准测试仪器
1	电感量	L(1S-1F)	38.3~48.6uH	at 100kHz, 1Vrms	1062 LCR
2	漏感	LK(1S-1F) Short N2	14uH Max	at 100kHz, 1Vrms	3250
3	直流电阻	R(1S-1F)	650mΩ Max	at 25℃	VR131
		R(2S-2F)	630mΩ Max	at 25℃	VR131
		R(3S-3F)	400mΩ Max	at 25℃	VR131
4	绝缘阻抗	COIL-COIL	100MΩ Min	DC500V/60S	9032B
5	绝缘阻抗	COIL-CORE	100MΩ Min	DC500V/60S	9032B
6	抗电强度	N1,CORE TO N2,N3	1500VDC	1mA, 1 Min	9032B

Schematics ID 5-01

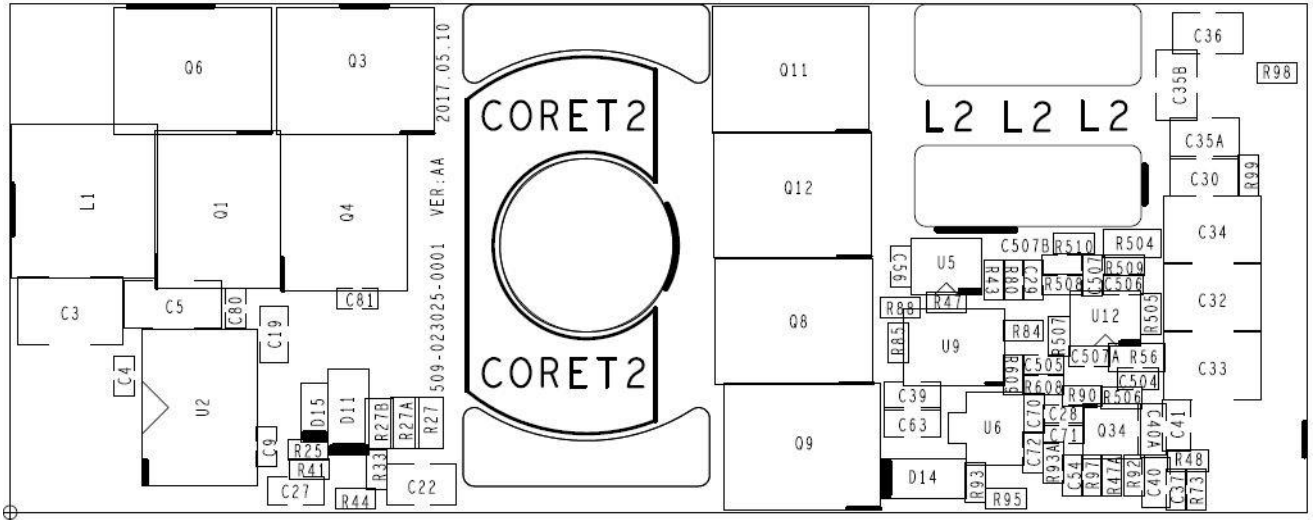


Component side

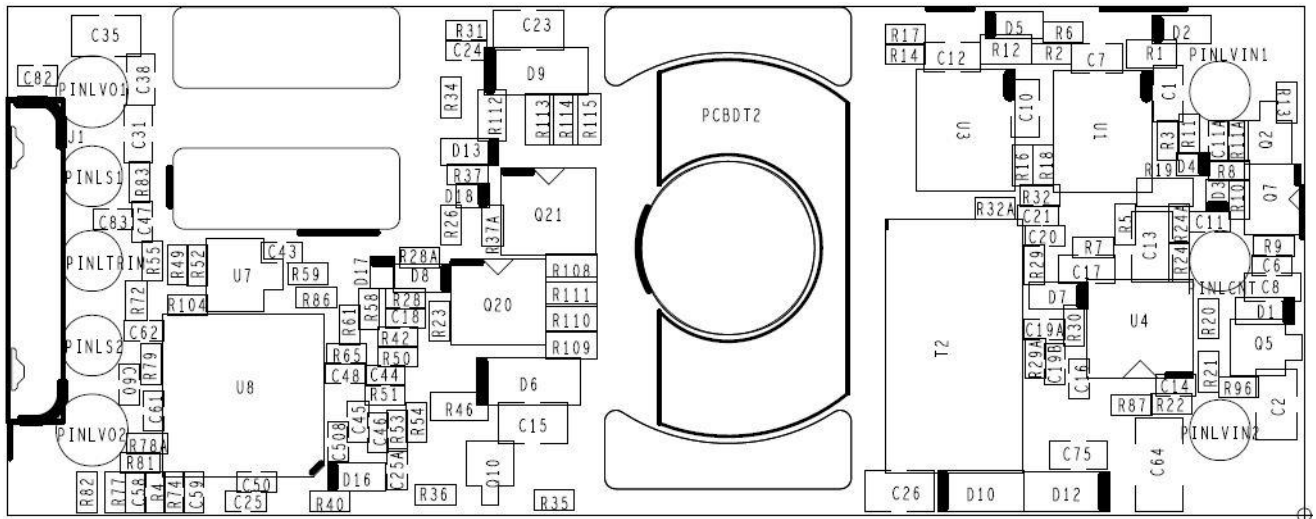


Solder side

Schematics ID 5-02



Component side



Solder side

Manuals ID 6-01

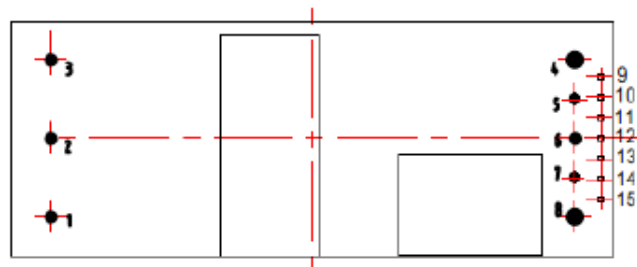
**INSTALLATION AND OPERATING INSTRUCTIONS  
FOR ADO300-48S3V3XXXXXXXXXX**

To comply with the published safety standards, the following must be observed when using this power supply.

1. Maximum ambient temperature around the DC-DC converter must not exceed 75°C with air velocity 800LFM air direction from Vin- to Vin+.
2. The power supply is intended for use as a component part of other equipment. When installing the power supply and making input and output connections, the relevant safety standards e.g. UL60950-1; IEC60950-1; EN 60950-1 and CSA 22.2 No. 60950-1 must be complied with, especially the requirements for creepage distances, clearances and distance through insulation between input wiring and earth or output wiring.
3. The power supply is approved and certified for the rated voltage range DC36V to 75V
4. The power supply had been evaluated for Basic insulation between DC input circuit and DC output circuit / baseplate.
5. The built-in converter isn't intended to be repaired by service personnel in case of failure or component defect (unit can be thrown away).
6. The power supply shall be connected to a source which is insulated from the mains supply by double or reinforced insulation.
7. The built-in converter has no in-line fuse, for safety operation, an external 10A, 125VDC fuse for ADO300-48S3V3XXXXXXXXXX must be employed as input line before installation.
- 8.

**Customer Install Chart**

**BOTTOM VIEW**



Manuals ID 6-01

**INSTALLATION AND OPERATING INSTRUCTIONS  
FOR ADO300-48S3V3XXXXXXXXXX****Pins definition**

Pin NO.	Name	Function	Optional
1	Vin+	Positive input voltage	
2	Remote ON/OFF	Remote control	
3	Vin-	Negative input voltage	
4	Vo-	Negative output voltage	
5	-Sense	Remote sense negative	yes
6	trim	Voltage adjustment	yes
7	+Sense	Remote sense positive	yes
8	Vo+	Positive output voltage	
9	C2	Digital	yes
10	Sig_Gnd		
11	Data		
12	SMBAlert		
13	Clock		
14	Addr1		
15	Addr0		

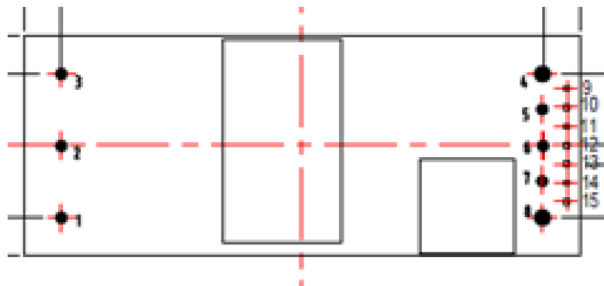
Manuals ID 6-02

**INSTALLATION AND OPERATING INSTRUCTIONS  
FOR ADO300-48S05XXXXXXXXXX**

To comply with the published safety standards, the following must be observed when using this power supply.

1. Maximum ambient temperature around the DC-DC converter must not exceed 75°C with air velocity 800LFM air direction from Vin- to Vin+.
2. The power supply is intended for use as a component part of other equipment. When installing the power supply and making input and output connections, the relevant safety standards e.g. UL60950-1; IEC60950-1; EN 60950-1 and CSA 22.2 No. 60950-1 must be complied with, especially the requirements for creepage distances, clearances and distance through insulation between input wiring and earth or output wiring.
3. The power supply is approved and certified for the rated voltage range DC36V to 75V
4. The power supply had been evaluated for Basic insulation between DC input circuit and DC output circuit / baseplate.
5. The built-in converter isn't intended to be repaired by service personnel in case of failure or component defect (unit can be thrown away).
6. The power supply shall be connected to a source which is insulated from the mains supply by double or reinforced insulation.
7. The built-in converter has no in-line fuse, for safety operation, an external 15A, 125VDC fuse for ADO300-48S05XXXXXXXXXX must be employed as input line before installation.
- 8.

**Customer Install Chart**



## Manuals ID 6-02

**INSTALLATION AND OPERATING INSTRUCTIONS  
FOR ADO300-48S05XXXXXXXXXX****Pins definition**

Pin NO.	Name	Function	Optional
1	Vin+	Positive input voltage	
2	Remote ON/OFF	Remote control	
3	Vin-	Negative input voltage	
4	Vo-	Negative output voltage	
5	-Sense	Remote sense negative	yes
6	trim	Voltage adjustment	yes
7	+Sense	Remote sense positive	yes
8	Vo+	Positive output voltage	
9	C2(PMBUS_CTRL)	Digital	yes
10	Sig_Gnd(GND)		
11	Data (PMBUS_DATA)		
12	SMBAlert(PMBUS_ALERT)		
13	Clock(PMBUS_CLK)		
14	Addr1(AD01)		
15	Addr0(AD00)		