



TIANBAO WANG
PINGHU CITY HONGKI ELECTRIC CO LTD
NO.133 TONGCHE ROAD, XINCANG TOWN, PIN
JIAXING
ZHEJIANG 314200 CHINA

Date: 2020/07/27
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PO Number:

Subject: **Procedure And/Or Report Material**

The following material resulting from the investigation under the above numbers is enclosed.

Issue

<u>Date</u>	<u>Vol</u>	<u>Sec</u>	<u>Pages</u>	<u>Revised Date</u>
	1		Revised Index Page(s) 1	2020/07/22
2020/07/22	1	2	Cert of Compliance	
2020/07/22	1	2	Add New Proc/Report Sect	

Legible images can be viewed online.

Inspections at your plant will be conducted under the supervision of CHUANGQI LOU, UL INSPECTION CENTER HANGZHOU,

CHINA NAT'L IMPORT & EXP COM INSP CORP, YAOJIANG DEVELOPING CENTER, 9TH FL, 305 HUANCHENG NORTH RD, HANGZHOU, ZHEJIANG,

China, 310012., PHONE: +86-571-8578-6148, EMAIL: UL.InspectionCenter325@ul.com

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

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NBK File

UL INSPECTION CENTER 325

INDEX

Product Description/Model	Section	Requirements Evaluated to (USL and/or CNL)
Class 2 Power Supplies, Models HK003-006050AXU, HK003-006045AXU, HK003-006040AXU, HK003-006035AXU, HK003-006030AXU, HK003-005050AXU, HK003-005040AXU, HK012-120100AXU, HK012-120090AXU, HK012-120080AXU, HK012-120070AXU, HK012-120060AXU, HK012-120050AXU, HK012-060100AXU, HK012-060080AXU, HK012-060070AXU, HK012-060060AXU, HK012-050100AXU	1	USL/CNL
Class 2 Power Supplies, Models HK024-240030AXU, HK024-240040AXU, HK024-240050AXU, HK024-240060AXU, HK024-240070AXU, HK024-240080AXU, HK024-240090AXU, HK024-240100AXU.	2	USL/CNL

DESCRIPTION

PRODUCT COVERED:

USL, CNL - Class 2 Power Supply, Models HK024-240030AXU, HK024-240040AXU, HK024-240050AXU, HK024-240060AXU, HK024-240070AXU, HK024-240080AXU, HK024-240090AXU, HK024-240100AXU.

GENERAL:

Each unit covered by this Report is a direct plug-in type Class 2 Power Supply.

Each unit consists of a switch mode transformer and other related electronic circuitry house in thermoplastic enclosure, and provide with non-polarized parallel blades for connection to line voltage.

Each unit does not include a grounding connection, and has no user accessible metal part which is likely to become energized. It is intended for dry location use only.

ELECTRICAL RATINGS:

Model	Input			Output		
	V ac	Hz	A	V dc	mA	W
HK024-240030AXU	100-120	50/60	0.5	24	300	7.2
HK024-240040AXU	100-120	50/60	0.5	24	400	9.6
HK024-240050AXU	100-120	50/60	0.5	24	500	12
HK024-240060AXU	100-120	50/60	0.5	24	600	14.4
HK024-240070AXU	100-120	50/60	0.5	24	700	16.8
HK024-240080AXU	100-120	50/60	0.5	24	800	19.2
HK024-240090AXU	100-120	50/60	0.5	24	900	21.6
HK024-240100AXU	100-120	50/60	0.5	24	1000	24

TECHNICAL CONSIDERATIONS (Not For Field Representative's Use):

USL indicates investigation to the U.S. Standard for Class 2 Power Units, UL 1310, Seventh Edition.

CNL indicates investigation to the Canadian Standard for Power Supplies with Extra-Low-Voltage Class 2 Outputs, CAN/CSA-C22.2 No. 223, Third Edition.

The maximum room ambient temperature is 40°C (Tmra).

This unit weights less than 1 pound (454g).

CONSTRUCTION DETAILS:

Section General - The following construction items are described in Section General.

Abbreviations	Date of Manufacturing
Corrosion Protection	Cautionary Markings
Segregation	Spacings
Blade Construction	Printed Wiring Board
Markings	

For CNL Unit, markings and instructions shall be provided in both English and French.

Markings - See Sec. Gen., Markings for detail. The following markings shall be additionally provided:

"Class 2 Power Supply"

"CAUTION - Risk of Electric Shock." and the following, "Do not expose to liquid, vapor, or rain" or "Dry location use only".

Model HK024-240100AXU is identical to Models HK024-240030AXU, HK024-240040AXU, HK024-240050AXU, HK024-240060AXU, HK024-240070AXU, HK024-240080AXU and HK024-240090AXU, except for the model designation, output current rating.

Illustrations - The following Illustration is referenced in this report:

ILL. No.	Description
1	Enclosure Construction
2	Drawing of Output Cord Strain Relief Bushing
3	PWB Component and Trace Layout
4	LF1 Specification
5	Transformer T1 Construction and Insulation
6	Heat sink for U1

General - The general design, shape, and arrangement shall be as illustrated in the following figures, except where variations are specifically described.

CLASS 2 POWER SUPPLY, MODEL HK024-240100AXU - FIGS. 1, 2
(ALSO REPRESENTS ALL MODELS COVERED UNDER THIS REPORT)

General - Figs. 1, 2 represent the external view

1. Enclosure - R/C (QMFZ2), SABIC INNOVATIVE PLASTICS B V (E45329), Type 943(f1), PC, AO color, rated V-0, HWI=3, HAI=3, 120°C, overall measures approx. 80.00 by 49.5 by 32.0 mm, minimum 2.0 mm thick. Two halves construction, secured together by ultrasonic welding. Provided with one opening for output cord strain relief, measures approx. 7.0 by 7.6 mm. See ILL. 1 for construction details.
2. Input Blades - Non-polarized, non-grounding type. Plated copper alloy, two provided. Each blade located minimum 8.2 mm from the edge of enclosure perimeter. See Section General, Blades for construction details and dimensions. Molded to Enclosure.
3. Output Cord Strain Relief Bushing - PVC bushing integrally molded on Output Cord and physically fitted in Enclosure. See ILL. 2 for construction details.
4. Output Cord - R/C (AVLV2/8), two-conductors, stranded, minimum 300 V, minimum 80 °C, minimum 26 AWG. Provided with minimum 0.33 mm thick PVC insulation on each lead. One end terminated internally on PWB by soldering and mechanically secured before soldering. The other end terminated in a non-standard polarized output connector. Minimum 1.8 m external length. Provided with molded-on strain relief.

CLASS 2 POWER SUPPLY, MODELS HK024-240100AXU - FIGS. 3 AND 4
(ALSO REPRESENTS ALL MODELS COVERED UNDER THIS REPORT)

General - Figs. 3 and 4 show the internal views of Model HK024-240100AXU.

1. Printed Wiring Board (PWB) - R/C (ZPMV2), rated minimum 130°C, V-0. Minimum 1.1 mm thick, overall approx. 74.7 by 42.6 mm. See ILL. 3 for component and trace layouts.
2. Fuse (F1) - R/C (JDYX2/8), DONGGUAN BETTER ELECTRONICS TECHNOLOGY CO LTD (E300003), Type 932, rated 250 Vac, 2 A.
3. X-Capacitor (CX1) - Line-to-Neutral. R/C (FOWX2/8), Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.(E208107), Type MPX series, Class X2, rated minimum 250 Vac , maximum 0.1uF, minimum 110°C.
4. Bleeding Resistors (R1, R1A, R2, R2A) - Each rated maximum 4M ohm, minimum 1/4 W.
5. Line Choke (LF1) -See ILL. 4. For construction details. Constructed as follow:
 - a. Core -Magnetic ring, Measured OD 14.7 mm, ID 3 mm, with 2.5 mm thickness.
 - b. Winding N1 - R/C (OBMW2), magnet wire. Rated 155 °C min.
 - c. Winding N2 - R/C (OBMW2), magnet wire. Rated 155 °C min.
See below windings information for turns and diameter.

No	Pin		Size	Turns
N2	4	3	0.25mm	95T
N1	1	2	0.25mm	95T

6. Bridge Diode (DB1) - Rated minimum 2.0 A, minimum 1000 V. Secured on PWB by soldering.
7. Capacitors (EC1, EC2) - Electrolytic with integral pressure relief. Rated 400 V, 22 uF, minimum 105°C.
8. Capacitor (EC3) - Electrolytic with integral pressure relief. Rated 50 V, 10 uF, minimum 105°C.
9. Capacitor (EC4) - Electrolytic with integral pressure relief. Rated 35 V, 680 uF, minimum 105°C.
10. IC (U1) - Manufactured Chengdu Chip-Rail Microelectronics Co.,ltd , Type CR5259.

11. Heat Sink - Formed of aluminum alloy, Secured to the top of U1 by adhesive (QMFZ2), various manufacturer, rated minimum 105°C. See ILL.6 for dimensions.
12. Resistors (R5, R7~R9, R10, R13, R20, R21) - See below table for details.

Resistors	Rating
R5	Max 360 K Ω , 1/4 W
R7-R9	Each Max 200 K Ω , 1/4 W
R10	Max 100 Ω , 1/4 W
R13	Max 100 K Ω , 1/8 W
R20	Max 3.9 Ω , 1/4 W
R21	Max 22 Ω , 1/4 W

13. Optical Isolator (U2) - R/C (FPQU2/8), EVERLIGHT ELECTRONICS CO LTD (E214129), Type EL8X7, rated 5000 V ac isolation voltage, 110°C.
14. Y-Capacitor (CY1) - R/C (FOWX2/8), rated maximum 1000 pF, minimum 250 Vac, Y1 Type, 125°C. Following types may be used.

Manufacturer / File No.	Type
SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD (E208107)	CD
DONGGUAN EASY-GATHER ELECTRONIC CO LTD (E252221)	DCF

15. Diodes (D3) - Rated minimum 60 V, minimum 2.0 A.
16. Barrier Sheet - (QMFZ2), CHENGDU KANGLONGXIN PLASTICS CO LTD (E315185), Type KLX FRPC-1860, KLX FRPC-1860B, KLX FRPC-1860-83, KLX FRPC-1860-83B, KLX FRPC-1860-1, KLX FRPC-1860-NTC, KLX FRPC-1860B-NTC, KLX FRPC-1860B-3, KLX FRPC-1870B-K, KLX FRPC-1860B-HY, KLX FRPC-1860-HY, KLX FRPC-1860B-K, KLX FRPC-1860-K, KLX FRPC-1860W, NC or black color, V-0, Polycarbonate (PC), flame retardant, furnished as sheets, measured 38.8 by 65.4mm, 0.35mm thickness, maintain the insulation between PWB bottom to the input blades.

and Report

17. Transformer (T1) - Employed R/C (OBJY2), BILLION ELECTRIC CO LTD (E150529), Class 130 (B) electrical insulation systems, designated HIS-8A, Table I. See ILL. 5 for Transformer overall view. Transformer construction and Insulation. Constructed as below:

- a. Core - Ferrite, E-E construction, overall measures 21.6 mm by 16.6 mm by 13.9 mm width, wrapped by two layers of Insulation Tape, each 0.05 mm thick, 8.0 mm width. Core is considered as primary part.
- b. Bobbin - R/C (QMFZ2), HITACHI CHEMICAL CO LTD (E42956), Type CP-J-8800, Phenolic, black or brown in color, rated V-0, 150 °C, measure minimum 0.64 mm thick.
- c. Primary Windings (N1, N2, N4, N5) - R/C (OBMW2), rated minimum 130°C, various ANSI Types covered in Insulation System,, see ILL. 5 for Windings Information details.
- d. Secondary Winding (N3) - R/C (OBJT2), FURUKAWA ELECTRIC CO LTD (E206440), Type TEX-E, rated 130 °C, see ILL. 5 for Windings Information details.

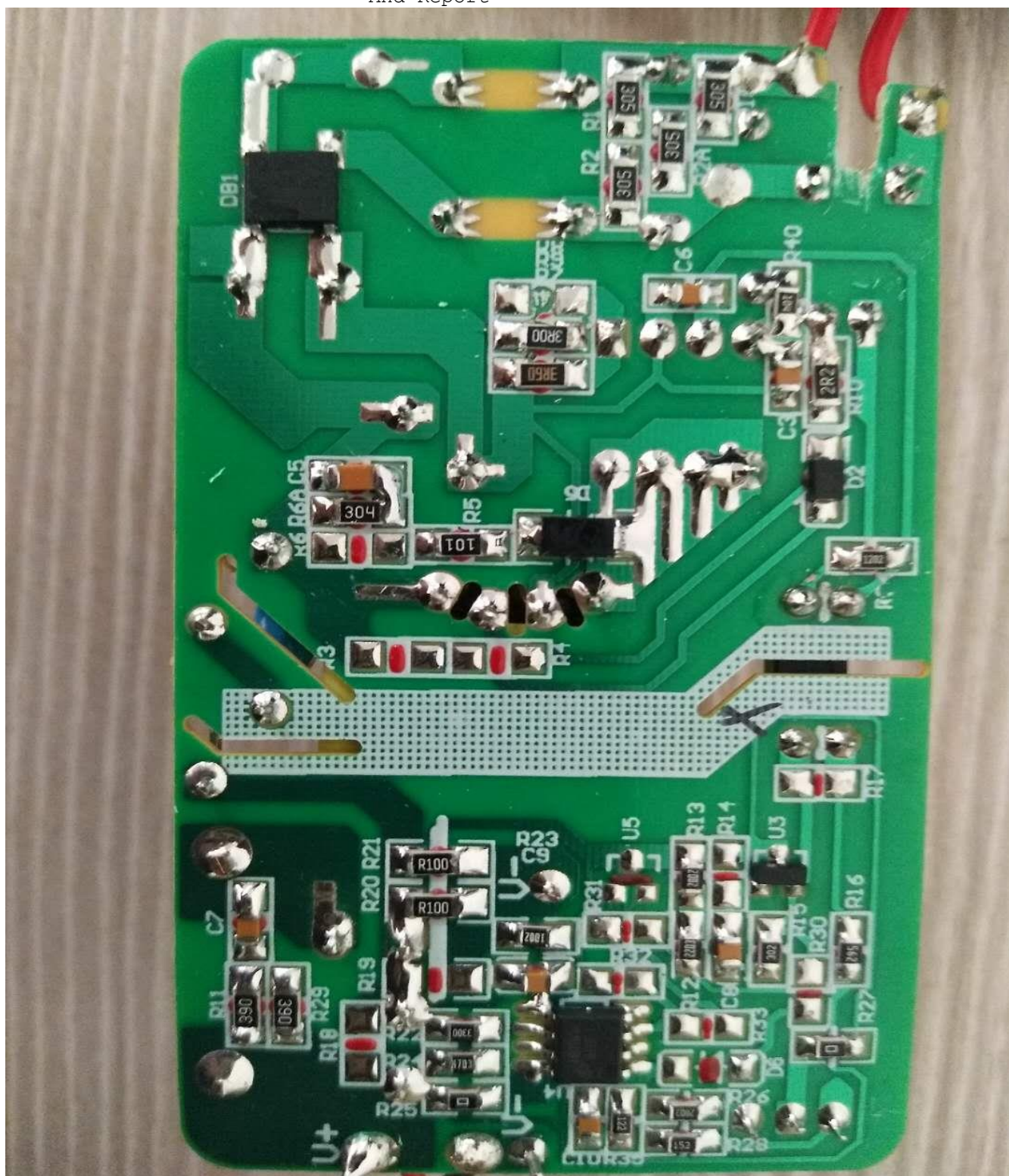
Winding	Location	Pin No.	Wire Size, mm	No. of Turns	Insulation Tape Layers
N1	PRI	A1-4	Ø0.2*2P	33	2
N2	SEC	3-NC	Ø0.15*2P	22	2
N3	PRI	7-8	TEX-EØ0.25*2P	17	2
N4	SEC	3-2	Ø0.15*3P	7	2
N5	PRI	1-A2	Ø0.2*2P	32	2

- e. Insulation Tape - R/C (OANZ2), 3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385), Type 1350F-1 or 1350F-2, all color, rated 130 °C, 0.05 mm thick per layer.
- f. Varnish - R/C (OBOR2), HITACHI CHEMICAL CO LTD (E72979), Type WA-238A, rated min. 130°C.
- g. Tube - R/C (YDPU2), ZEUS INDUSTRIAL PRODUCTS INC (E64007), not heat-shrinkable PTFE tubing, Type TFE-TW-300, rated minimum 300 V, 200°C.
- h. Primary Crossover Lead insulation - Two layers of insulation tape and tube.



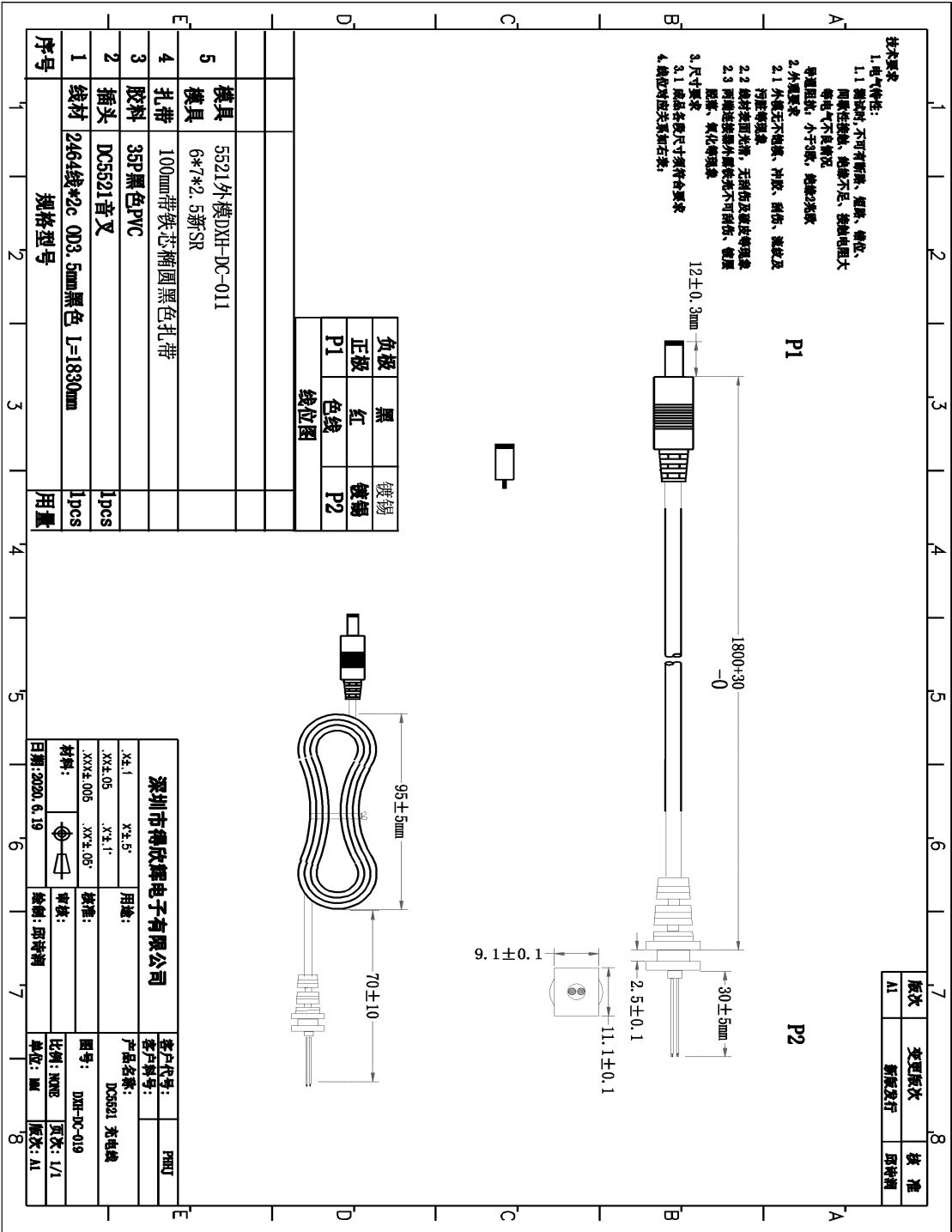


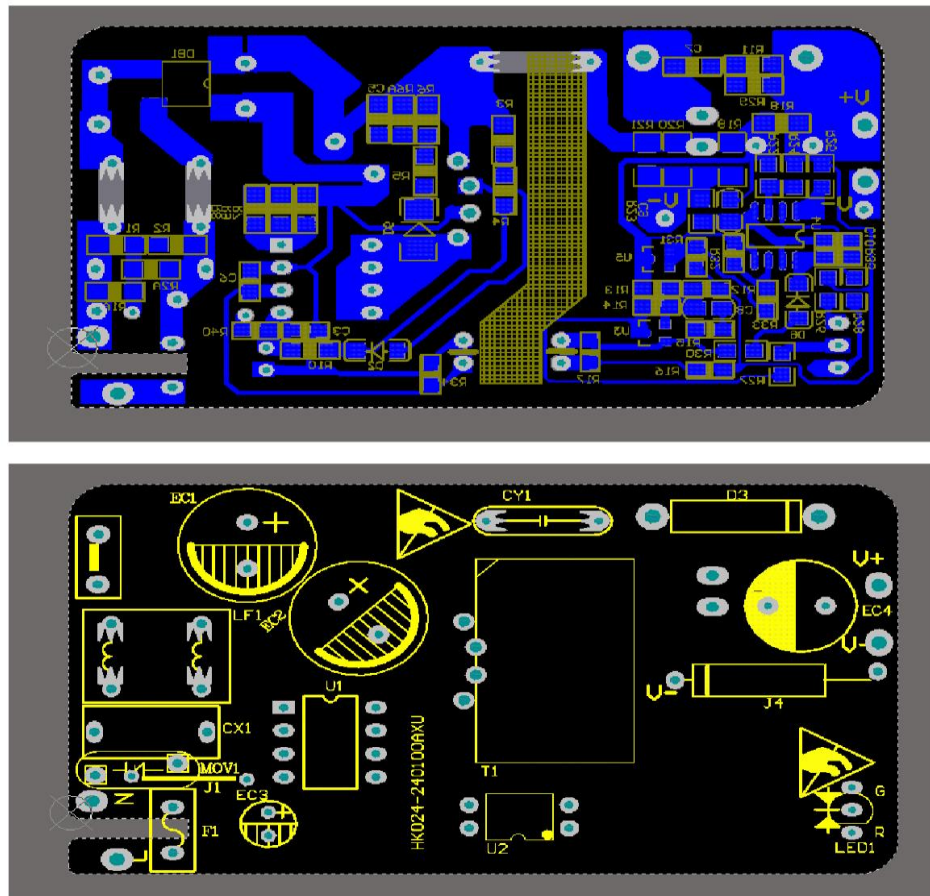




品名	36W通用上盖	
材质	PC 940/UL94V0	
比例	1:1	单位:MM

品名	36W美规正插下盖		
材质	PC 940/UL94V0		
比例	1:1	单位	MM





承 认 书

SPECIFICATION FOR APPROVAL

客户名称:

CUSTOMER: 平湖市鸿基电器有限公司

品名/型号:

DESCRIPTION: UU9.8-20mH

客户料号:

MATERIAL:

硕宝恒驰编号:

VENDOR NO:

出 图		客户承认
DRAWING		CUSTOMER APPROVE
制表	审核	
朱玉珍	余雪荣	
DATE:	2020-08-18	



深 圳 市 硕 宝 恒 驰 科 技 有 限 公 司

SHENZHEN SHUOBAOHENGCHI TECHNOLOGY CO., LTD

地址: 深圳市龙华新区观澜街道福前路 436 号颐泉工业园 A 栋二楼

E-MAIL: 1370926276@qq.com

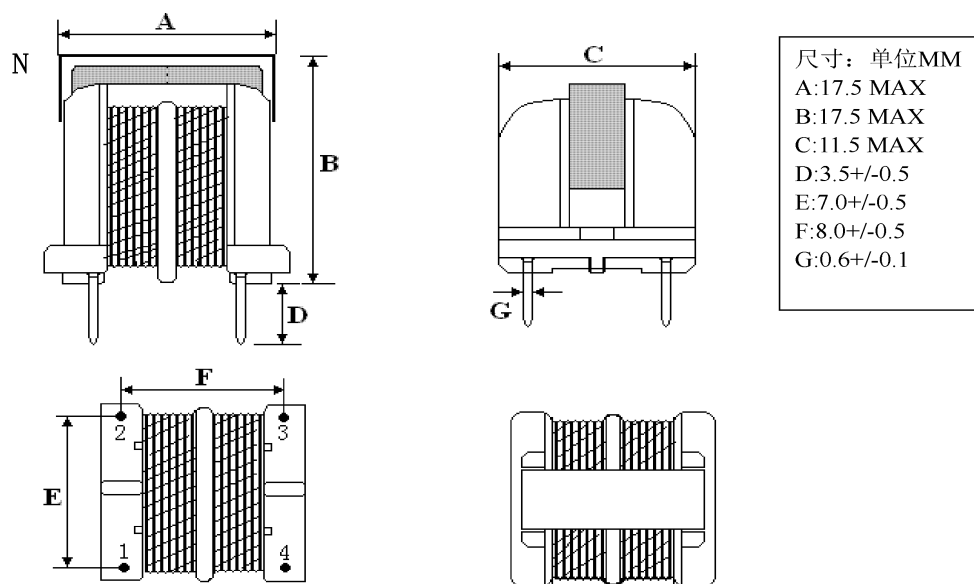
HTTP: SZSBHC.COM

深圳市硕宝恒驰科技有限公司				文件编号: SB2020061801A
承 认 书				制定单位: 工程部
CUSTOMER 客 户	鸿基电器	DESCRIPTION 品名型号	UU9.8-20mH	拟制日期: 20200618
				修订日期:
MATERIAL 客户料号		VENDOR NO 硕宝恒驰编号		版 本: 试制 A
				页 数: 第 1 页 共 4 页

文 件 更 改 记 录				
次数	更改后版本	经手人	更 改 内 容	修正日期
分发对象	☐ 总经理 ☐ 生产部 ☐ 供应商资源管理部 ☐ 管理部 ☐ PMC ☐ 品质部 ☐ 财务部 ☐ 工程部			

深圳市硕宝恒驰科技有限公司 承 认 书				文件编号: SB2020061801A
				制定单位: 工程部
CUSTOMER 客 户	鸿基电器	DESCRIPTION 品名型号	UU9.8-20mH	拟制日期: 20200618
				修订日期:
MATERIAL 客户料号		VENDOR NO 硕宝恒驰编号		版 本: 试制 A
				页 数: 第 2 页 共 4 页

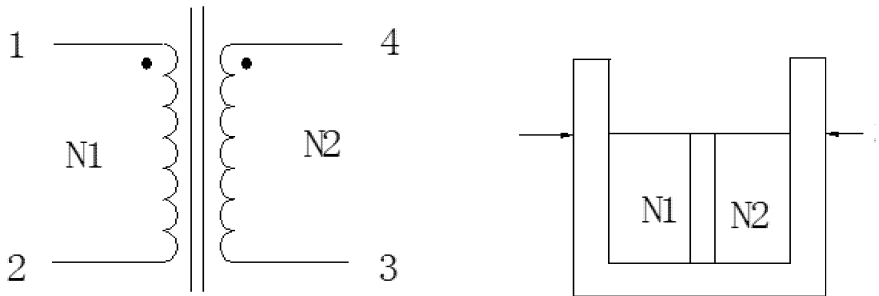
1. OUTLINE DEMENSION: (UNIT: mm)



1. 产品符合 ROHS 标准
2. 两线包需包胶带 2 层

深圳市硕宝恒驰科技有限公司				文件编号: SB2020061801A
承 认 书				制定单位: 工程部
CUSTOMER 客 户	鸿基电器	DESCRIPTION 品名型号	UU9.8-20mH	拟制日期: 20200618
				修订日期:
MATERIAL 客户料号		VENDOR NO 硕宝恒驰编号		版 本: 试制 A
				页 数: 第 3 页 共 4 页

2. CIRCUIT DIAGRAM/电原理图 (NUIT: mm) CONSTRUCTION DIAGRAM/内部结构图



绕组规格/WINDING SPECIFICATION

顺序 NO.	起始 START	结束 FINISH	漆包线 WIRE	圈数 TURNS	胶带 TAPE	绕制方式 WINDINGCONDIT IO
N1	1	2	2 U E W -F & 0.25*1P	95TS REF	2TS	密绕
N2	4	3	2 U E W -F & 0.25*1P	95TS REF	2TS	密绕

4. 绕制工艺/MANUFACTURE SPECIFICATION

- 磁芯为境面,
- 绕线时双线并绕, 保证两边电感量平衡.

深圳市硕宝恒驰科技有限公司 承 认 书				文件编号: SB2020061801A
				制定单位: 工程部
CUSTOMER 客 户	鸿基电器	DESCRIPTION 品名型号	UU9.8-20mH	拟制日期: 20200618
				修订日期:
MATERIAL 客户料号		VENDOR NO 硕宝恒驰编号		版 本: 试制 A
				页 数: 第 4 页 共 4 页

5. 电气性能/ELECTRICAL CHARACTERISTIC

NO	ITEM 名称	MEASURED POINT 测量端	TECHNICAL DATA 技术要求	NUIT 单位	TEST CONDITION 测试条件	INSTRUMENT 测试仪器
1	INDUCTANCE 电感量	LN1=LN2	20MIN	mH	1.0KHZ/0.25V 串联测试 AT25℃	CH1062 或同等 仪器内阻 100Ω
	BL 平衡值	LN1-N2	490	UH	1.0KHZ/0.25V 串联测试 AT25℃	
2	DC RESISTANCE 直流电阻	R1--2	/	mΩ	AT25℃±5℃	
		R4--3	/			
4	HI-POT/AC/50HZ 耐压测试	COIL-COIL	AC500	V	50HZ1mA3S	CS2676C/ EXTECH 7410 或同等仪器
		COIL1-CORE	AC500	V	50HZ1mA3S	
		COIL2-CORE	AC500	V	50HZ1mA3S	

6. MATERIAL LIS/ 材料清单

No.	ITEM 名称	TYPE 材质	DESCRIPTION 规格型号	SUPPLERS 制造商&品牌	SGS. UL
1	CORE/磁芯	AL≥3500	UU9.8	山东恒瑞磁电科技有限公司 I SHANDONGHENRUITECHNOLOGYCO., LTD	N/A
2	BOBBIN/骨架	T375HF	UU9.8	长春人造树脂厂股份有限公司新竹厂 (深圳市恒源发科技有限公司)	E59481
3	TAPE/胶带	HMT803 130	3.0mm	深圳市鑫华辉胶粘科技有限公司 SHENZHEN XINHUAHUI PLASTIC INSULATIONMATERIAL CO., LTD	E328315
4	WIRE/漆包线	2UEW 155	2UEW 0.25mm	东莞市益达实业有限公司 DONGGUAN YIDA INDUSTRIAL CO., LTD	E344055
5	SOLDER BAR/锡	无铅锡	-----	东莞市四方电子有限公司 (深圳市兴鸿泰锡业有限公司)	E328315
6	绝缘油	-----	-----	珠海长先新材料技术有限公司 ZHUHAI CHANGXIAN NEW MATERIALS TECHNOLOGY CO	E335405
7					

规格承认书

客 户：平湖市鸿基电器有限公司

品 名：变压器

订购型号：HIS-8A

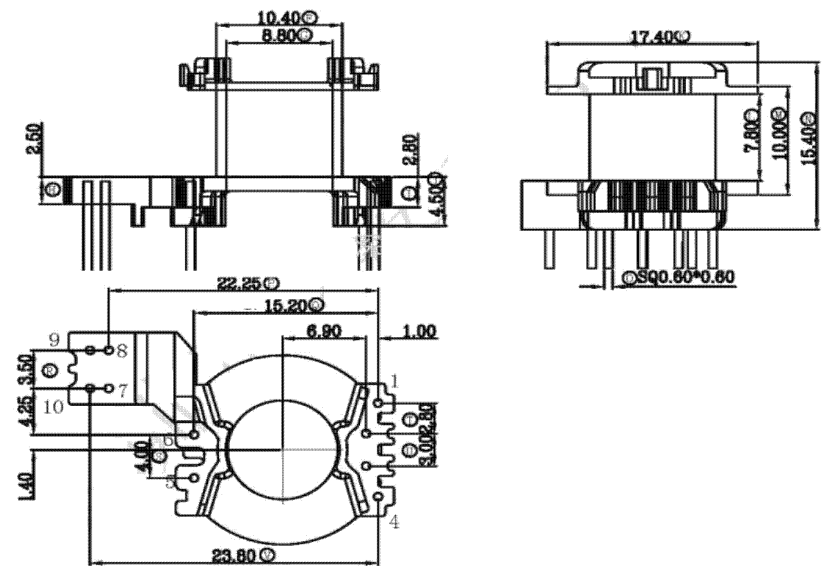
客户料号：HK240-240100AXU-T1

送样日期：2020 年 5 月 29 日

出 图			承 认		
设 计	审 核	批 准			
黄凤英	陈祖强	陈冲金			

承认书签字后请寄回一份，未回签视同默认。

1. 骨架外形尺寸 (UNIT:mm)

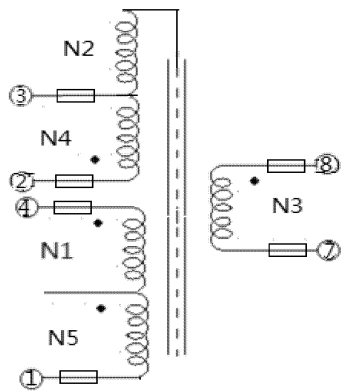


注：1.磁芯包胶 2T
2.A1,A1 绞线焊锡后包入线包
3 脚连接到磁芯，再包胶带

2. 电参数

NO	测试项目	脚位	测试值	测试条件	测试仪表
1	电感量	4-1	1.4mH ±5%	1KHZ0.3V	TH2829LX
2	漏感				TH2829LX
3	耐压	P-S	1.5KV	2S	

3. 原理图



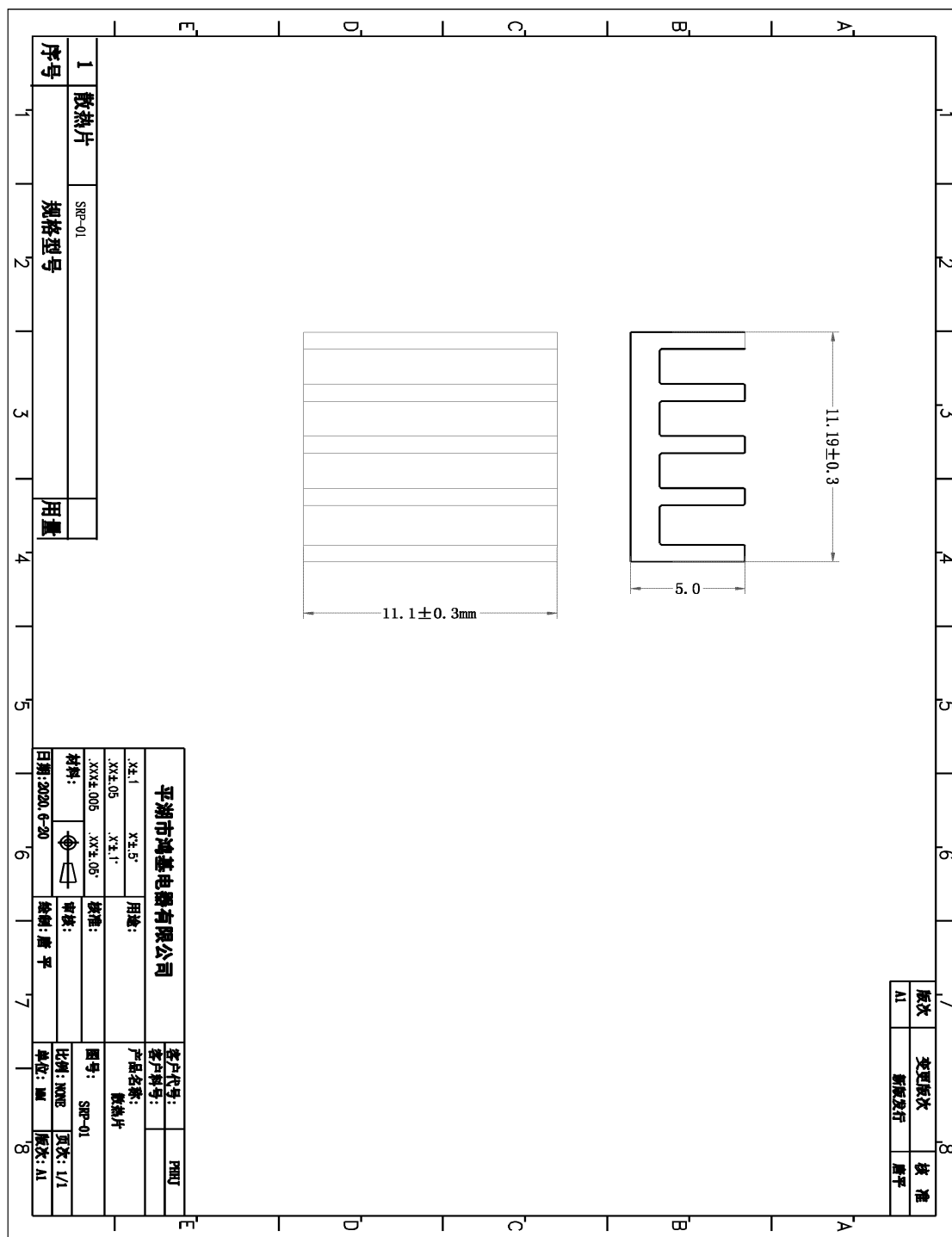
4. 线包结构图

线圈	脚位	线规	圈数	绕线方法	套管		胶带
N1	A1-4	Ø0. 2*2P	33	密绕		√	0.025 *8*2T
N2	3-NC	Ø0. 15*2P	22	密绕	√		0.025 *8*2T
N3	7-8	TEX-EØ0. 25*2P	17	密绕	√	√	0.025 *8*2T
N4	3-2	Ø0. 15*3P	7	密绕	√	√	0.025 *8*2T
N5	1-A2	Ø0. 2*2P	32	密绕	√	√	0.025 *8*2T

5. 材料清单

序号	材料名称	规格	制造厂商	UL NO	
1	Bobbin	Type CP-J-8800	HITACHI CHEMICAL CO LTD	E42956	

2	Triple-insulation wire	TEX-E	FURUKAWA ELECTRIC CO. LTD.	E206440	
3	Varnish	WA-238A	HITACHI CHEMICAL CO. LTD.	E72979	
4	Tube	TFE-TW-300	EUS INDUSTRIAL PRODUCTS INC.	E64007	
5	Insulation Tape	1350F-1 or 1350F-2	3M COMPANY ELECTRICAL MARKETS DIV.	E17385	



CERTIFICATE OF COMPLIANCE

Certificate Number E504979
Report Reference E504979-20200722
Issue Date 2020-JULY-27

Issued to: PINGHU CITY HONGKI ELECTRIC CO LTD
No.133 Tongche Road, Xincang Town, Pinghu
Jiaxing
Zhejiang 314200 CHINA

This certificate confirms that
representative samples of

DIRECT-PLUG-IN AND CORD-CONNECTED CLASS 2
POWER UNITS

USL, CNL – Class 2 Power Supply, Models HK024-
240030AXU, HK024-240040AXU, HK024-240050AXU,
HK024-240060AXU, HK024-240070AXU, HK024-
240080AXU, HK024-240090AXU, HK024-240100AXU.

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety:

UL 1310 : Class 2 Power Units
CAN/CSA C22.2 No. 223 : Power Supplies with Extra-low
Voltage Class 2 Outputs

Additional Information:

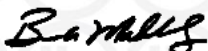
See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information.

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Look for the UL Certification Mark on the product.

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.



Bruce Mahrenholz, Director North American Certification Program
UL LLC

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File E504979
Project 4789495904

July 22, 2020

REPORT

On

DIRECT PLUG-IN AND CORD-CONNECTED CLASS 2 POWER UNITS

PINGHU CITY HONGKI ELECTRIC CO LTD
ZHEJIANG, CHINA

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DESCRIPTION

PRODUCT COVERED:

USL, CNL - Class 2 Power Supply, Models HK024-240030AXU, HK024-240040AXU, HK024-240050AXU, HK024-240060AXU, HK024-240070AXU, HK024-240080AXU, HK024-240090AXU, HK024-240100AXU.

GENERAL:

Each unit covered by this Report is a direct plug-in type Class 2 Power Supply.

Each unit consists of a switch mode transformer and other related electronic circuitry housed in thermoplastic enclosure, and provided with non-polarized parallel blades for connection to line voltage.

Each unit does not include a grounding connection, and has no user accessible metal part which is likely to become energized. It is intended for dry location use only.

ELECTRICAL RATINGS:

Model	Input			Output		
	V ac	Hz	A	V dc	mA	W
HK024-240030AXU	100-120	50/60	0.5	24	300	7.2
HK024-240040AXU	100-120	50/60	0.5	24	400	9.6
HK024-240050AXU	100-120	50/60	0.5	24	500	12
HK024-240060AXU	100-120	50/60	0.5	24	600	14.4
HK024-240070AXU	100-120	50/60	0.5	24	700	16.8
HK024-240080AXU	100-120	50/60	0.5	24	800	19.2
HK024-240090AXU	100-120	50/60	0.5	24	900	21.6
HK024-240100AXU	100-120	50/60	0.5	24	1000	24

TECHNICAL CONSIDERATIONS (Not For Field Representative's Use):

USL indicates investigation to the U.S. Standard for Class 2 Power Units, UL 1310, Seventh Edition.

CNL indicates investigation to the Canadian Standard for Power Supplies with Extra-Low-Voltage Class 2 Outputs, CAN/CSA-C22.2 No. 223, Third Edition.

The maximum room ambient temperature is 40°C (T_{mra}).

This unit weighs less than 1 pound (454g).

CONSTRUCTION DETAILS:

Section General - The following construction items are described in Section General.

Abbreviations	Date of Manufacturing
Corrosion Protection	Cautionary Markings
Segregation	Spacings
Blade Construction	Printed Wiring Board
Markings	

For CNL Unit, markings and instructions shall be provided in both English and French.

Markings - See Sec. Gen., Markings for detail. The following markings shall be additionally provided:

"Class 2 Power Supply"

"CAUTION - Risk of Electric Shock." and the following, "Do not expose to liquid, vapor, or rain" or "Dry location use only".

Model HK024-240100AXU is identical to Models HK024-240030AXU, HK024-240040AXU, HK024-240050AXU, HK024-240060AXU, HK024-240070AXU, HK024-240080AXU and HK024-240090AXU, except for the model designation, output current rating.

Illustrations - The following Illustration is referenced in this report:

ILL. No.	Description
1	Enclosure Construction
2	Drawing of Output Cord Strain Relief Bushing
3	PWB Component and Trace Layout
4	LF1 Specification
5	Transformer T1 Construction and Insulation
6	Heat sink for U1

General - The general design, shape, and arrangement shall be as illustrated in the following figures, except where variations are specifically described.

CLASS 2 POWER SUPPLY, MODEL HK024-240100AXU - FIGS. 1, 2
(ALSO REPRESENTS ALL MODELS COVERED UNDER THIS REPORT)

General - Figs. 1, 2 represent the external view

1. Enclosure - R/C (QMFZ2), SABIC INNOVATIVE PLASTICS B V (E45329), Type 943(f1), PC, AO color, rated V-0, HWI=3, HAI=3, 120°C, overall measures approx. 80.00 by 49.5 by 32.0 mm, minimum 2.0 mm thick. Two halves construction, secured together by ultrasonic welding. Provided with one opening for output cord strain relief, measures approx. 7.0 by 7.6 mm. See ILL. 1 for construction details.
2. Input Blades - Non-polarized, non-grounding type. Plated copper alloy, two provided. Each blade located minimum 8.2 mm from the edge of enclosure perimeter. See Section General, Blades for construction details and dimensions. Molded to Enclosure.
3. Output Cord Strain Relief Bushing - PVC bushing integrally molded on Output Cord and physically fitted in Enclosure. See ILL. 2 for construction details.
4. Output Cord - R/C (AVLV2/8), two-conductors, stranded, minimum 300 V, minimum 80 °C, minimum 26 AWG. Provided with minimum 0.33 mm thick PVC insulation on each lead. One end terminated internally on PWB by soldering and mechanically secured before soldering. The other end terminated in a non-standard polarized output connector. Minimum 1.8 m external length. Provided with molded-on strain relief.

CLASS 2 POWER SUPPLY, MODELS HK024-240100AXU - FIGS. 3 AND 4
(ALSO REPRESENTS ALL MODELS COVERED UNDER THIS REPORT)

General - Figs. 3 and 4 show the internal views of Model HK024-240100AXU.

1. Printed Wiring Board (PWB) - R/C (ZPMV2), rated minimum 130°C, V-0. Minimum 1.1 mm thick, overall approx. 74.7 by 42.6 mm. See ILL. 3 for component and trace layouts.
2. Fuse (F1) - R/C (JDYX2/8), DONGGUAN BETTER ELECTRONICS TECHNOLOGY CO LTD (E300003), Type 932, rated 250 Vac, 2 A.
3. X-Capacitor (CX1) - Line-to-Neutral. R/C (FOWX2/8), Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.(E208107), Type MPX series, Class X2, rated minimum 250 Vac , maximum 0.1uF, minimum 110°C.
4. Bleeding Resistors (R1, R1A, R2, R2A) - Each rated maximum 4M ohm, minimum 1/4 W.
5. Line Choke (LF1) -See ILL. 4. For construction details. Constructed as follow:
 - a. Core -Magnetic ring, Measured OD 14.7 mm, ID 3 mm, with 2.5 mm thickness.
 - b. Winding N1 - R/C (OBMW2), magnet wire. Rated 155 °C min.
 - c. Winding N2 - R/C (OBMW2), magnet wire. Rated 155 °C min.
See below windings information for turns and diameter.

No	Pin		Size	Turns
N2	4	3	0.25mm	95T
N1	1	2	0.25mm	95T

6. Bridge Diode (DB1) - Rated minimum 2.0 A, minimum 1000 V. Secured on PWB by soldering.
7. Capacitors (EC1, EC2) - Electrolytic with integral pressure relief. Rated 400 V, 22 uF, minimum 105°C.
8. Capacitor (EC3) - Electrolytic with integral pressure relief. Rated 50 V, 10 uF, minimum 105°C.
9. Capacitor (EC4) - Electrolytic with integral pressure relief. Rated 35 V, 680 uF, minimum 105°C.
10. IC (U1) - Manufactured Chengdu Chip-Rail Microelectronics Co.,ltd , Type CR5259.

11. Heat Sink - Formed of aluminum alloy, Secured to the top of U1 by adhesive (QMFZ2), various manufacturer, rated minimum 105°C. See ILL.6 for dimensions.
12. Resistors (R5, R7~R9, R10, R13, R20, R21) - See below table for details.

Resistors	Rating
R5	Max 360 K Ω , 1/4 W
R7-R9	Each Max 200 K Ω , 1/4 W
R10	Max 100 Ω , 1/4 W
R13	Max 100 K Ω , 1/8 W
R20	Max 3.9 Ω , 1/4 W
R21	Max 22 Ω , 1/4 W

13. Optical Isolator (U2) - R/C (FPQU2/8), EVERLIGHT ELECTRONICS CO LTD (E214129), Type EL8X7, rated 5000 V ac isolation voltage, 110°C.
14. Y-Capacitor (CY1) - R/C (FOWX2/8), rated maximum 1000 pF, minimum 250 Vac, Y1 Type, 125°C. Following types may be used.

Manufacturer / File No.	Type
SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD (E208107)	CD
DONGGUAN EASY-GATHER ELECTRONIC CO LTD (E252221)	DCF

15. Diodes (D3) - Rated minimum 60 V, minimum 2.0 A.
16. Barrier Sheet - (QMFZ2), CHENGDU KANGLONGXIN PLASTICS CO LTD (E315185), Type KLX FRPC-1860, KLX FRPC-1860B, KLX FRPC-1860-83, KLX FRPC-1860-83B, KLX FRPC-1860-1, KLX FRPC-1860-NTC, KLX FRPC-1860B-NTC, KLX FRPC-1860B-3, KLX FRPC-1870B-K, KLX FRPC-1860B-HY, KLX FRPC-1860-HY, KLX FRPC-1860B-K, KLX FRPC-1860-K, KLX FRPC-1860W, NC or black color, V-0, Polycarbonate (PC), flame retardant, furnished as sheets, measured 38.8 by 65.4mm, 0.35mm thickness, maintain the insulation between PWB bottom to the input blades.

and Report

17. Transformer (T1) - Employed R/C (OBJY2), BILLION ELECTRIC CO LTD (E150529), Class 130 (B) electrical insulation systems, designated HIS-8A, Table I. See ILL. 5 for Transformer overall view. Transformer construction and Insulation. Constructed as below:

- a. Core - Ferrite, E-E construction, overall measures 21.6 mm by 16.6 mm by 13.9 mm width, wrapped by two layers of Insulation Tape, each 0.05 mm thick, 8.0 mm width. Core is considered as primary part.
- b. Bobbin - R/C (QMFZ2), HITACHI CHEMICAL CO LTD (E42956), Type CP-J-8800, Phenolic, black or brown in color, rated V-0, 150 °C, measure minimum 0.64 mm thick.
- c. Primary Windings (N1, N2, N4, N5) - R/C (OBMW2), rated minimum 130°C, various ANSI Types covered in Insulation System,, see ILL. 5 for Windings Information details.
- d. Secondary Winding (N3) - R/C (OBJT2), FURUKAWA ELECTRIC CO LTD (E206440), Type TEX-E, rated 130 °C, see ILL. 5 for Windings Information details.

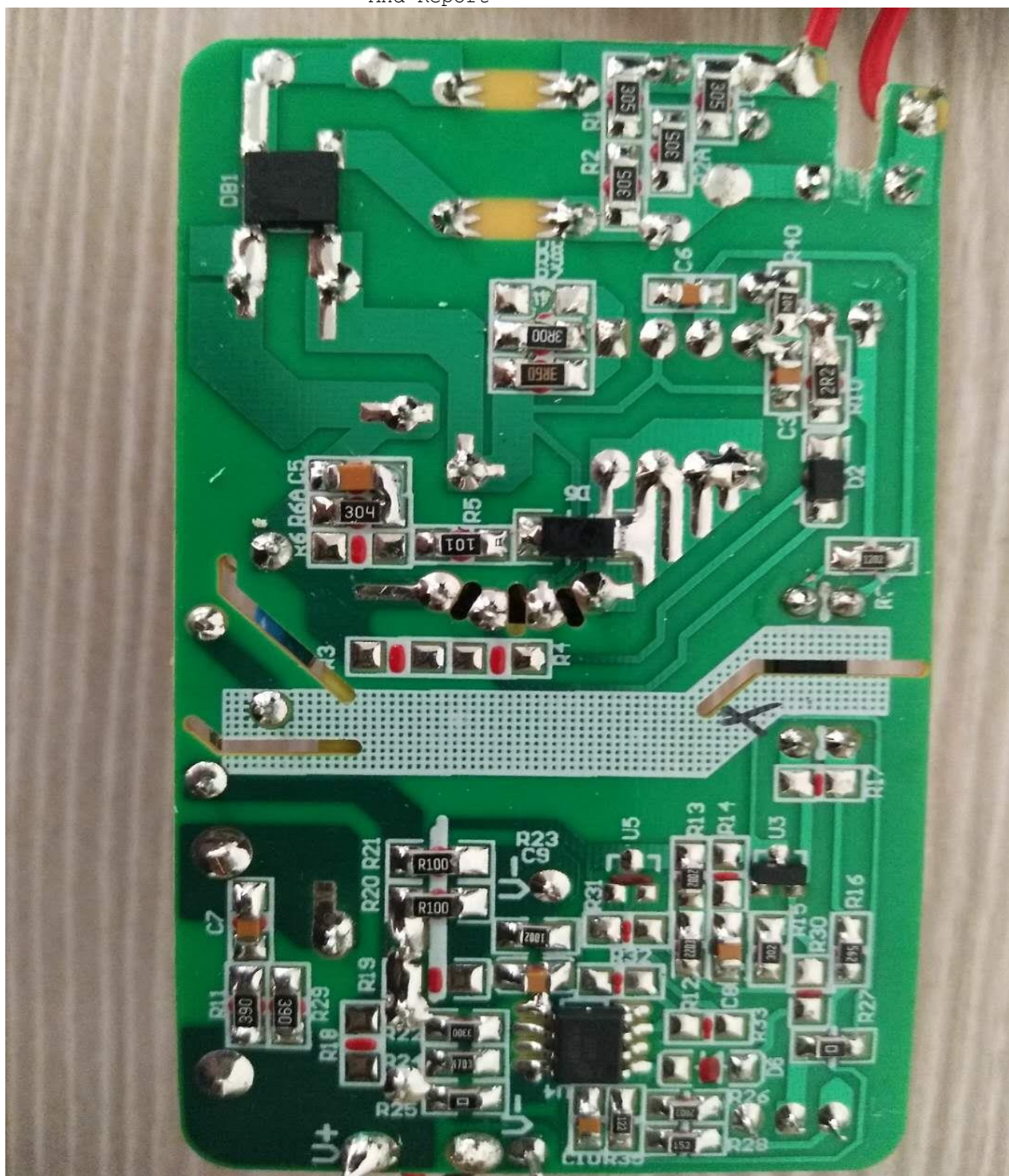
Winding	Location	Pin No.	Wire Size, mm	No. of Turns	Insulation Tape Layers
N1	PRI	A1-4	Ø0.2*2P	33	2
N2	SEC	3-NC	Ø0.15*2P	22	2
N3	PRI	7-8	TEX-EØ0.25*2P	17	2
N4	SEC	3-2	Ø0.15*3P	7	2
N5	PRI	1-A2	Ø0.2*2P	32	2

- e. Insulation Tape - R/C (OANZ2), 3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385), Type 1350F-1 or 1350F-2, all color, rated 130 °C, 0.05 mm thick per layer.
- f. Varnish - R/C (OBOR2), HITACHI CHEMICAL CO LTD (E72979), Type WA-238A, rated min. 130°C.
- g. Tube - R/C (YDPU2), ZEUS INDUSTRIAL PRODUCTS INC (E64007), not heat-shrinkable PTFE tubing, Type TFE-TW-300, rated minimum 300 V, 200°C.
- h. Primary Crossover Lead insulation - Two layers of insulation tape and tube.



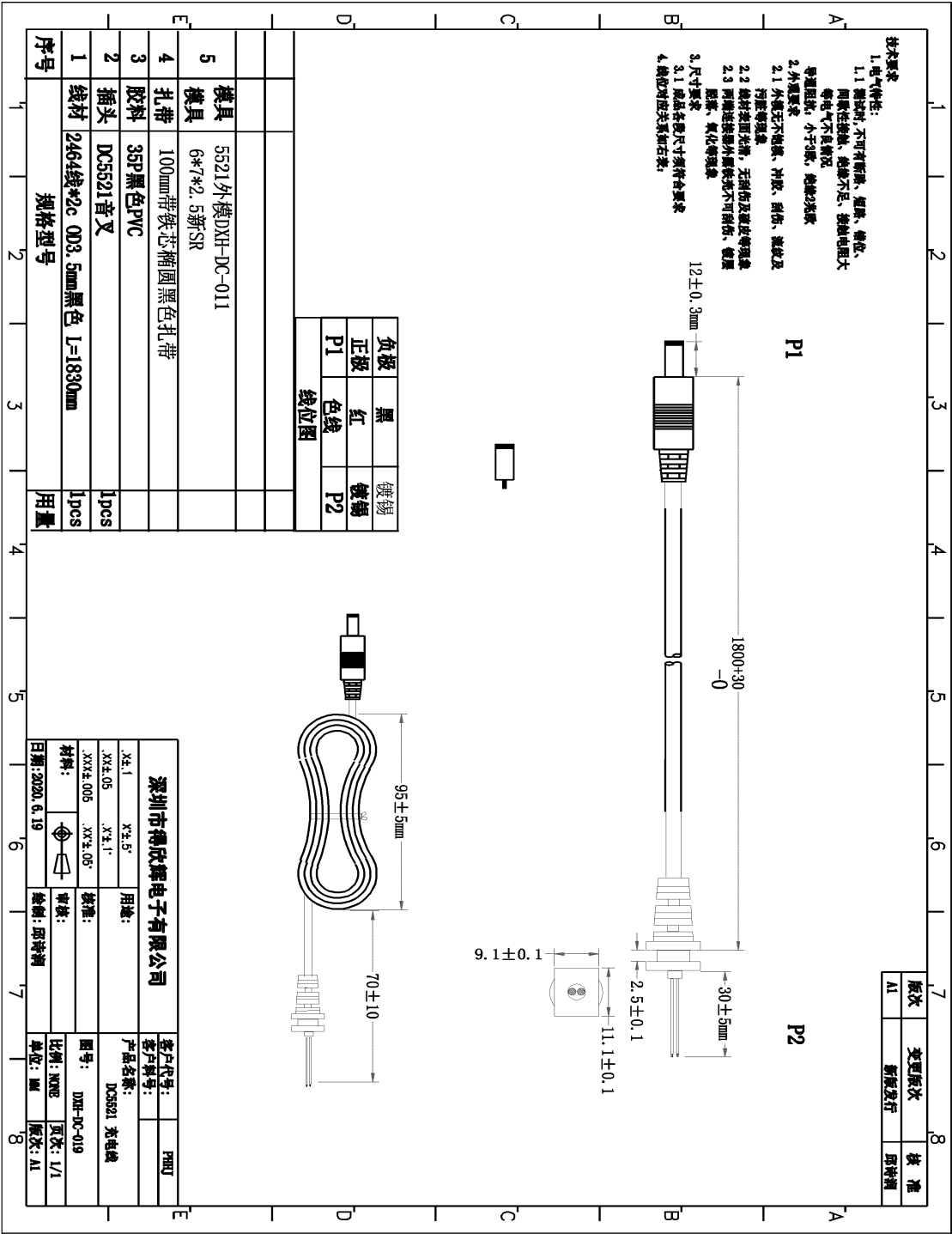


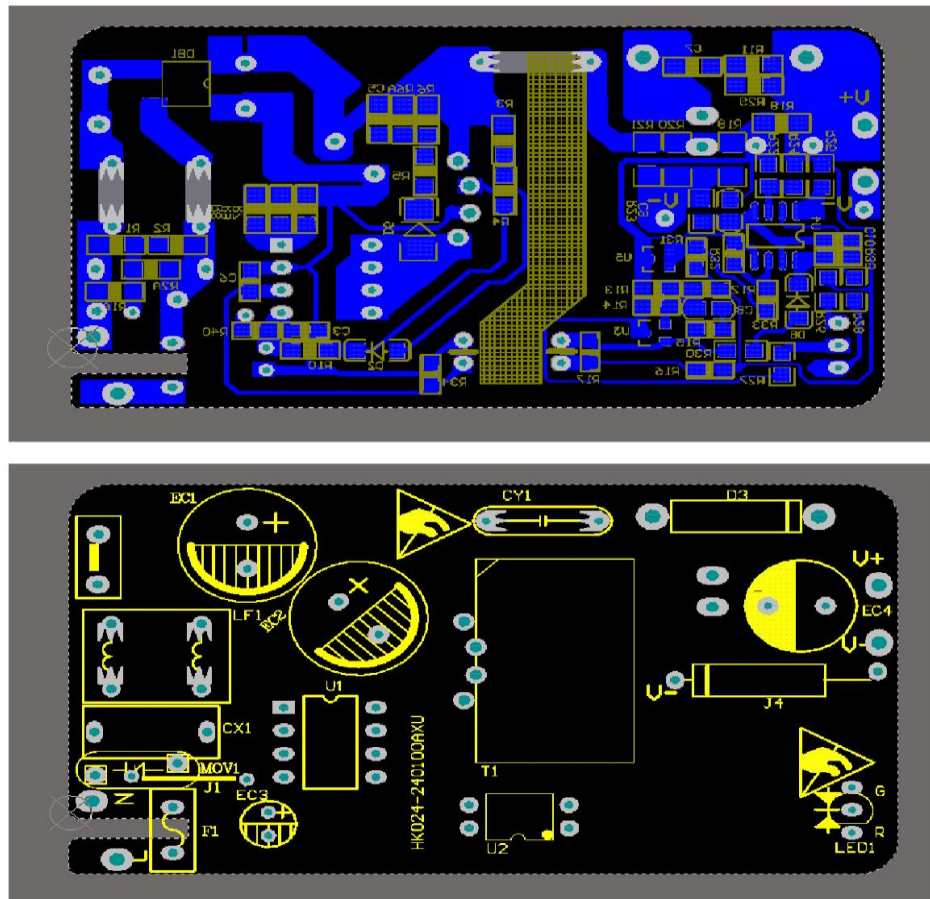




品名	36W通用上盖	
材质	PC 940/UL94V0	
比例	1:1	单位:MM

品名	36W美规正插下盖		
材质	PC 940/UL94V0		
比例	1:1	单位	MM





承 认 书

SPECIFICATION FOR APPROVAL

客户名称:

CUSTOMER: 平湖市鸿基电器有限公司

品名/型号:

DESCRIPTION: UU9.8-20mH

客户料号:

MATERIAL:

硕宝恒驰编号:

VENDOR NO:

出 图		客户承认
DRAWING		CUSTOMER APPROVE
制表	审核	
朱玉珍	余雪荣	
DATE:	2020-08-18	



深 圳 市 硕 宝 恒 驰 科 技 有 限 公 司

SHENZHEN SHUOBAOHENGCHI TECHNOLOGY CO., LTD

地址: 深圳市龙华新区观澜街道福前路 436 号颐泉工业园 A 栋二楼

E-MAIL: 1370926276@qq.com

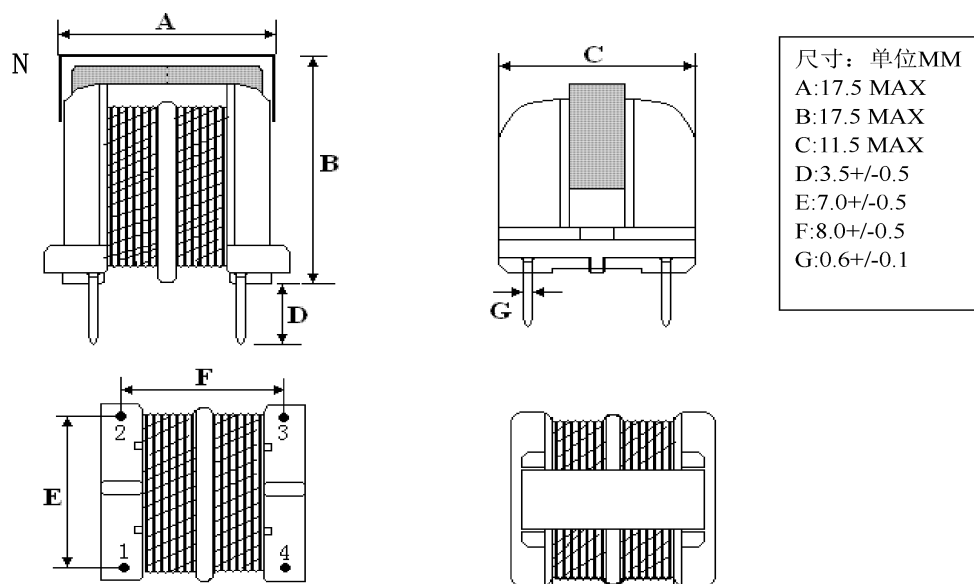
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深圳市硕宝恒驰科技有限公司				文件编号: SB2020061801A
承 认 书				制定单位: 工程部
CUSTOMER 客 户	鸿基电器	DESCRIPTION 品名型号	UU9.8-20mH	拟制日期: 20200618
				修订日期:
MATERIAL 客户料号		VENDOR NO 硕宝恒驰编号		版 本: 试制 A
				页 数: 第 1 页 共 4 页

文 件 更 改 记 录				
次数	更改后版本	经手人	更 改 内 容	修正日期
分发对象	☐ 总经理 ☐ 生产部 ☐ 供应商资源管理部 ☐ 管理部 ☐ PMC ☐ 品质部 ☐ 财务部 ☐ 工程部			

深圳市硕宝恒驰科技有限公司				文件编号: SB2020061801A
承 认 书				制定单位: 工程部
CUSTOMER 客 户	鸿基电器	DESCRIPTION 品名型号	UU9.8-20MH	拟制日期: 20200618
				修订日期:
MATERIAL 客户料号		VENDOR NO 硕宝恒驰编号		版 本: 试制 A
				页 数: 第 2 页 共 4 页

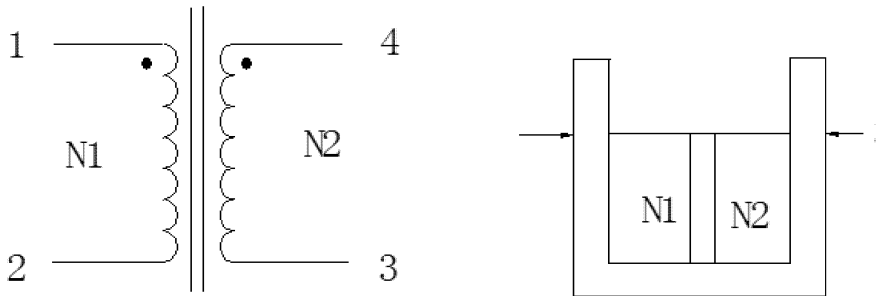
1. OUTLINE DEMENSION: (UNIT: mm)



1. 产品符合 ROHS 标准
2. 两线包需包胶带 2 层

深圳市硕宝恒驰科技有限公司				文件编号: SB2020061801A
承 认 书				制定单位: 工程部
CUSTOMER 客 户	鸿基电器	DESCRIPTION 品名型号	UU9.8-20mH	拟制日期: 20200618
				修订日期:
MATERIAL 客户料号		VENDOR NO 硕宝恒驰编号		版 本: 试制 A
				页 数: 第 3 页 共 4 页

2. CIRCUIT DIAGRAM/电原理图 (NUIT: mm) CONSTRUCTION DIAGRAM/内部结构图



绕组规格/WINDING SPECIFICATION

顺序 NO.	起始 START	结束 FINISH	漆包线 WIRE	圈数 TURNS	胶带 TAPE	绕制方式 WINDINGCONDIT IO
N1	1	2	2 U E W -F & 0.25*1P	95TS REF	2TS	密绕
N2	4	3	2 U E W -F & 0.25*1P	95TS REF	2TS	密绕

4. 绕制工艺/MANUFACTURE SPECIFICATION

1. 磁芯为境面,
2. 绕线时双线并绕, 保证两边电感量平衡.
- .

深圳市硕宝恒驰科技有限公司 承 认 书				文件编号: SB2020061801A
				制定单位: 工程部
CUSTOMER 客 户	鸿基电器	DESCRIPTION 品名型号	UU9.8-20mH	拟制日期: 20200618
				修订日期:
MATERIAL 客户料号		VENDOR NO 硕宝恒驰编号		版 本: 试制 A
				页 数: 第 4 页 共 4 页

5. 电气性能/ELECTRICAL CHARACTERISTIC

NO	ITEM 名称	MEASURED POINT 测量端	TECHNICAL DATA 技术要求	NUIT 单位	TEST CONDITION 测试条件	INSTRUMENT 测试仪器
1	INDUCTANCE 电感量	LN1=LN2	20MIN	mH	1.0KHZ/0.25V 串联测试 AT25℃	CH1062 或同等 仪器内阻 100Ω
	BL 平衡值	LN1-N2	490	UH	1.0KHZ/0.25V 串联测试 AT25℃	
2	DC RESISTANCE 直流电阻	R1--2	/	mΩ	AT25℃±5℃	
		R4--3	/			
4	HI-POT/AC/50HZ 耐压测试	COIL-COIL	AC500	V	50HZ1mA3S	CS2676C/ EXTECH 7410 或同等仪器
		COIL1-CORE	AC500	V	50HZ1mA3S	
		COIL2-CORE	AC500	V	50HZ1mA3S	

6. MATERIAL LIS/ 材料清单

No.	ITEM 名称	TYPE 材质	DESCRIPTION 规格型号	SUPPLERS 制造商&品牌	SGS. UL
1	CORE/磁芯	AL≥3500	UU9.8	山东恒瑞磁电科技有限公司 I SHANDONGHENRUITECHNOLOGYCO., LTD	N/A
2	BOBBIN/骨架	T375HF	UU9.8	长春人造树脂厂股份有限公司新竹厂 (深圳市恒源发科技有限公司)	E59481
3	TAPE/胶带	HMT803 130	3.0mm	深圳市鑫华辉胶粘科技有限公司 SHENZHEN XINHUAHUI PLASTIC INSULATIONMATERIAL CO., LTD	E328315
4	WIRE/漆包线	2UEW 155	2UEW 0.25mm	东莞市益达实业有限公司 DONGGUAN YIDA INDUSTRIAL CO., LTD	E344055
5	SOLDER BAR/锡	无铅锡	-----	东莞市四方电子有限公司 (深圳市兴鸿泰锡业有限公司)	E328315
6	绝缘油	-----	-----	珠海长先新材料技术有限公司 ZHUHAI CHANGXIAN NEW MATERIALS TECHNOLOGY CO	E335405
7					

规格承认书

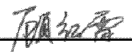
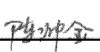
客 户：平湖市鸿基电器有限公司

品 名：变压器

订购型号：HIS-8A

客户料号：HK240-240100AXU-T1

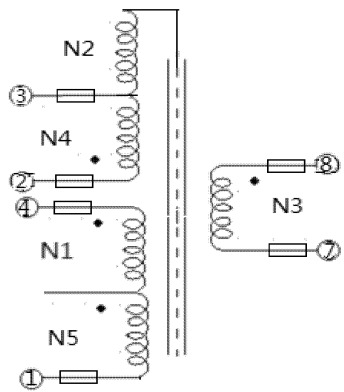
送样日期：2020 年 5 月 29 日

出 图			承 认		
设 计	审 核	批 准			
					

承认书签字后请寄回一份，未回签视同默认。

NO	测试项目	脚位	测试值	测试条件	测试仪表
1	电感量	4-1	1.4mH ± 5%	1KHZ0.3V	TH2829LX
2	漏感				TH2829LX
3	耐压	P-S	1.5KV	2S	

3. 原理图



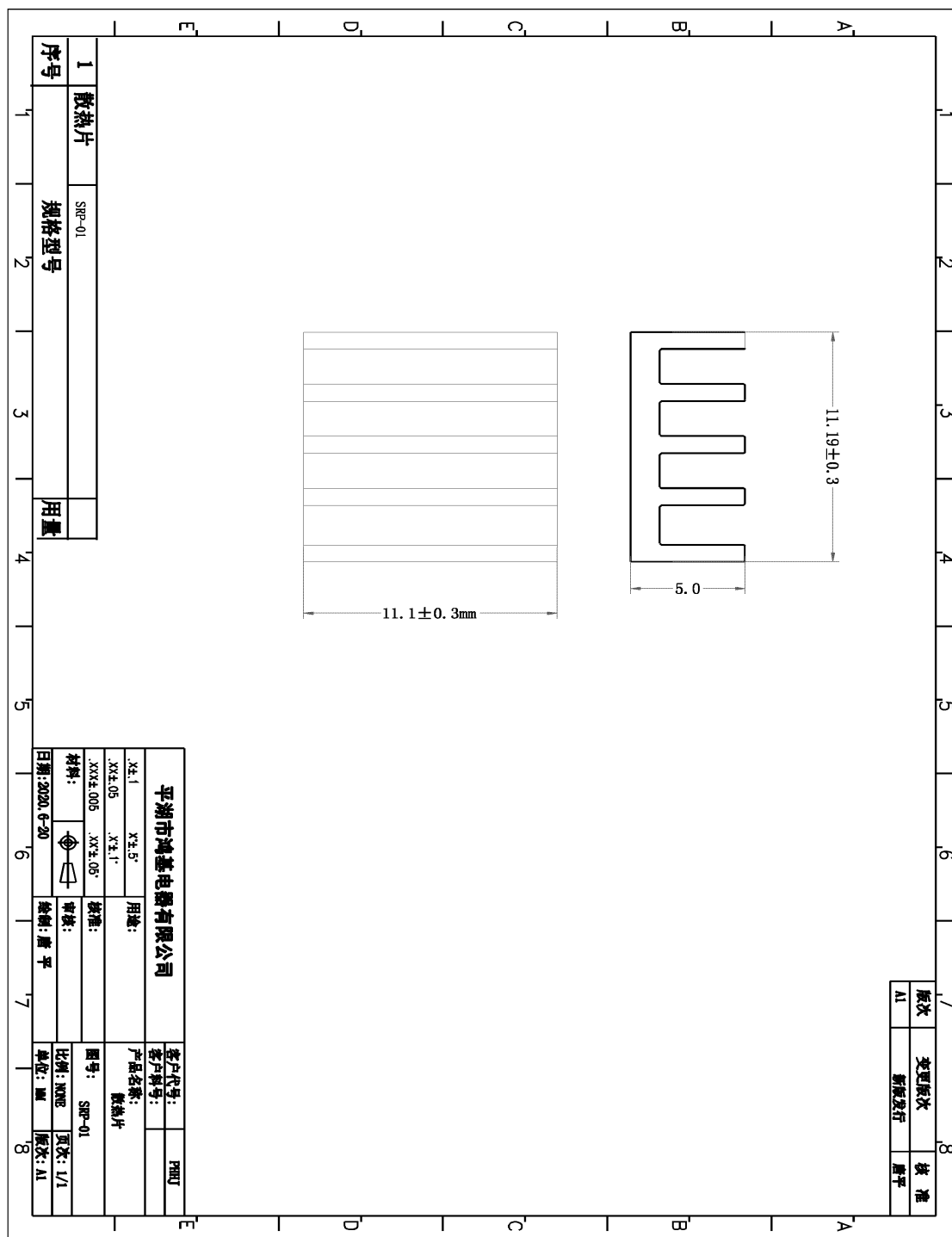
4.线包结构图

线圈	脚位	线规	圈数	绕线方法	套管		胶带
N1	A1-4	Ø0. 2*2P	33	密绕		√	0.025 *8*2T
N2	3-NC	Ø0. 15*2P	22	密绕	√		0.025 *8*2T
N3	7-8	TEX-EØ0. 25*2P	17	密绕	√	√	0.025 *8*2T
N4	3-2	Ø0. 15*3P	7	密绕	√	√	0.025 *8*2T
N5	1-A2	Ø0. 2*2P	32	密绕	√	√	0.025 *8*2T

5. 材料清单

序号	材料名称	规格	制造厂商	UL NO	
1	Bobbin	Type CP-J-8800	HITACHI CHEMICAL CO LTD	E42956	

2	Triple-insulation wire	TEX-E	FURUKAWA ELECTRIC CO. LTD.	E206440	
3	Varnish	WA-238A	HITACHI CHEMICAL CO. LTD.	E72979	
4	Tube	TFE-TW-300	EUS INDUSTRIAL PRODUCTS INC.	E64007	
5	Insulation Tape	1350F-1 or 1350F-2	3M COMPANY ELECTRICAL MARKETS DIV.	E17385	



TEST RECORD NO. 1

SAMPLES:

Samples of the Class 2 Power Supply, Model HK024-240100AXU (which also can represent models HK024-240030AXU, HK024-240040AXU, HK024-240050AXU, HK024-240060AXU, HK024-240070AXU, HK024-240080AXU, HK024-240090AXU for these models same with model HK024-240100AXU except for model designation and output current rating) constructed as described herein, were submitted by the manufacturer and subjected to the following tests with the requirements in the Standard for Class 2 Power Units, UL 1310, Seventh Edition and the Canadian Standard for Power Supplies with Extra Low Voltage Class 2 Outputs, CAN/CSA C22.2 No. 223, Third Edition.

GENERAL:

Test results relate only to the items tested.

Tests conducted on Model HK024-240100AXU for maximum output current and maximum power could represent for Models HK024-240030AXU, HK024-240040AXU, HK024-240050AXU, HK024-240060AXU, HK024-240070AXU, HK024-240080AXU, HK024-240090AXU.

The following tests were conducted in accordance with UL 1310 and Canadian Standard, CAN/CSA C22.2 No. 223 with acceptable results. Clause and paragraph reference conventions consist of UL 1310 reference followed by (C22.2 No. 223) reference.

Working Voltage Measurements	24.2
(Electrical Spacings, CSA C22.2 No. 223)	(4.11)
Leakage Current Test	26 (6.6)
Dielectric Voltage Withstand Test After Leakage Current Test	27
Leakage Current Test After Humidity Exposure	27
Dielectric Voltage Withstand Test After Humidity Exposure	27
Maximum Output Voltage Test	28
(Open-Circuit Secondary Voltage, CSA C22.2 No.223)	(6.3.1)
Normal Input Test	50.2
(Rated Input, CSA C22.2 No.223)	(6.3.2)
Maximum Input Test	29
(Rated Input, CSA C22.2 No. 223)	(6.3.2)
Output Current And Power Test (5 S)	30
(Maximum Output Current And Power, CSA C22.2 No.223)	(6.3.4)

Table CONT'D

Dielectric Voltage Withstand Test After Output Current And Power Test	34
(Dielectric Strength, CSA C22.2 No. 223)	(6.5)
Full-Load Output Current Test	32
Normal Temperature Test - General	33
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The test methods and results of the above tests have been reviewed and found in accordance with the requirements in the Standards mentioned above.

TEST RECORD SUMMARY:

The results of this investigation, including construction review and testing, indicate that the product evaluated complies with the applicable requirements in the standards noted below and, therefore, such product is judged eligible to bear UL's Mark as described on the Conclusion Page of this Report. Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 1310	Class 2 Power Units	7th Edition	2019-08-16
CAN/CSA C22.2 No. 223	Power Supplies with Extra-low Voltage Class 2 Outputs	3rd Edition	2017-06-01

CONCLUSION

Sample of the products covered by this Report has been found to comply with the requirements covering the category and the products are found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the sample(s) investigated by UL and does not signify UL Listing Mark or that the product(s) described are covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the Listing Mark of UL on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Listing Mark of UL on the product, or the UL symbol on the product and the Listing Mark of UL on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Listing and Follow-Up Service.

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