

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Listing
CCN:	QQGQ, QQGQ7 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	SWITCHING POWER SUPPLY
Model:	FY042XXXXYYY (XXX=120-420; 3 digits, indicate output voltage from 12.0V to 42.0V in step of 0.1V, eg. 120=12.0V, 420=42.0V; YYYY=0010-2000; 4 digits, indicate output current from 0.01A to 4.0A in step of 0.01A, eg. 0010=0.01A, 2000=2.0A.) See enclosure ID 7-01 for detail.
Rating:	Input: 100-240Vac, 50/60Hz, 1.5A Output: See enclosure ID 7-01 for detail
Applicant Name and Address:	SHENZHEN FUYUANDIAN POWER CO LTD 3/F BLDG 9 YIJING NORTH 5 LANE ZONE 47 BAOAN DISTRICT SHENZHEN GUANGDONG 518000 CHINA

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.

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

Prepared by: Jack Huang

Reviewed by: Alvin Peng

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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

Unit is a SWITCHING POWER SUPPLY employing a switching mode transformer, a non-detachable output cord with polarized output connector and two enclosure type (type A is direct plug-in type, type B is desktop type).

All electrical components are mounted on a PWB and housed in a plastic enclosure secured together by ultra-sonic welding.

Model Differences

All models are identical to each other except for model designation, enclosure type, output rating and secondary components adjust to rating.

Technical Considerations

- Equipment mobility : Enclosure type A: direct plug-in, Enclosure type B: transportable
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10% (declared by manufacturer)
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class II (double insulated)
- Considered current rating of protective device as part of the building installation (A) : 20 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 2000
- Altitude of test laboratory (m) : less than 2000
- Mass of equipment (kg) : Approx. 0.17kg Max.

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 40 °C
- The means of connection to the mains supply is: Enclosure type B: Detachable power cord, Enclosure type A: plug, Enclosure type A & B: Pluggable A
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Enclosure type A: Plug, Enclosure type B: Appliance inlet
- The product was investigated to the following additional standards: (1) Blade configuration was evaluated and found compliant with standard for Wiring Devices-Dimensional Specifications, ANSI/NEMA WD 6., (2) Direct Plug-in Equipment complies with UL1310 mechanical assembly requirements.
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: CY2 secondary pin(CY1 and CY2 in series)
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual
- LEDs provided in the product are considered low power devices: Yes

Additional Information

N/A

Additional Standards

The product fulfills the requirements of: N/A

Markings and instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Power rating - Class II symbol	Symbol for Class II construction  (60417-2-IEC-5172)
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.

Special Instructions to UL Representative

Inspect the transformer(s) listed in Production-Line Testing Requirements (Electric Strength Test Special Constructions) per AA1.1- (C). 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 (Electric Strength Test Special Constructions) be conducted at the component manufacturer.

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models covered in this report	Transformer	--	Primary to secondary	300 0	or 4242	at least 1 s

Earthing Continuity Test Exemptions - This test is not required for the following models:

All Models

Electric Strength Test Exemptions - This test is not required for the following models:

None

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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Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
--	--	--	--	--	--

1.5.1							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					
1. Label	Interchangeable	Interchangeable	Minimum 80 degree C, suitable for plastic surface.	PGDQ2 or PGJ12	UL						
01a. Label	---	--	Molded as part of enclosure, Hot stamping, laser etching or silk screened.	--	--						
2. Plastic enclosure	SABIC JAPAN L L C (E207780)	940 (f1)	V-0, min. 2.0 mm, 120 degree C.HWI=3, Plastic enclosure secured together by ultra-sonic welding. See supplement enclosure 7-02, 7-03 for details.	QMFZ2	UL	7-02					
3. PWB	Interchangeable	Interchangeable	Min. V-1, 130 degree C.	ZPMV2	UL						
4. output cord	Interchangeable	Interchangeable	Rated VW-1 or FT-1, minimum 80 degree C, minimum 300 V, minimum 24 AWG, Used as external wire, One of the two-layer insulation is Min. 0.4 mm, maximum 3.05 m in length. One end terminated at PWB by soldering, the other end terminated with special DC connector.	AVLV2	UL						
5. AC Inlet for enclosure type B used	ZHEJIANG LECI ELECTRONICS CO LTD (E302229)	DB-8	Rated 2.5A, 250VAC, 105 degree C	AXUT2	UL						
6. Fuse (F1)	DONGGUAN BETTER ELECTRONICS TECHNOLOGY CO LTD E300003	332, 334	T2AL, 250V	JDYX2	UL						
6a. Fuse (F1) (Alternate)	DONGGUAN ANLU ELECTRONICS TECHNOLOGY CO LTD E365174	32GT	T2AL, 250V	JDYX2	UL						

6b. Fuse (F1) (Alternate)	XC ELECTRONICS (SHENZHEN) CORP LTD E249609	3T	T2AL, 250V	JDYX	UL	
6c. Fuse (F1) (Alternate)	Interchangeable	Interchangeable	T2AL, 250V	JDYX	UL	
7. Heat Shrinkable tube	Interchangeable	Interchangeable	Min. VW-1, 125 degree C, 600V.	YDPU2	UL	
8. Plug holder for enclosure A used	SABIC JAPAN L L C (E207780)	940 (f1)	V-0, min. 2.0 mm, 120 degree C.HWI=3, See supplement enclosure 7-02 for details.	QMIFZ2	UL	7-02
9. X-Capacitor (CX1) (optional)	SHANTOU XINYIN ELECTRONICS TECHNOLOGY CO LTD (E470852)	MPX	Rated minimum 250Vac, maximum 0.33uF, X2 type, minimum 110 degree C.	FOWX2	UL	
10.Y-Capacitor (CY1, CY2) (optional)	JYA-NAY CO LTD (E201384)	JN	Rated minimum 250Vac, maximum 1000 pF. Minimum 125 degree C, Y1 type.	FOWX2	UL	
11. Line chock (LF1) (optional)	--	--	130 degree C. See ID4-02 for details.	-	-	4-02
11-1. Triple insulated winding	FURUKAWA ELECTRIC CO LTD E206440	TEX-E	130 degree C.	OBJT2	UL	
11-2. Core	--	--	Ferrite, See ID4-03 for details.	--	--	
11-3. Winding	Interchangeable	Interchangeable	130 degree C.	OBMW2	UL	
11-4. Inductor (LF1) – Insulation Tape	3M Japan Limited	2245, CU-35C	155 degree C	OANZ2	UL	
12.Current Sense Resistors (R20)	--	-	Rated 0.56-10ohm, minimum 1W-2W	--	--	
13. Rectifier bridge (DB1, DB2, DB3, DB4)	-	-	Min. 2A, min. 600V	-	-	
14. E-cap (C2)	-	-	Electrolytic Type. Rated 23 - 68(F, minimum 400 V, minimum 105 degree C	-	-	
15. Transformer (T1)	TEN PAO INDUSTRIAL CO LTD	FYD042C0020	Class F, See ID4-01 for details.	-	-	4-01
15-1. T1 - Insulated system	TEN PAO INDUSTRIAL CO	TP155-2	Class F	OBJY2	-	

	LTD (E178826)	Interchangeable	Interchangeable	Ferrite, see ID4-01 for details.	-		
15-2. T1 - Core	Interchangeable	Interchangeable	Interchangeable	MW 79, MW 80, MW 82, MW 83, 155 degree C.	OBMW2	UL	
15-3. T1- Primary winding	Interchangeable	Interchangeable	Interchangeable	155 degree C.	OBJT2	UL	
15-4. T1 - Triple insulated wire	FURUKAWA ELECTRIC CO LTD (E206440)	TEX-F	TEX-F	155 degree C.	OBJT2	UL	
15-5. T1 - Insulation tape	3M Japan Limited (E59505)	2245, CU-35C	2245, CU-35C	155 degree C	OANZ2	UL	
15-6. T1 - Tubing	Great Holding Industrial Co., Ltd. (E156256)	TFT	TFT	200 degree C.	YDPU2	UL	
15-7. T1 - Bobbin	SUMITOMO BAKELITE CO LTD (E41429)	PM-9820	PM-9820	Phenolic, minimum 0.75 mm thick, rated V-0, 150 degree C.	QMFZ2	UL	
15-8. T1 - Varnish	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC (E75225)	711-F-2106	711-F-2106	180 degree C	OBOR2	UL	
16. Photo coupler (U1) (Alternate)	EVERLIGHT ELECTRONICS CO LTD (E214129)	EL817	EL817	Double protection isolation, 5000 Vac, 110 degree C	FPQU2	UL	
16b. Photo coupler (U1) (Alternate)	CHINA RESOURCES SEMICONDUCTOR(SHENZHEN)LIMITED (E465130)	PC817*	PC817*	Single protected optical isolators rated for 5000 Vrms isolation 110degree C	FPQU2	UL	
17. MOSFET (Q1)	-	-	-	Min. 7A, min. 600V	-	-	
18. Bleeder resistors (R1, R3)	-	-	-	Each rated 0.3-2.5 Mohm, minimum 1/4W	-	-	
19. Glue	Interchangeable	Interchangeable	Interchangeable	Min. V-2, provided for some primary and secondary components.	QMFZ2	UL	
20. Strain relief	Interchangeable	Interchangeable	Interchangeable	V-1 or better, See ID 7-04 for details	QMFZ2	UL	
21. Thermistor (RT1)	Interchangeable	Interchangeable	Interchangeable	NTC 2A, 0.3 Ohm at 25 degree	XGPU2	UL	

(Optional)				C			
22.Heat sink(HS1, HS2)	-		-	AL, see enclosure ID 7-05 for detail	-		7-05
23. Primary input wire for enclosure type A	Interchangeable		Interchangeable	Marked VW-1, minimum 300 V, 80 degree C.	UL		
24.Varistor (VR1) (Optional)	THINKING ELECTRONIC INDUSTRIAL CO LTD (E314979)		TVR10471, TVR10511,TVR10561, TVR14471,TVR14511 TVR14561	Rated 300Vac minimum, minimum 85 degree C, rate coating V-0	UL		
24a.Varistor (VR1) (Optional) (Alternate)	LIEN SHUN ELECTRONICS CO LTD (E315524)		10D471K, 10D511K, 10D561K, 14D471K, 14D511K, 14D561K,	Rated 300Vac minimum, minimum 85 degree C. rate coating V-0	UL		
24b.Varistor (VR1) (Optional) (Alternate)	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD (E330837)		10D471K, 10D511K, 10D561K, 14D471K, 14D511K, 14D561K,	Rated 300Vac minimum, minimum 85 degree C. rate coating V-0	UL		
24c.Varistor (VR1) (Optional) (Alternate)	SUCCESS ELECTRONICS CO LTD (E330256)		10D471K, 10D511K, 10D561K, 14D471K, 14D511K, 14D561K	Rated 300Vac minimum, minimum 85 degree C. rate coating V-0	UL		
24d.Varistor (VR1) (Optional) (Alternate)	HONGZHI ENTERPRISES LTD E324904		HEL10D471K, HEL10D511K, HEL10D561K, HEL14D471K, HEL14D511K, HEL14D561K	Rated 300Vac minimum, minimum 85 degree C. rate coating V-0	UL		

Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	Overall view 1 for enclosure type A
Photographs	3-02	Overall view 2 for enclosure type A
Photographs	3-03	Overall view 3 for enclosure type B
Photographs	3-04	Overall view 4 for enclosure type B
Photographs	3-05	Internal view for enclosure type A
Photographs	3-06	Internal view for enclosure type B
Photographs	3-07	Component side view
Photographs	3-08	PWB side view
Diagrams	4-01	Transformer T1 specification
Diagrams	4-02	Line filter LF1 specification
Schematics + PWB	5-01	PWB Layout
Miscellaneous	7-01	Model List
Miscellaneous	7-02	Enclosure drawing for type A
Miscellaneous	7-03	Enclosure drawing for type B
Miscellaneous	7-04	SR and Output connector drawing
Miscellaneous	7-05	Heatsink(HS1, HS2)







File E650715

PHO-03

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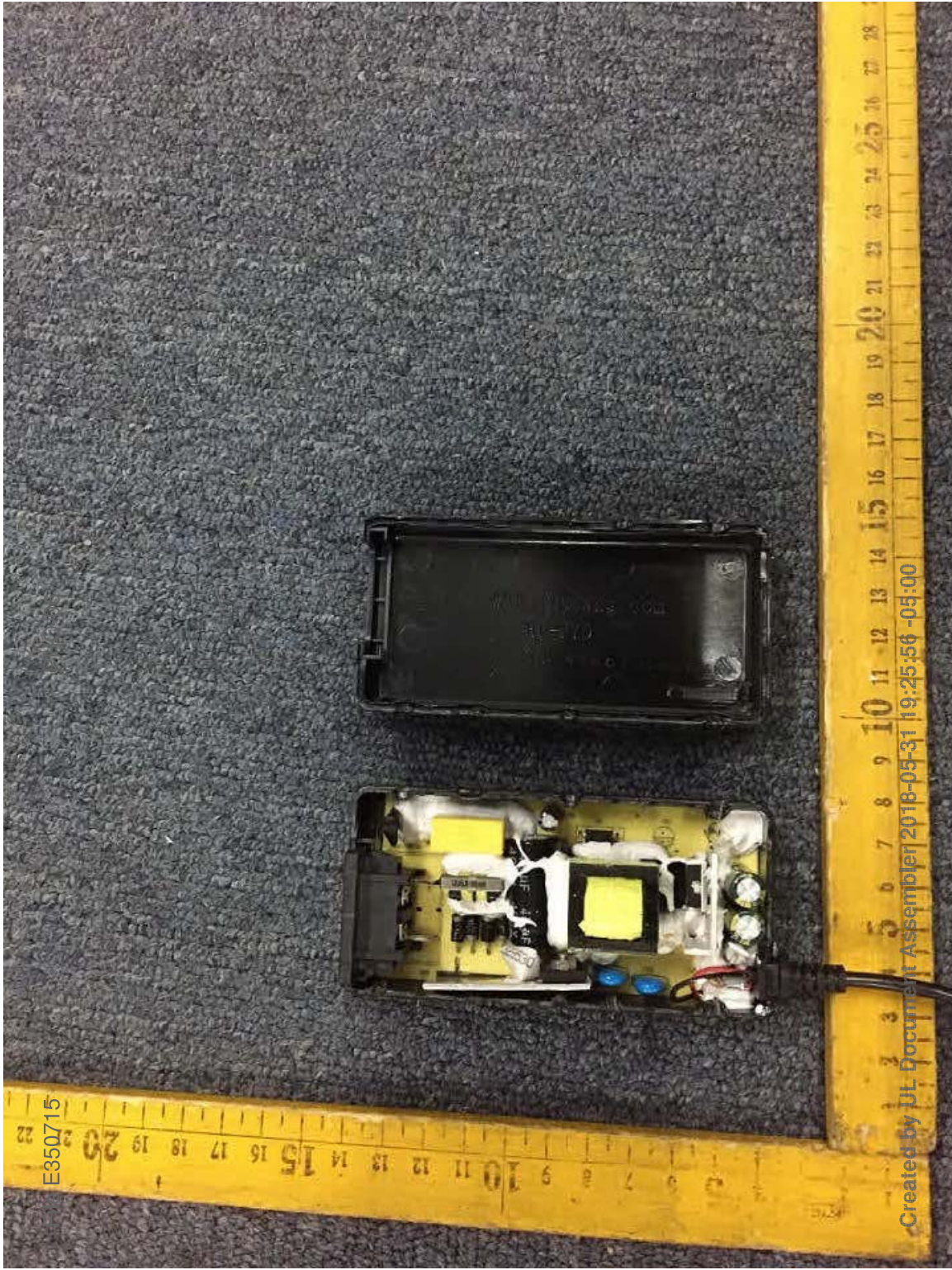


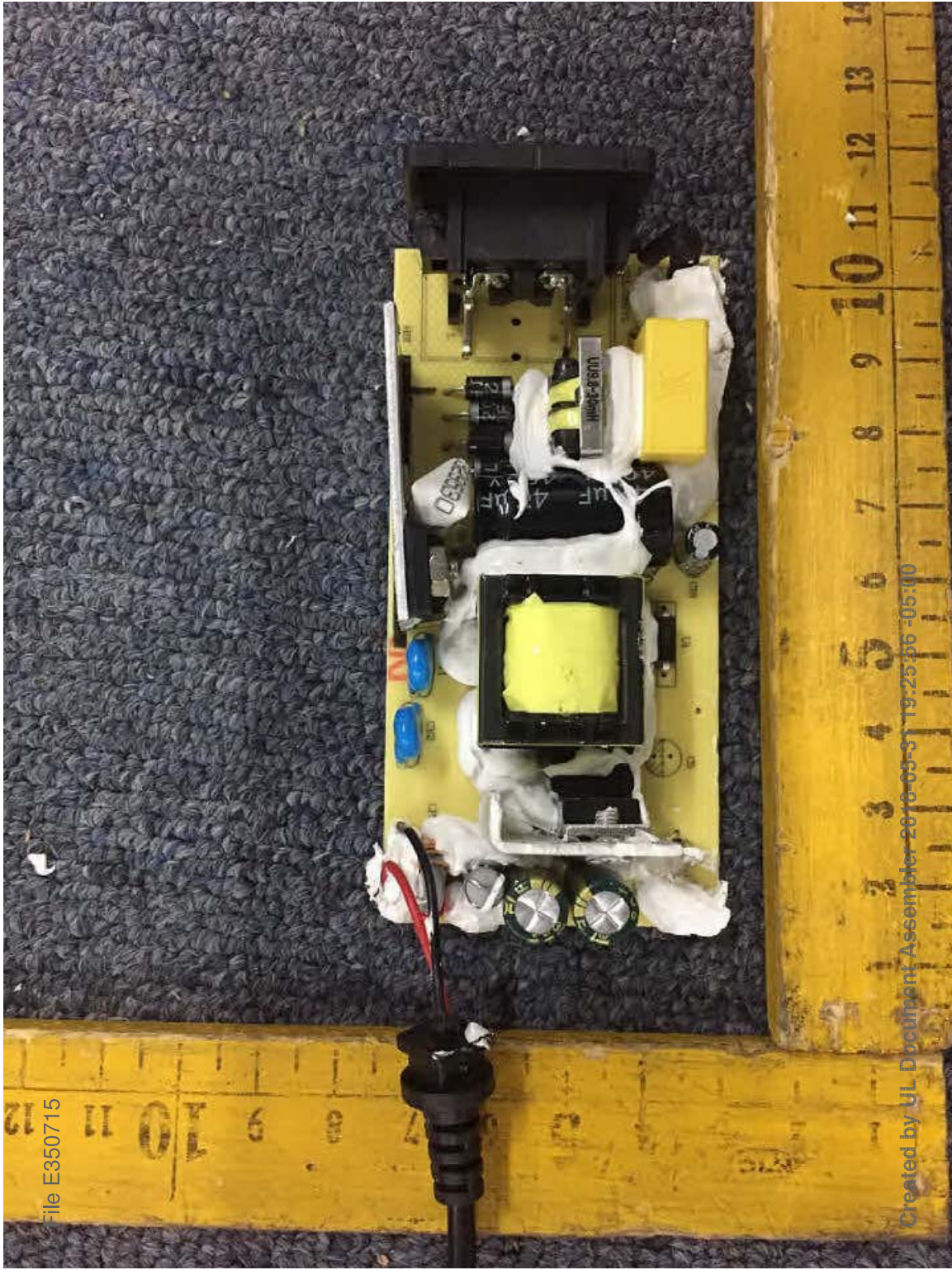
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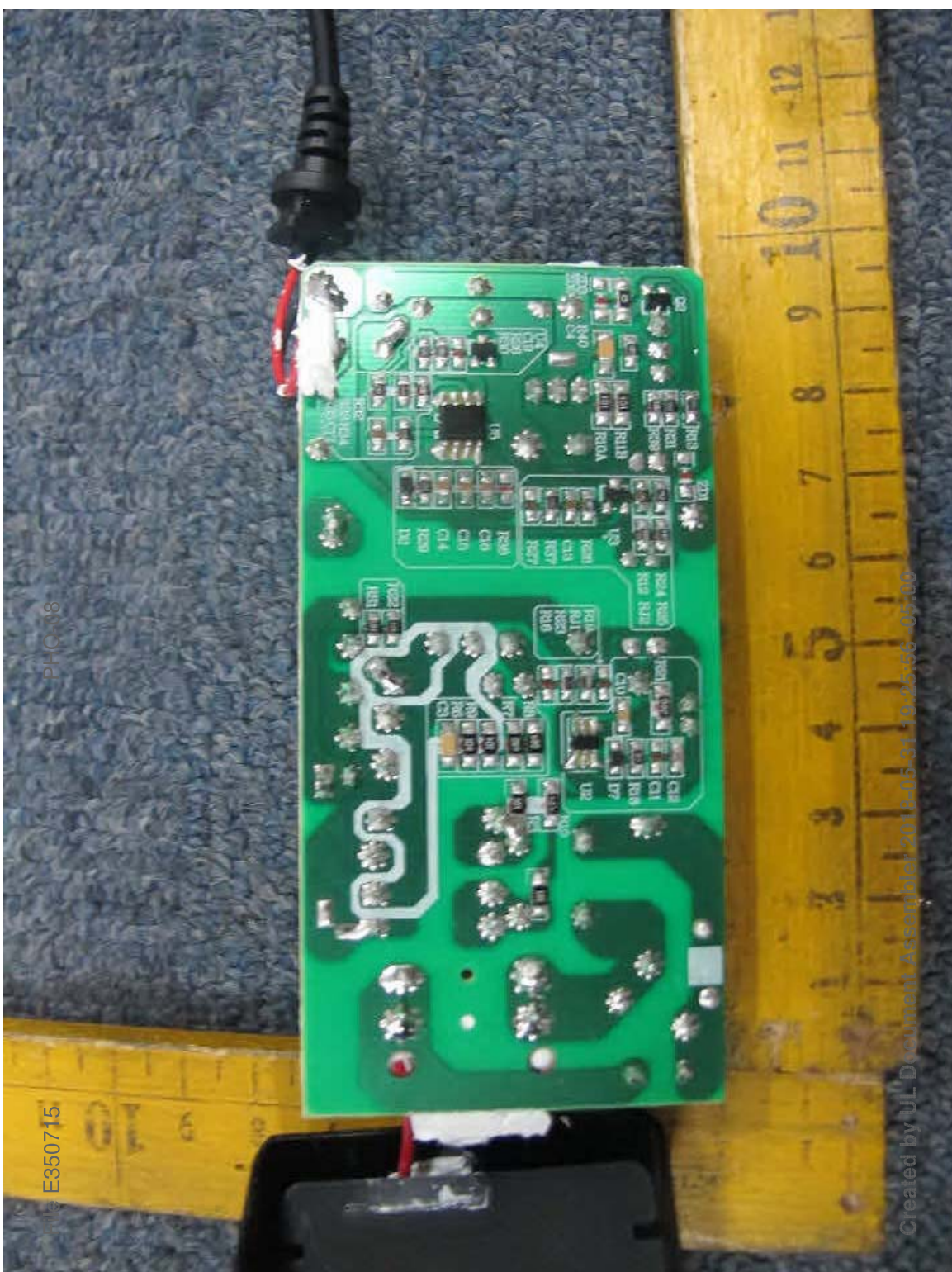
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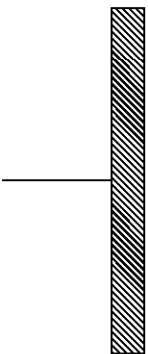
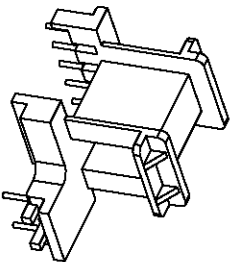
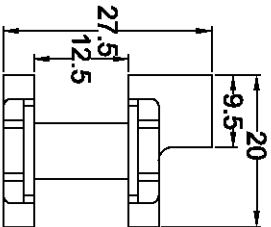


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PHQ-08

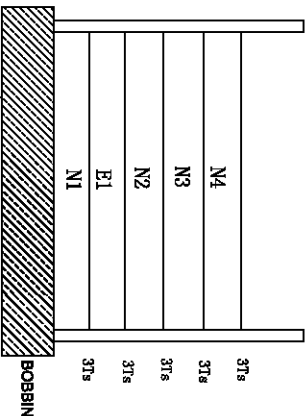
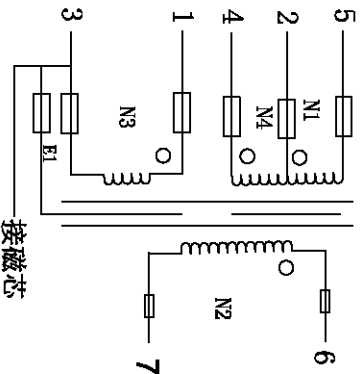
变压器规格书

变压器规格书			版本	内 容	设计者	审 核	核 准	日 期
			A/0	发行	郑工			2017.05.17
产品规格:		产品料号:	C-350-042C-A01					
产品型号:	FYD042C0020	产品批次:						
版 本:	A/0	页 码:	1 of 1					



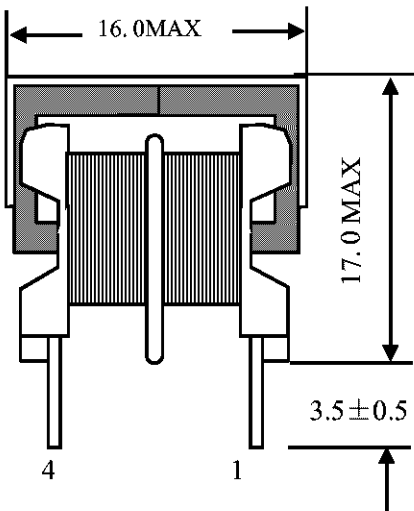
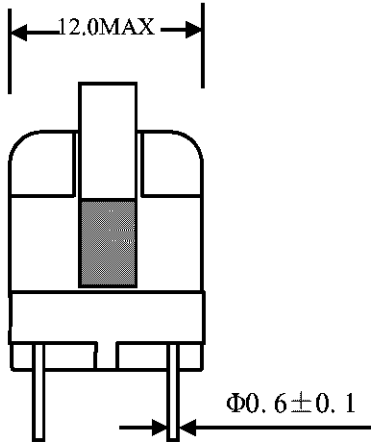
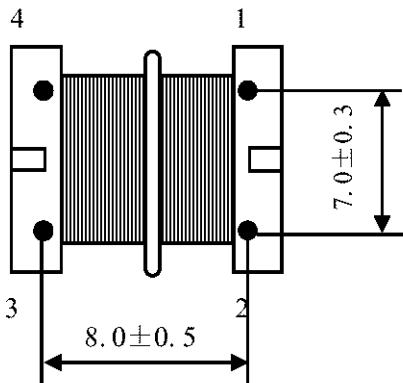
1. 电感量:1.4-5 1000-1100uH 1KHz 0.25V
2. 漏感Lk:4-5<15uH, 条件:短接N2 N3 N4绕组, 条件:1K 0.25V
3. 骨架: TDK或同等公司材料 PC44或同等材质
4. 磁芯: BF20加宽加高 5-2P1N卧式 电木, 排距21.4mm
5. 成品2脚剪 1/2,
6. 变压器需符合安规和ROHS要求.
7. 成品需包外面 沿磁芯用14mm胶带包4层
9. 屏蔽铜薄片引线需焊接在铜棒中间1/2处。磁芯用铜线接1脚
10. NP1-NP5针脚朝外(右)顺时针绕制
11. 成品初级磁芯边贴标签: FYD0420020 2941000A

初级PRI--次级SEC: 3.75VAC/5.0mA/60S, 无飞弧, 无击穿;
初级PRI--磁芯CORE: 2.0KVAC/5.0mA/60S, 无飞弧, 无击穿;
次级SEC--磁芯CORE: 2.0KVAC/5.0mA/60S, 无飞弧, 无击穿;



NP1-NP5针脚朝外(右)顺时针绕制

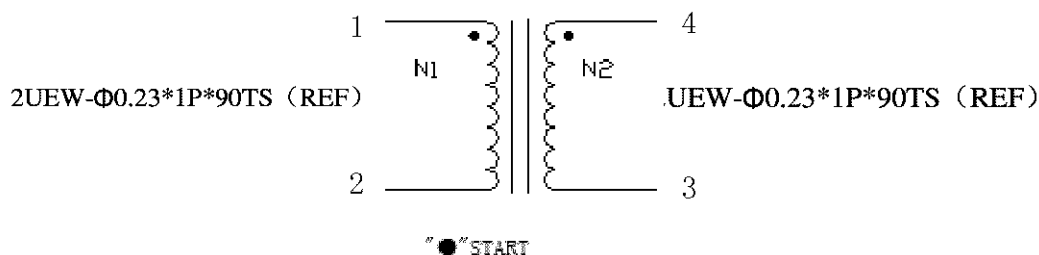
层别	始端	终端	绕线规格	圈数	绕线方式	绝缘层
N1	2	5	2UEW ϕ 0.32mm*1	34TS	绕1层	PZ TAPE 2层
E1	1	--	10mmW*0.025mmT 屏蔽铜皮背胶	0.9TS	居中不能短路	PZ TAPE 2层
N2	6	7	三层绝缘线 ϕ 0.35mm*1P	20TS	绕一层	PZ TAPE 2层
N3	1	3	2UEW ϕ 0.2mm*3	11TS	居中密绕一层	PZ TAPE 2层
N4	4	2	2UEW ϕ 0.32mm*1	34TS	绕1层	PZ TAPE 2层

CUSTOMER	CUSTOMER P/N		REV	0
1. MECHANICAL DIMENSION: (UNIT: mm) FRONT VIEW  SIDE VIEW  BOTTOM VIEW 				
深圳市信达鑫电子科技有限公司 SHENZHEN CINDA ELECTRONICS CO. , LTD 电话: 0755-89693037 传真: 0755-84665920		ZHIJIE P/N	xdx20170626001	
		DATE	2017/6/26	
		PAGE No	Page 2of 3	

审查: _____ 批准: _____ 客户确认: _____

CUSTOMER		CUSTOMER P/N		REV	0
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2、SCHEMATIC:



3、ELECTRICAL CHARACTERISTIC:.

3.1 INDUCTANCE:(TH2811, 1KHZ, 0.25V,25℃)

$L: (1-2) = (4-3) \geq 20\text{mH MIN}$

BALANCE INDUCTANCE

$|L(1-2)-(4-3)| \leq 0.5\text{mH}$

3.2 HI-POT TEST: (CS2672, AC 50Hz):

N1~N2: AC 1000V 5mA 3SEC

N1、N2~CORE: AC 500V 5mA 3SEC

3.3 INSULATION RESISTANCE: (DC500V)

BETWEEN PRI.TO SEC.AND PRI TO CORE.AND SEC.TO CORE.
THE RESISTANCE STRENGTH IS MORE THAN 100M OHM

4. MATERIAL LIST:

No.	ITEM	MATERIAL	SUPPLIER	UL No.
1	CORE	UU9.8	ZHONGXING ELECTRONIC CO., LTD OR EQUIVALENT.	
2	BOBBIN	UU9.8 4PIN	CHANGCHUN PLASTICS CO., LTD OR EQUIVALENT.	E59481 (S)
3	WIRE	MAGNET WIRE/MW75C UEW MW28UEWE	TAI-I COPPER (GUAN ZHOU) CO.,LTD	E85640
4	IRON CLIP	UU9.8	SHENZHEN DECHANG HARNWARE ACCESSORY FAC TORY	
5	VARNISH	MF-101	DONGGUAN TANGXIN MOGAO METAL FACTORY	
深圳市信达鑫电子科技有限公司 SHENZHEN CINDA ELECTRONICS CO. , LTD 电话: 0755-89693037 传真: 0755-84665920			ZHIJIE P/N	xdx20170626001
			DATE	2017/6/26
			PAGE No	Page 3of 3

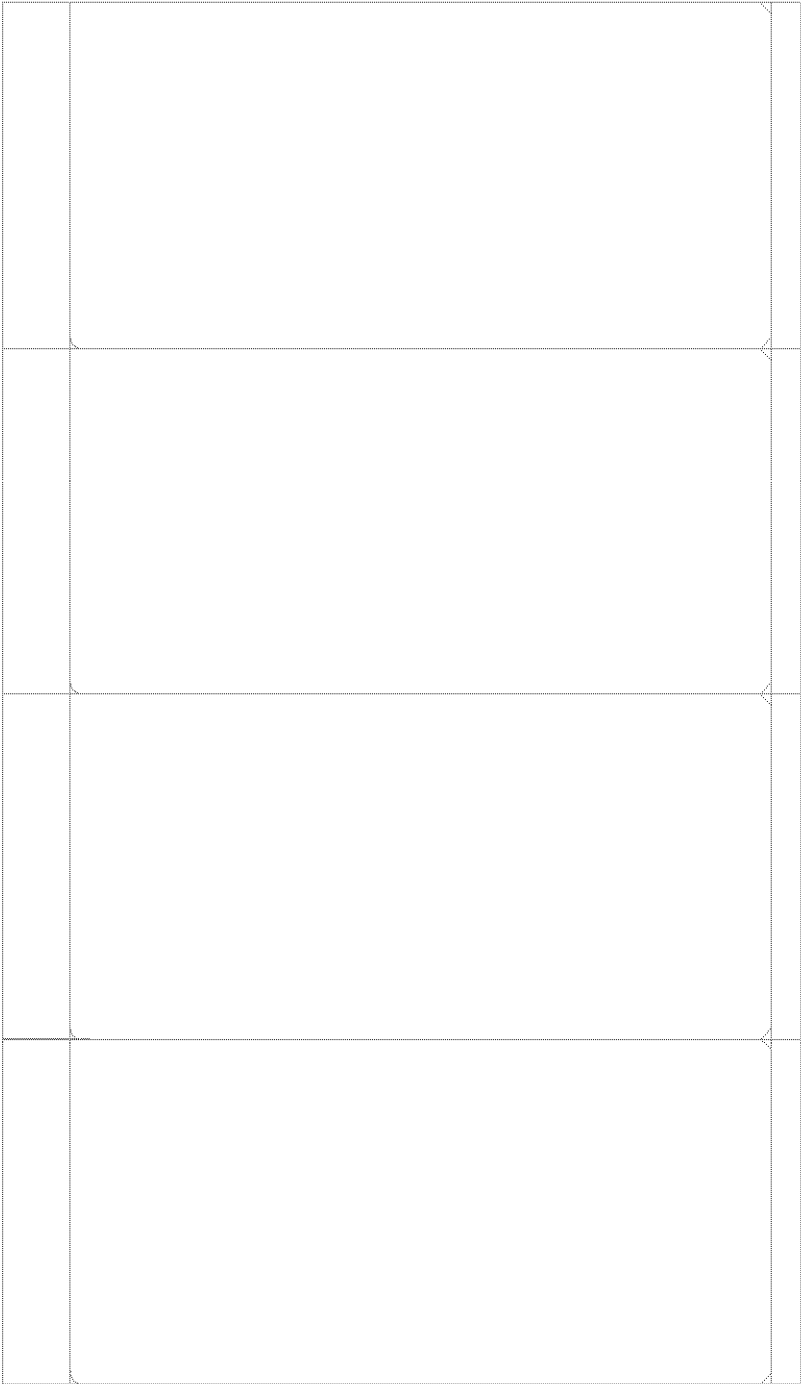
审查: _____

批准: _____

客户确认: _____

9 (mm)

SCH-01

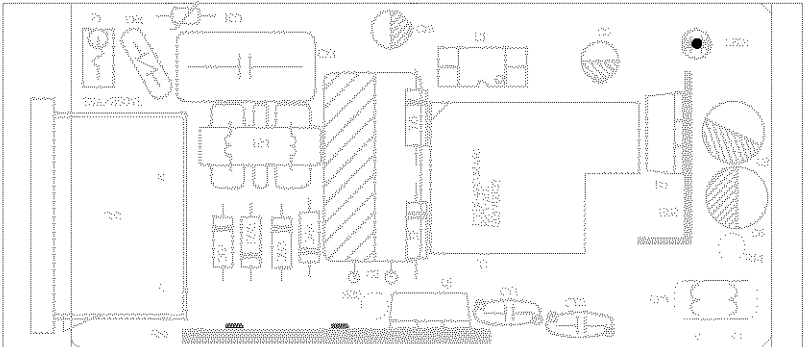


9 (mm)

22F KB 1.6MM 1#4P

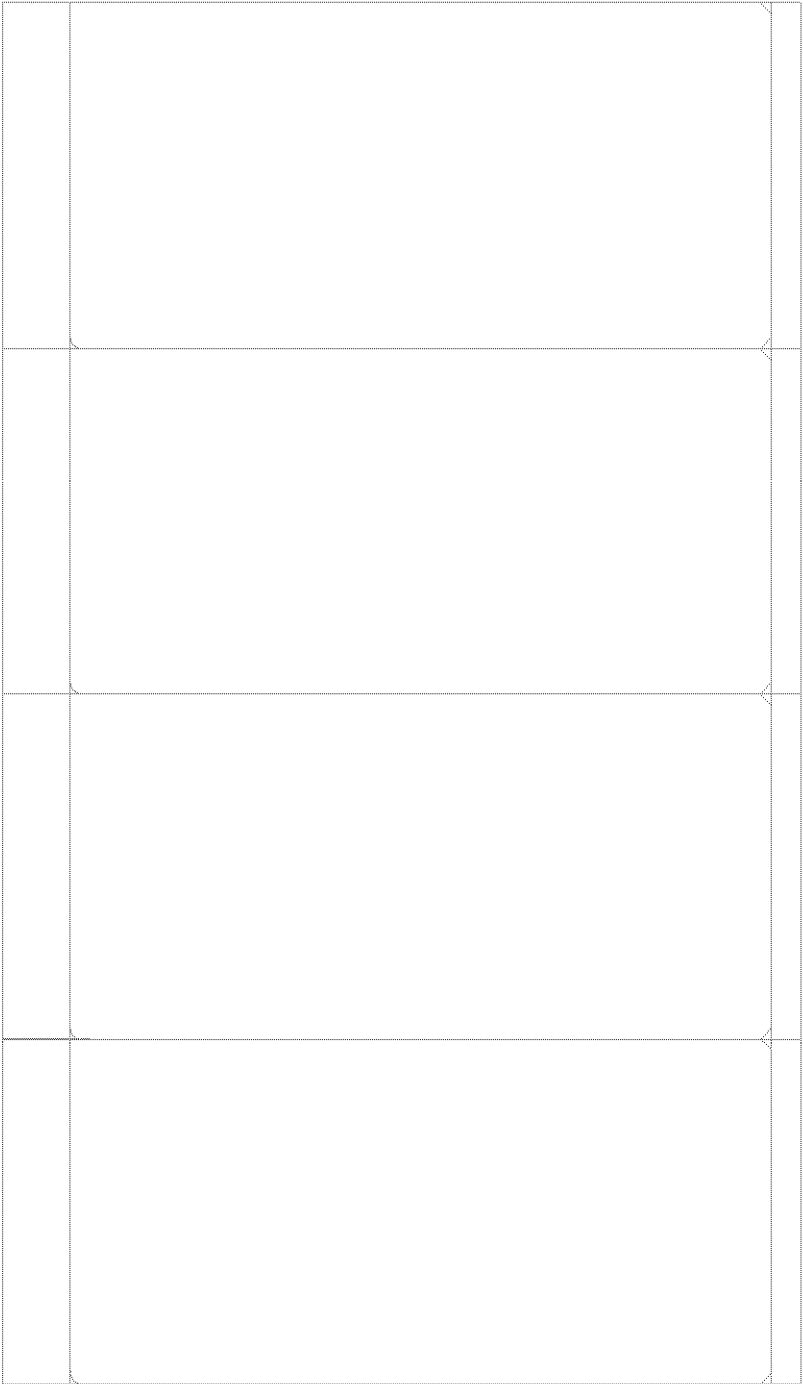
9 (mm)

4 (mm)

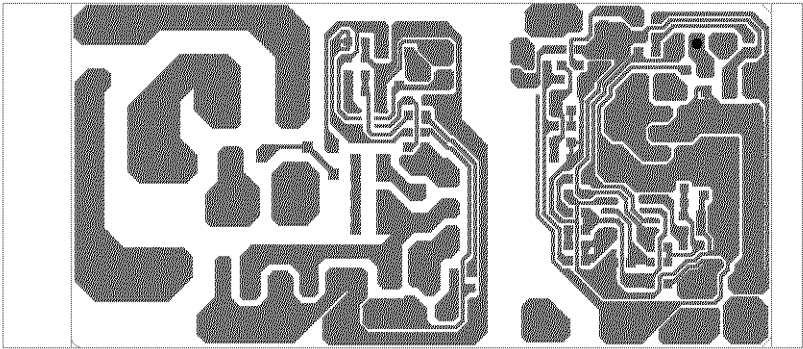


Material 22F, T=1.6mm 1#4P

22F KB 1.6MM 1#4P



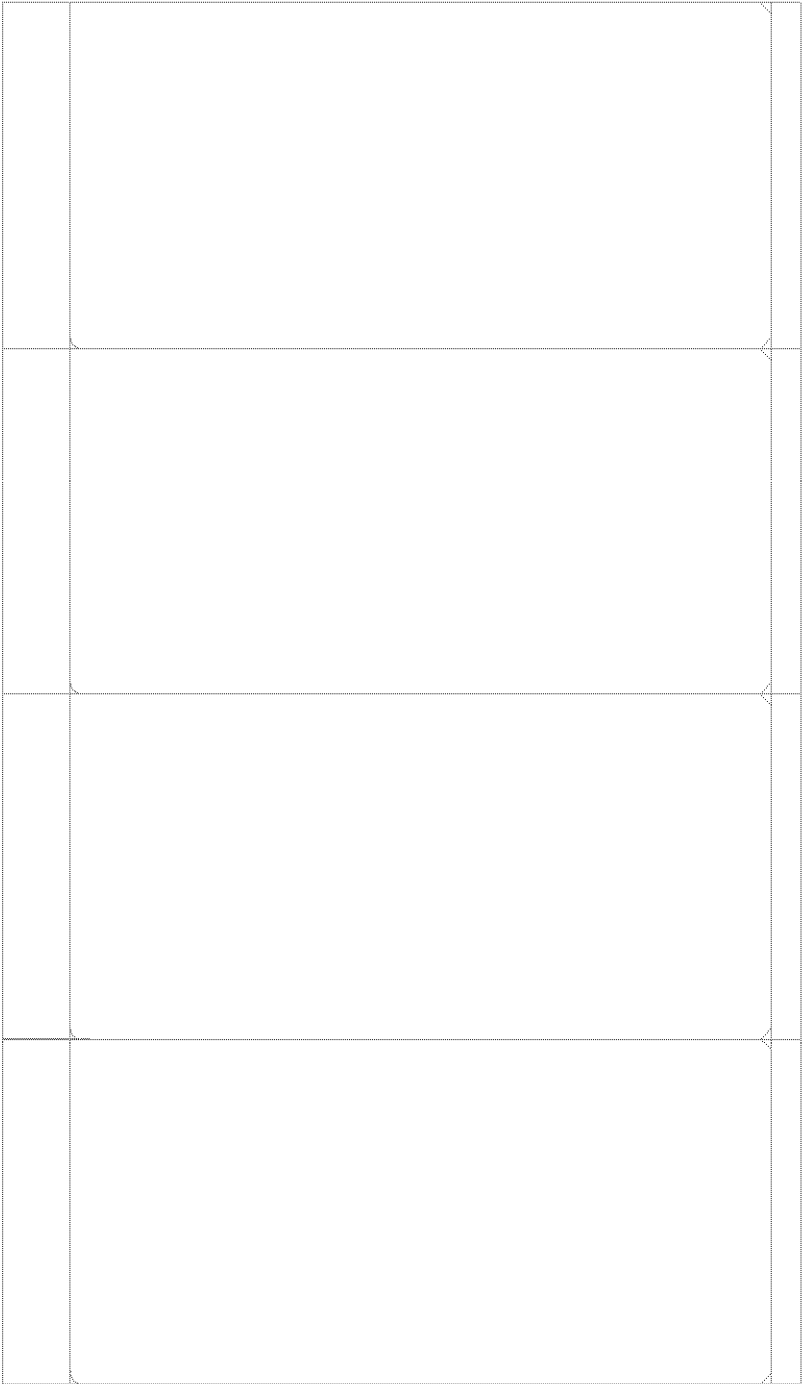
22F KB 1.6MM 1#4P



22F KB 1.6MM 1#4P

9 (mm)

SCH-01

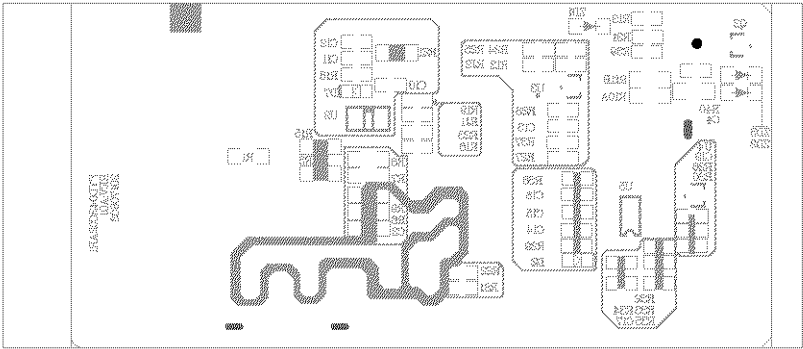


9 (mm)

22F KB 1.6MM 1#4P

9 (mm)

4 (mm)



22F KB 1.6MM 1#4P

FY042XXXXYYY, Input: 100-240Vac, 50/60Hz, 1.8A

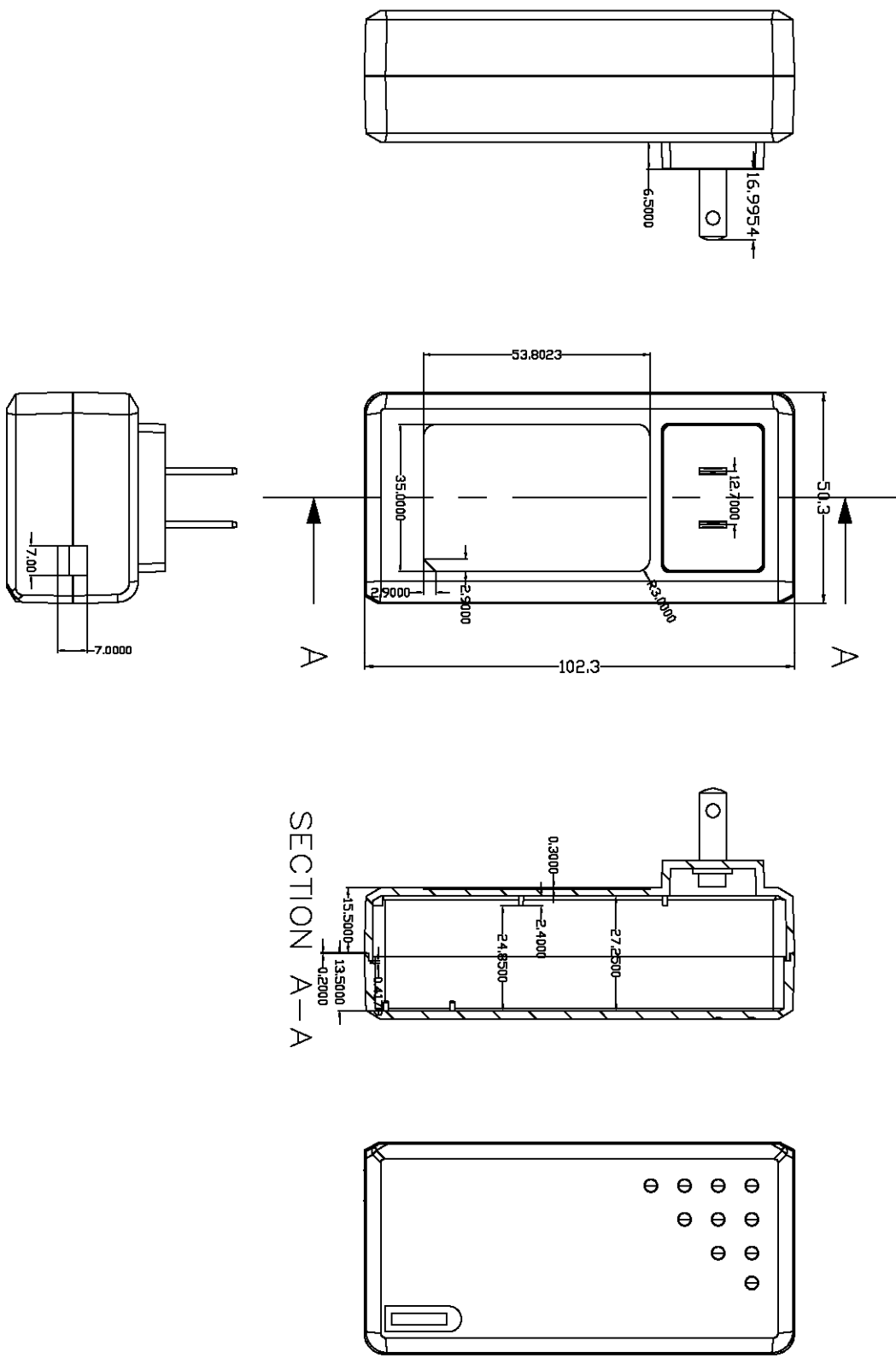
Table A: Definition of variables

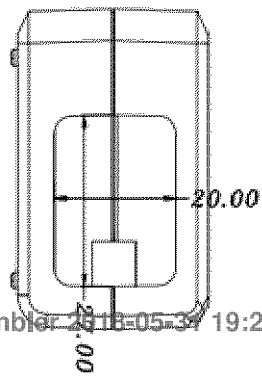
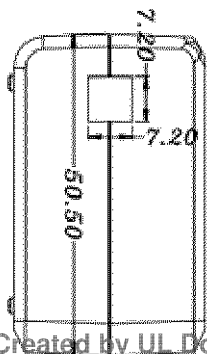
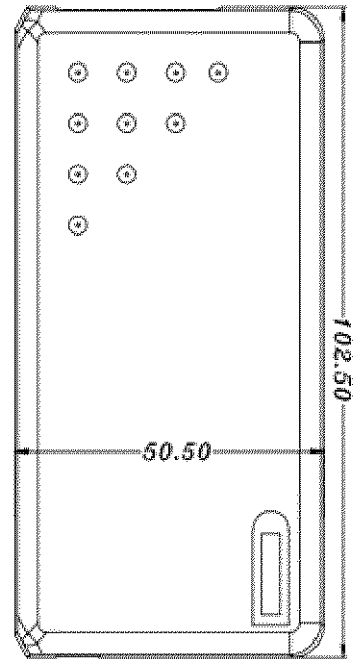
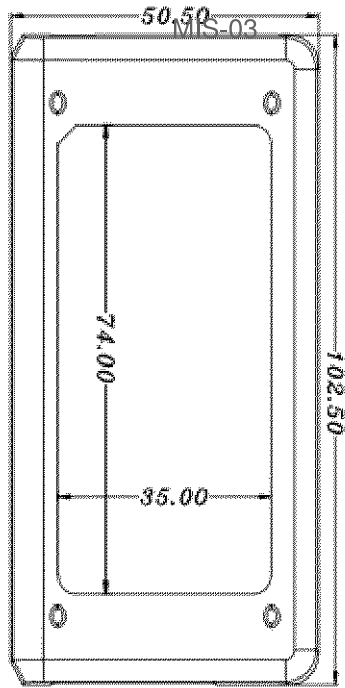
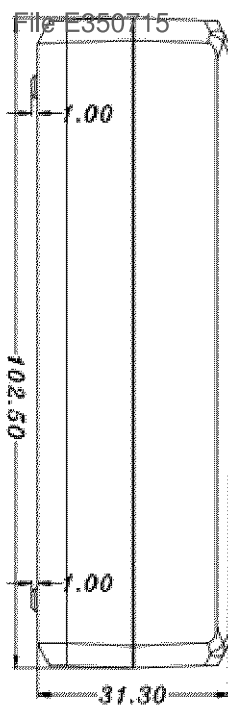
Variable:	Range of variable:	Content:
XXX	120-420	3 digits, indicate output voltage from 12.0V to 42.0V in step of 0.1V, eg. 120=12V, 420V=42.0V.
YYYY	0100-2000	4 digits, indicate output current from 0.01A to 2.0A in step of 0.01A, eg. 0100=0.1A, 2000=2.0A.

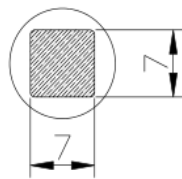
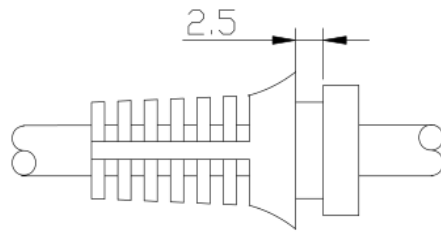
Table B: Model list and output rating

Model	Output Voltage(V)	Output Current(A)	The Max. Power(W)	Transformer Model
FY042XXXXYYY	12.0-13.0	0.1-2.0	26	FYD042C0020
	13.1-14.0	0.1-2.0	28	
	14.1-15.0	0.1-2.0	30	
	15.1-16.0	0.1-2.0	32	
	16.1-17.0	0.1-2.0	34	
	17.1-18.0	0.1-2.0	36	
	18.1-19.0	0.1-1.89	36	
	19.1-20.0	0.1-1.8	36	
	20.1-21.0	0.1-1.71	36	
	21.1-22.0	0.1-1.63	36	
	22.1-23.0	0.1-1.56	36	
	23.1-24.0	0.1-1.50	36	
	24.1-25.0	0.1-1.44	36	
	25.1-26.0	0.1-1.38	36	
	26.1-27.0	0.1-1.33	36	
	27.1-28.0	0.1-1.28	36	
	28.1-29.0	0.1-1.24	36	
	29.1-30.0	0.1-1.20	36	
	30.1-31.0	0.1-1.16	36	
	31.1-32.0	0.1-1.12	36	
	32.1-33.0	0.1-1.09	36	
	33.1-34.0	0.1-1.05	36	
	34.1-35.0	0.1-1.02	36	
	35.1-36.0	0.1-1.00	36	
	36.1-37.0	0.1-0.97	36	
	37.1-38.0	0.1-0.94	36	
	38.1-39.0	0.1-0.92	36	
	39.1-40.0	0.1-0.90	36	
	40.1-41.0	0.1-0.87	36	
	41.1-42.0	0.1-0.85	36	

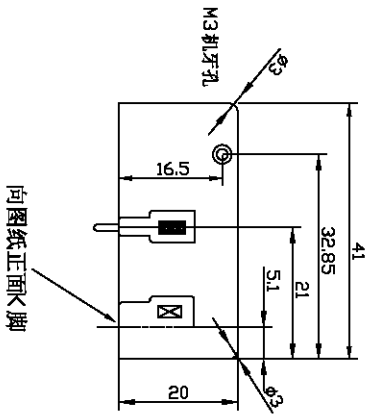
HF-FYD-50W-UL外壳图





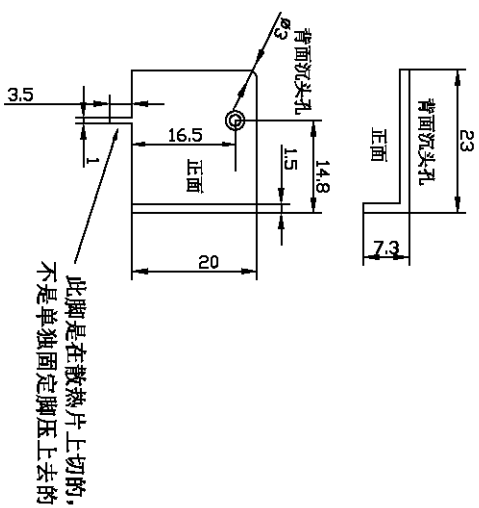


SR 尺寸图

[illegible]

1.材质: 铝
2.厚度: 2.0MM

HE0420H1



1. 材质: 马口铁 镀镍
2. 厚度: 1.5MM

HF0420HS