



The table below describes the files that were selected to be included as part of this package.

Supplements, such as Figures and Illustrations, will appear as X number of Figures, X number of Illustrations, etc., rather than naming each one.

E357718-vol2-Index
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E357718-vol2-ListingMarkData
E357718-vol2-SectionGeneral
E357718-20240524-Description
Figure-8-Total
Illustration-8-Total
E357718-vol2-Appendix
E357718-Vol2-AuthorizationPage

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MODELS	SEC	USL	CNL
Class P LED Driver, Model FLX-42-1050 DALI-2 0-10 LN PRO.	1	x	x

Note: USL - United States Standard, Listed

CNL - Canadian Standard, Listed

# Certificate of Compliance

**Certificate Number:**

UL-US-2420793-0

**Report Reference:**

E357718-20240524

**Issue Date:**

2024-05-27

Issued to:

**Eaglerise Electric & Electronic (China) Co Ltd  
GUICHENG SCIENCE & TECHNOLOGY PARK A3  
GUICHENG STREET FOSHAN, Guangdong 528200  
China**

This certificate confirms that representative samples of:  
**FKSZ - Light-emitting-diode Drivers**

**See Addendum Page for Product Designation(s).**

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

**UL 8750, Edition 2, Issue Date 2015-09-15, Revision Date 2022-12-07**

Additional Information:

See UL Product iQ® at <https://iq.ulprospector.com> for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.



David Piecuch  
UL Mark Certification Program Manager



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# CERTIFICATE OF COMPLIANCE

**Certificate number** UL-US-2420793-0  
**Report reference** E357718-20240524  
**Date** 2024-05-27

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

<b>Model</b>	<b>Product Description</b>
FLX-42-1050 DALI-2 0-10 LN PRO	LED Drivers



David Piecuch  
UL Mark Certification Program Manager

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# Certificate of Compliance

**Certificate Number:**

UL-CA-2416653-0

**Report Reference:**

E357718-20240524

**Issue Date:**

2024-05-27

Issued to:

**Eaglerise Electric & Electronic (China) Co Ltd  
GUICHENG SCIENCE & TECHNOLOGY PARK A3  
GUICHENG STREET FOSHAN, Guangdong 528200  
China**

This certificate confirms that representative samples of:

**FKSZ7 - Light-emitting-diode Drivers Certified for Canada**

**See Addendum Page for Product Designation(s).**

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

**CSA C22.2 No. 250.13, Edition 5, Issue Date 2022-05**

Additional Information:

See UL Product iQ® at <https://iq.ulprospector.com> for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.



David Piecuch  
UL Mark Certification Program Manager



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# CERTIFICATE OF COMPLIANCE

**Certificate number** UL-CA-2416653-0  
**Report reference** E357718-20240524  
**Date** 2024-05-27

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

<b>Model</b>	<b>Product Description</b>
FLX-42-1050 DALI-2 0-10 LN PRO	LED Drivers



David Piecuch  
UL Mark Certification Program Manager

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## Listing Mark Data Page

(FILE IMMEDIATELY AFTER AUTHORIZATION PAGE)

LISTING MARK

The Listing Mark consists of four elements placed in close proximity and shall appear on Listed products only. Minimum size is not specified, as long as the Listing Mark is legible. The following is suggested.



XXXX = The control number assigned by UL, E357718

The minimum height of the registered trademark symbol ® shall be 3/64 of an inch. When the overall diameter of the UL Mark is less than 3/8 of an inch, the trademark symbol may be omitted if it is not legible to the naked eye.

The product identity is: "LED CONTROLGEAR", "LED DRIVER", or "LED POWER SUPPLY"

Note- other product characteristics that have been evaluated (such as Constant Current, Constant Voltage, dimmable, Class 2) may be added (e.g., Constant Current LED Driver).

The product identity may appear elsewhere on the product when the other three elements are directly and permanently applied to the product by stamping, molding, ink-stamping, silk screening or similar process or part of the nameplate which includes the rating or the catalog or model designation.

Separable Listing Mark (not part of a nameplate and in the form of decals, stickers or labels) will always include the four elements.

The manufacturer may reproduce the Mark or obtain it from a UL authorized supplier. The list of UL authorized label suppliers can be found on UL's online directory at [www.ul.com](http://www.ul.com).

## Canadian Listing Mark Data Page

(FILE IMMEDIATELY AFTER AUTHORIZATION PAGE)

LISTING MARK

The Listing Mark consists of four elements placed in close proximity and shall appear on Listed products only. Minimum size is not specified, as long as the Listing Mark is legible.

UL Symbol to the left and the C-UL Symbol to the right. If only Canadian coverage is authorized, use only the C-UL Symbol).



Alternatively, the Canadian/US Mark may be used if both US and Canadian coverage is authorized. The UL Symbol with "C" to the left and "US" to the right.



XXXX = The control number assigned by UL, E357718

The minimum height of the registered trademark symbol ® shall be 3/64 of an inch. When the overall diameter of the UL Mark is less than 3/8 of an inch, the trademark symbol may be omitted if it is not legible to the naked eye.

The product identity is: "LED CONTROLGEAR", "LED DRIVER", or "LED POWER SUPPLY"

Note- other product characteristics that have been evaluated (such as Constant Current, Constant Voltage, dimmable, Class 2) may be added (e.g., Constant Current LED Driver).

The product identity may appear elsewhere on the product when the other three elements are directly and permanently applied to the product by stamping, molding, ink-stamping, silk screening or similar process or part of the nameplate which includes the rating or the catalog or model designation.

Separable Listing Mark (not part of a nameplate and in the form of decals, stickers or labels) will always include the four elements.

The manufacturer may reproduce the Mark or obtain it from a UL authorized supplier. The list of UL authorized label suppliers can be found on UL's online directory at [www.ul.com](http://www.ul.com).



## GENERAL

## PRODUCT COVERED:

Light-emitting Diode (LED) Drivers and Power Sources

## FACTORY LOCATION AND IDENTIFICATION:

When more than one manufacturing location is indicated on the Authorization Page Addendum for the Procedure Volume, the factory code is as specified in the Addendum.

## MANUFACTURING DATE:

Devices are required to be marked to indicate the date of manufacture. The date code is YYYY-WW. YYYY represents year, WW represents week.

## ABBREVIATIONS:

Sec. Gen. - Section General  
R/C - Recognized Component  
CNL - Canada Listed  
CNR - Canada Recognized  
USL - United States Listed  
USR - United States Recognized  
PCB - Printed Circuit Board

## GENERAL CONSTRUCTION:

General - Unless specified otherwise in the Report, all products shall comply with the following Construction Details.

Internal Wiring - Unless noted otherwise, all internal and external wiring is R/C (AVLV2). See individual section for minimum voltage and temperature ratings and insulation thickness.

Insulating Tubing and Sleeving - Unless otherwise noted, all insulating tubing is R/C (YDPU2) or (UZFT2) with minimum voltage and temperature ratings as specified in each section.

Soldered Connections - All soldered connections are mechanically secured before soldering. When hand soldered, leads on printed circuit boards are bent over prior to soldering.

Exception - Printed circuit board assemblies that are wave soldered.

Trace Layouts - PCB trace layouts, if provided in individual sections, are for the Field Representative to verify that the PCB trace layout has not changed.

Coil Device Verification - The number of turns or the DC coil resistance on coil devices specified in individual sections can be verified by comparing with coil manufacturer certification documentation.

Corrosion Protection - Parts are of corrosion resistant material or plated or painted as corrosion protection.

Tolerances - Unless specified otherwise, all indicated dimensions are minimums.

Marking and Labeling system -For Listed products pressure-sensitive labels and nameplates of the permanent type that are secured by adhesive shall 1)- comply with the Standard for Marking and Labeling Systems, UL 969, 2)- be suitable for the mounting surface material, temperature involved, and the environment to which it will be subjected. Unless noted otherwise, the label shall be min. 90 Degree C. This requirement is optional for Recognized products.

Marking letter height requirements - Product markings shall be legible. See individual report for product Markings where a minimum letter height of 1.6 mm (0.062 in.) is required.

File E357718  
Project 4791288240

May 24, 2024

REPORT

on

Listed - Drivers for Light-emitting-diode Arrays, Modules and Controllers

EAGLERISE ELECTRIC & ELECTRONIC (CHINA) CO LTD  
FOSHAN CN 528200

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## DESCRIPTION

## PRODUCT COVERED:

USL, CNL -Class P LED Driver, see electrical ratings table for models.

## ELECTRICAL RATINGS:

Model No.	Rated Input [ ] CC [ ] CV				Rated Main Output (LED+/LED-) [x] CC [ ] CV		
	Voltage [x] Vac [X] Vdc	[x] Hz	Max. Current (A)	Power (W)	Max. Voltage [ ] Vac [x] Vdc ##	Max. Current (A) ##	Max. Power (W) ##
FLX-42-1050 DALI-2 0-10 LN PRO	100- 240Vac/ 220- 240VDC	50/60 for AC	0.55	55	49	1.05	42

## - The product is provided with NFC function, which can adjust the output current and output power not exceed max. current and max. power in "ELECTRICAL RATINGS" table through the wireless APP.

## TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVES USE):

USL - Products designated USL have been investigated using US requirements as noted in the Test Record.

CNL - Products designated CNL have been investigated using Canadian requirements as noted in the Test Record.

## Product characteristics-

Model No. [x] applies to all models- see electrical ratings	Input Type	<input checked="" type="checkbox"/> Branch Circuit (Mains) <input type="checkbox"/> Isolated Circuit <input type="checkbox"/> Class 2 (a) <input type="checkbox"/> LVLE (b1) <input type="checkbox"/> LED Class 2 (b2)		
	Output Type	<input type="checkbox"/> Non-isolated <input type="checkbox"/> with PLIMIT @ 15 W (d) <input type="checkbox"/> Isolated <input type="checkbox"/> with PLIMIT @ 15 W (d) <input checked="" type="checkbox"/> Class 2 (a) <input type="checkbox"/> LVLE (b1) <input type="checkbox"/> LED Class 2 (b2)		
	Environmental Conditions	<input checked="" type="checkbox"/> Dry <input checked="" type="checkbox"/> Damp <input type="checkbox"/> Wet		
	[x] Additionally evaluated to UL 8750 Supplements	<input type="checkbox"/> SA- SREC	<input type="checkbox"/> - Evaluation per SA 3.2	<input type="checkbox"/> - Evaluation per SA 4
		<input type="checkbox"/> SB- Type HL		
		<input type="checkbox"/> SC- Type TL	Tref max/ Measured Tref- xx/ yy ° C	
		<input checked="" type="checkbox"/> SE- Class P		
		<input checked="" type="checkbox"/> SF- Wired control Circuits	<input checked="" type="checkbox"/> Evaluated per SF3.1 <input type="checkbox"/> per exception 1 <input type="checkbox"/> per exception 2 <input type="checkbox"/> Not Isolated	
		<input checked="" type="checkbox"/> SG- Temperature value @ Tc	85 ° C	
		<input type="checkbox"/> SH- Phase cut dimming		
<input type="checkbox"/> SI- Type IC LED driver				
<input type="checkbox"/> SK- Double Insulated LED equipment				

a- As defined in [x] UL 8750, Clause 7.12.1 [x] and CAN/CSA-C22.2 No. 250.13, Clause 8.12

b1- As defined in UL 8750, Section 8.16

b2- As defined in CAN/CSA-C22.2 No. 250.13, Annex A

d- Refers to a circuit of 15 W maximum power limit under normal and single fault conditions, as defined in UL 8750, section 8.8 and CAN/CSA-C22.2 No. 250.13, section 9.6

## CONSTRUCTION DETAILS:

Corrosion Protection - Ferrous metal parts are protected against corrosion by plating or painting.

Soldered Connections - All soldered connections are mechanically secured before soldering.

Printed Wiring Boards - Suitable for the solder time and temperature used by the manufacturer.

Compliance with applicable Canadian requirements is confirmed based on the UL Mark for Canada for the component (i.e. c-UL coverage, which is identified by the UL CCN followed by 7, 8 or 9). Alternatively, the description may include 'CN' immediately after the UL CCN. CN indicates that UL Evaluation Staff have verified that the component meets applicable Canadian requirements for the component based on its CSA approval. 'CN' is always noted in conjunction with the UL CCN indicating UL Certification per applicable US requirements for the component.

## and Report

## Product markings &amp; information on an instruction sheet or the like;

	Description	Comment
x	Company name (as identified in Online directory) or File number	
X	Model designation-	
x	Factory ID, when more than one factory	
X	Date Code	See Section General.
X	Environmental considerations	See product characteristics table- §
X	Electrical Ratings	See electrical ratings table- §
X	Input & Output Types	See product characteristics table- §
X	Class 2 outputs	See product characteristics table- 'Class 2' marked on the device.
X	Polarity of supply connections	Applies to [X]Input, [X] Output- §
x	Class P LED drivers	See product characteristics table- optional marking 'Class P' on LED driver. If marking is provided, then the LED driver is marked "For Connections Use Wire Rated for at Least 90°C (194°F); POUR LES CONNEXIONS, UTILISER DES CONDUCTEURS D'ALIMENTATION CONVENANT 90 °C", " or equivalent. [x] Device marked 'Use only within an enclosure; DOIT ÊTRE INSTALLÉ DANS UNE ENCEINTE' or equivalent §
x	Push-in terminals	The installation instructions contain the following information: a) For releasing the wire from the terminal connection, b) The intended wire size(s), c) Whether the terminal is intended for both solid and stranded or just solid wire, d) The length to strip the insulation from conductors, and e) The terminal relationship to the internal circuitry. f) For input connection, use of wires [up to 152 mm (6 in)] to transition to branch circuit wiring
x	Wired Control Circuits	See product characteristics table- 1. Identification of the terminals or lead wires for control circuits - § 2. Identification of the intended industry or proprietary protocols- § 3. Installation instructions 4. [X] For DA+ AND DA-: "CAUTION: More than one power supply present; ATTENTION: presence de plusieurs alimentations électriques)" or equivalent- §, 5. [x] Device wired control circuit(DIM+/DIM-) marked 'Class 2'
X	Temperature Measurement Point (Tc)	See product characteristics table- Tc point location marking on device. See Ill. 7 for Tc location. The Tref max values may be marked on the device in the following format: 85°C- §
X	Harmonic Emissions ¥	Information to be provided in an instruction sheet or the like for LED drivers evaluated per CSA 250.13 (clause 8.13).  Manufacturer indication regarding LED driver load types where the driver meets the harmonic emissions requirements of ANSI C82.77-10.
x	Maximum Ambient (Ta)	Optional, Ta= 45°C

x- Denotes applicable product markings

§- For Components (built-in products) this information may be provided on the product, or on an instruction sheet or the like.

#- For products with the UL Mark for Canada, this marking is also provided in French.

¥- This marking criteria is related to LED drivers evaluated per CSA 250.13.

## and Report

MODEL FLX-42-1050 DALI-2 0-10 LN PRO - FIGS. 1- 8

General - The general design, shape and arrangement shall be as illustrated except where variations are specifically described. The unit for all the dimension drawing is mm.

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F)IG (I)LL
1	Driver Housing	QMFZ2/ 8	Covestro Deutschland AG [PC Resins] (E41613)	2805 + (z) (f1)	Two pieces construction: Body and Cover, Rated V-2, HWI=2, HAI=0, CIT=2, 115°C, min. 1.5 mm thick. See Ill.1 for detailed dimensions. Secured together by snap fit.	(I)1
2	End Cap	QMFZ2/ 8	Covestro Deutschland AG [PC Resins] (E41613)	2805 + (z) (f1)	Optional. Two sets provided. Each set consist of base and cover, secured together by integral hinger, Rated V-2, HWI=2, HAI=0, CIT=2, 115°C, min.1.5mm thick. There can be two kinds of construction, See Ill. 2 or 2A for detail dimensions. Mechanically fitted with Driver Housing by integral tab.	(I)2 (I)2A
3	Input Terminal Block (CON1) /Output Terminal Block(CON2)/Dimming Terminal Block(CON3)	XCFR2/ 8	DEGSON TECHNOLOGY CO.,LTD. (E228872)	DG250-3.5	Push-In Type. Rated 300 V,8 A, 105°C. Suitable for 16-22 AWG, SOL/STR leads. Suitable for field wiring.  Mechanically secured on PCB by passing a hole before soldering.	-
-	Alternate	XCFR2, XCFR8	PUTIAN HANJIANG FUCON ELECTRONICS CO LTD (E338959)	CM-250	Same as above except rated 300 V, 7 A, 115°C. Suitable for 16-24AWG, SOL/STR leads.	-
-	Alternate	XCFR2, XCFR8	HEAVY POWER CO LTD(E152546)	250	Same as above except rated 300 V, 5 A, 115°C. Suitable for 16-24AWG, SOL/STR leads.	-
-	Alternate	XCFR2, XCFR8	YUEQING DONGNAN ELECTRONICS TECHNOLOGY CO LTD(E225227)	DN250A	Same as above except rated 300 V, 7 A, 85°C. Suitable for 16-24AWG, SOL/STR leads.	-
-	Alternate	XCFR2, XCFR8	DONGGUANSHI CHANGHE ELECTRONICS CO LTD(E256644)	CS200-00- 350	Same as above except rated 300 V, 10 A, 120°C. Suitable for 16-24AWG, SOL/STR leads.	-
-	Alternate	XCFR2, XCFR8	Jiangsu Changhe Electronics Co Ltd (E473178)	CS200-00- 350	Same as above except rated 300 V, 7A, 105°C. Suitable for 16-20AWG, SOL/STR leads.	-
3	Main Printed Wiring Board	ZPMV2/ 8	Various	Various	Rated min. V-1, 130 °C. Measured 1.0 mm thick, overall 40 mm width by 94 mm length. Suitable for support of live parts. Mechanically fitted within Driver Housing.  See ILL.3 for PWB trace/component layouts.	(I)3



## and Report

No.	Item	CCN	Manufacturer (File Number)	Part/Model Number	Description / Technical Data	(F) IG (I) LL
4	Small Printed Wiring Board	ZPMV2/ 8	Various	Various	Rated min. V-1, 130 °C. Measured 1.0 mm thick, overall 25 mm width by 70 mm length. Suitable for support of live parts. Soldered to Main PWB.  See ILL.4 for PWB trace/component layouts.	(I) 4
5	Fuse (F1)	JDYX2/ 8	XC ELECTRONICS (SHENZHEN) CORP LTD (E249609)†	24T	Rated 3.15 A, 250Vac/250Vdc, connected in series with ungrounded supply.	-
-	Alternate	JDYX/7	Various	Various	Same as above.	-
6	Varistor (VR5)	VZCA2/ 8	Various	Various	SPD 5, Minimum rated operating voltage 320Vac, temperature rating min.105 °C. (Note: SPD does not include Note 3 or Note 4)	-
7	Varistor (VR6)	VZCA2/ 8	Various	Various	SPD 5, Minimum rated operating voltage 350Vac, minimum 350V MCOV, minimum 1.25 KA In, maximum 1280 Vpeak MLV, temperature rating min.105 °C. (Note: SPD does not include Note 3 or Note 4)	-
8	Varistor (VR2)	VZCA2/ 8	Various	Various	SPD 5, Minimum rated operating voltage 470Vac, temperature rating min.105 °C. (Note: SPD does not include Note 3 or Note 4)	-
9	X-Capacitor (CX1)	FOWX2/ 8	Various	Various	Class X1 or X2. Rated Min. 275 V, min. 105°C, max. 0.33uF. Located across the line.	-
10	Y-Capacitor (CY2/CY3/CY4)	FOWX2/ 8	Various	Various	Class Y1. Rated min. 400 V, min. 105°C. CY2/CY3: max. 470pF, bridging Primary circuit to secondary main output circuit. CY4: max. 2200pF, bridging Primary circuit to secondary wire control circuit output.	-
11	Optical Isolators (U7/U8/U9/U10)	FPQU2/ 8	Various	Various	Rated min. 3750 V isolation voltage, min 100 °C.	-
12	E-Capacitor (CE1/CE4/CE5/C E3)	N/A	N/A	N/A	Electrolytic type. Rated min. 105°C  CE1/CE4/CE3: Rated min. 50 V, 47 µF, CE5: Rated min. 80 V, 300 µF.	-
13	Potting Compound	QMFZ2/ 8	Shenzhen Opute Industry Materials Co., Ltd (E335127 )	916	Silicone. Rated V-0, 150°C. Partly covered the components on LED driver. Weight: 400 g.	-
14	Winding Device	N/A	N/A	N/A	See "Winding devices "table.	-
15	Other Components	N/A	N/A	N/A	See Ill. 5 for details.	(I) 5

Winding devices - See below for details.

No.	Item	CCN	Manufacturer (File Number)	Part Number	Rating	(F)IG (I)LL
1	Inductor (LF1/LF3)	N/A	N/A	N/A	Rated 10uH-50uH;	-
1.1	Core	N/A	N/A	N/A	Ferrite. Overall 9 mm OD by 5 mm ID by 3 mm thick.	-
1.2	Coil(N1)	OBMW2	Various	Various	Enameled copper wire. Rated min. 130°C. 0.4 mm diameter,10 turns X 1 P.	-
1.3	Coil(N1)	OBJT2	Various	Various	Enameled copper wire. Rated min. 130°C. 0.4 mm diameter,10 turns X 1 P.	-
1.4	Base	QMFZ2	Various	Various	Phenolic. 0.71 mm thick min., rated V-0, 150°C min.	-
2	Inductor (LF6)	N/A	N/A	N/A	Rated min. 25mH;	-
2.1	Core	N/A	N/A	N/A	Ferrite. Overall 16.7 mm length by 10.6 mm width by 17.6 mm height.	-
2.2	Bobbin	QMFZ2	Various	Various	Phenolic. 0.71 mm thick min., rated V-0, 150°C min.	-
2.3	Winding (N1/N2)	OBMW2	Various	Various	Enameled copper wire. Rated min. 130°C. 0.25 mm diameter, 102 turns X 1 P.	-
2.4	Tape	OANZ2, CN	Various	Various	Polyethylene terephthalate film tapes. Rated 130°C. 0.025 mm thick per layer, two layers provided.	-
3	Inductor (LF2)	N/A	N/A	N/A	Rated max. 50uH;	-
3.1	Core	N/A	N/A	N/A	Ferrite. Overall 6 mm OD by 3 mm ID by 3 mm thick.	-
3.2	Coil(N1/N2)	OBMW2	Various	Various	Enameled copper wire. Rated min. 130°C. 0.21 mm diameter,6 turns X 1 P.	-
3.3	Base	QMFZ2	Various	Various	Phenolic. 0.71 mm thick min., rated V-0, 150°C min.	-
4	Inductor (L6)	N/A	N/A	N/A	Rated 220uH;	-
4.1	Core	N/A	N/A	N/A	Ferrite. Overall 12.7 mm OD by 7.62 mm ID by 4.75 mm thick.	-
4.2	Coil(N1)	OBMW2	Various	Various	Enameled copper wire. Rated min. 130°C.0.25 mm diameter,102 turns X 1 P.	-
4.3	Base	ZPMV2	Various	Various	Phenolic. 0.71 mm thick min..	-
5	Inductor (L1)	N/A	N/A	N/A	Rated 0.95mH-1.25mH.	-
5.1	Core	N/A	N/A	N/A	Ferrite. Overall 10 mm OD by 18 mm height.	-
5.2	Coil (N1)	OBMW2	Various	Various	Enameled copper wire. Rated min. 130°C. 0.31 mm diameter, 170+5 turns X 1 P.	-
5.3	Tube	YDPU2	Various	Various	Rated 300 V, 200 C, min. Fully Covered Coil and core.	-

## Winding devices (CON'D):

No.	Item	CCN	Manufacturer (File Number)	Part Number	Rating	(F) IG (I) LL
6	Transformer (T1)	-	N/A	N/A	See Ill. 6 for the specification	(I) 6
-	Electrical insulation system	OBJY2/ 8	ZHONG SHAN SHI YINGXING ELECTRONIC CO LTD (E335791)	YINGXING 130- TM	Rated 130°C (Class B), OBJS2 Found on SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD (E233623), model TaiHu 130-TM, (Table:XI).	-
6.1	Core	N/A	N/A	N/A	Ferrite. The outer surface is fully covered with 2 layers of Tape.	-
6.2	Bobbin	QMFZ2/ 8	CHANG CHUN PLASTICS CO LTD (E59481)	T200HF	Phenolic. Rated V-0, 150°C, min. 0.71 mm thick.	-
6.3	Primary Windings (N1,N2)	OBMW2	Various	Various	Enameled copper wire, ANSI Type MW28/75/79/80/82/83/85, rated 130°C min.	-
6.4	Secondary Windings (N3,N4,N5)	OBJT2	KBI COSMOLINK CO.,LTD.( E213 764)	TIW-M(XX)	Insulated Winding Wire. Rated 130°C  Provided 2 layer of Tape at outer surface of winding.	-
-	Alternate	OBJT2	FURUKAWA ELECTRIC CO LTD (E206440)	TEX- ELZ(xx) (yy)	Insulated Winding Wire. Rated 130°C  Provided 3 layer of Tape at outer surface of winding.	-
6.5	Tape	OANZ2, CN	3M COMPANY (E17385 )	1298 (b)	Polyester film/mat composite insulating tapes. Rated 130°C. 0.025 mm thick per layer, two layers provided.	-
6.6	Varnish	OBOR2	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD (E228349)	ET-90 (a)	Rated min. 130 C.	-
6.7	Tubing	YDPU2	CHANGYUAN ELECTRONICS GROUP CO LTD (E180908)	CB-TT-T	Rated 300 V, min.200 C.	-

Figure-1 Page-1

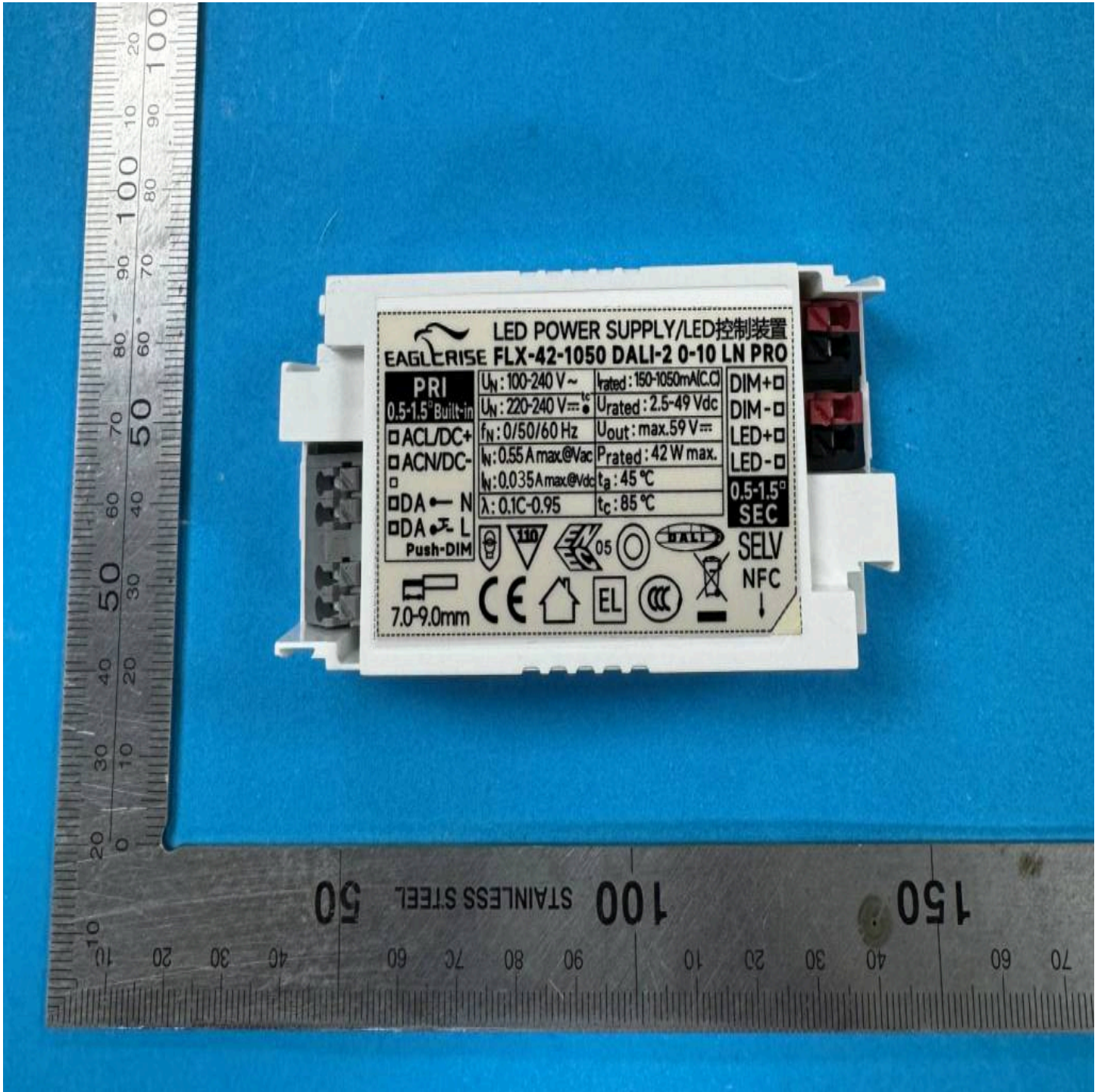


Figure-2 Page-1

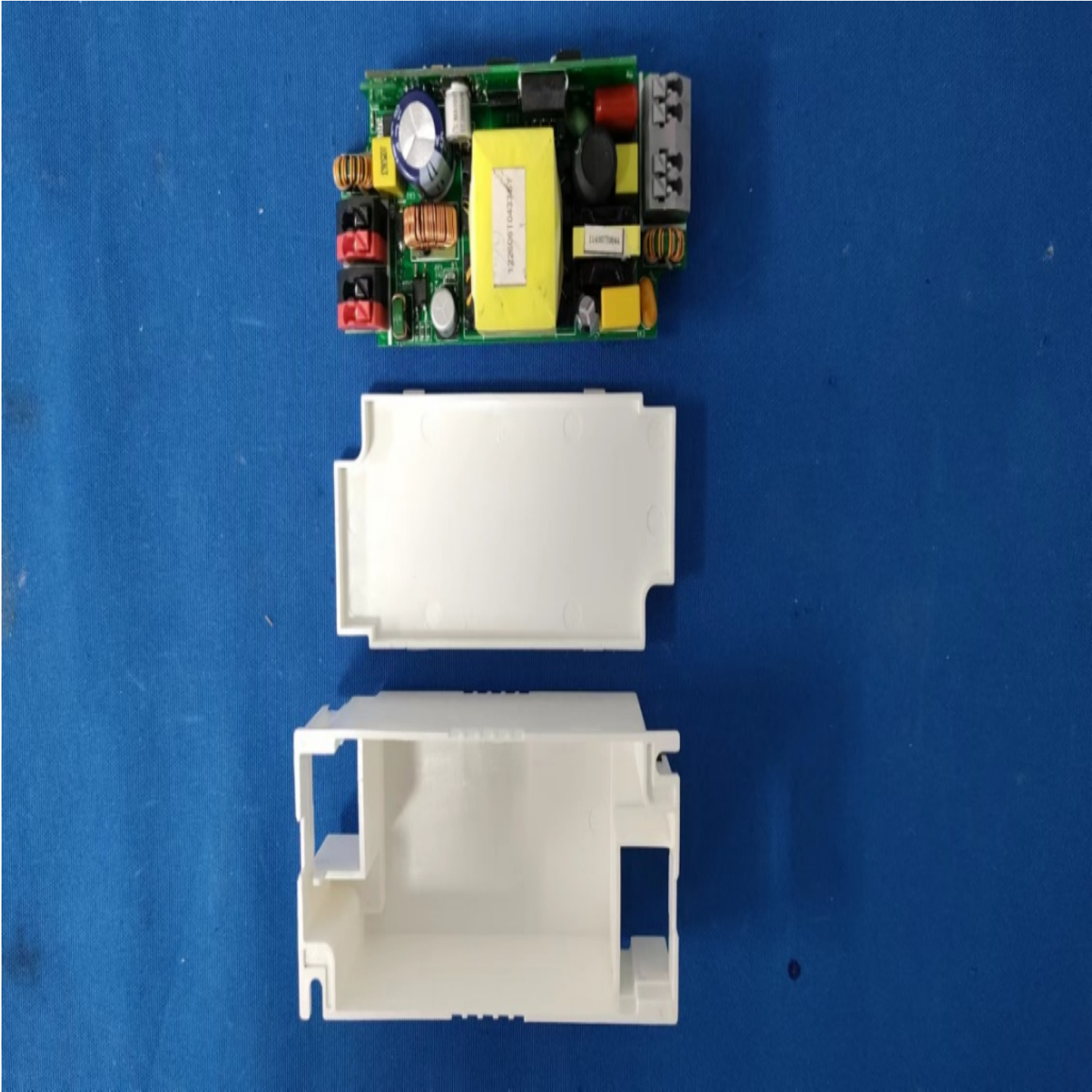




Figure-3 Page-1

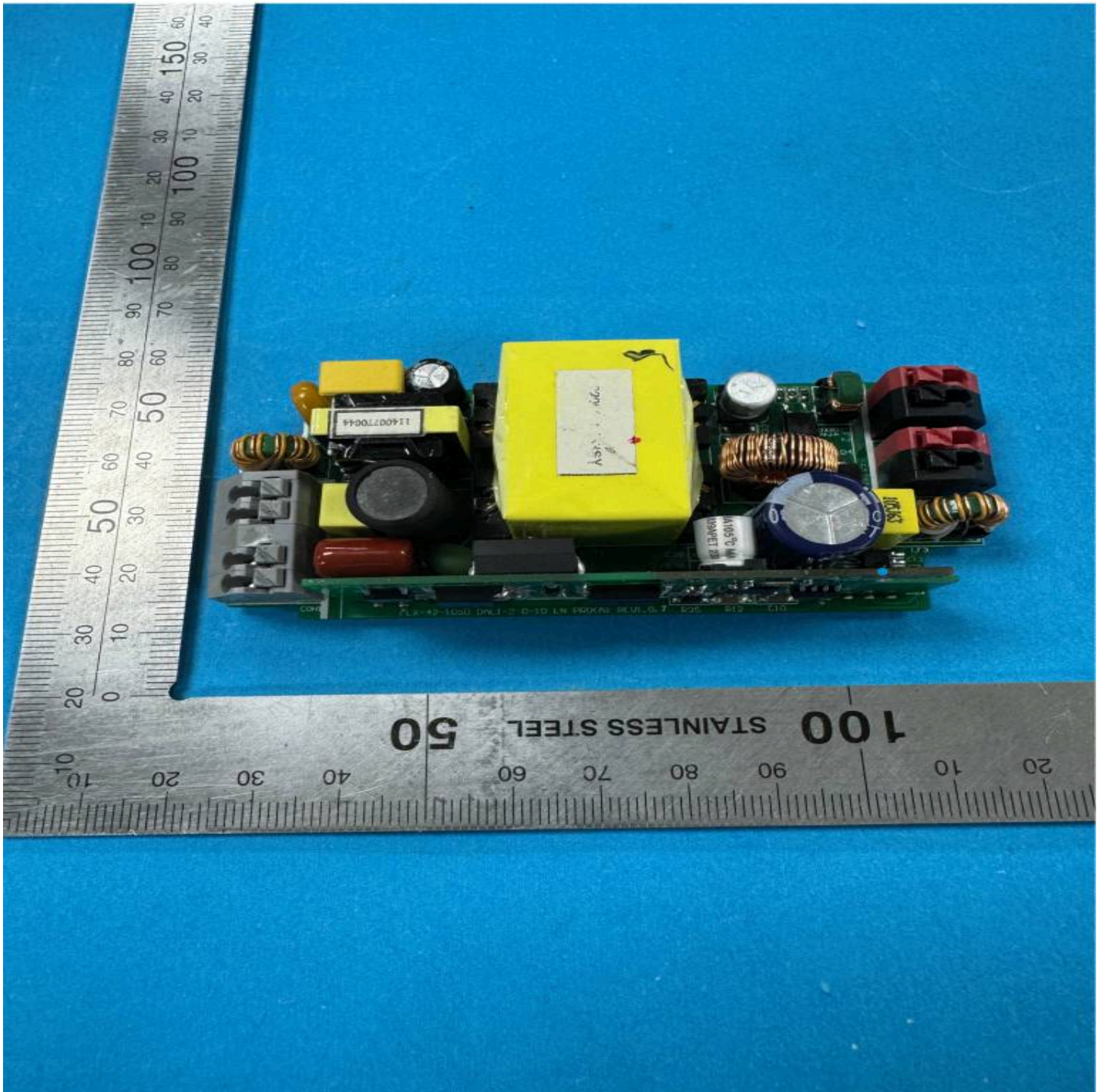




Figure-4 Page-1

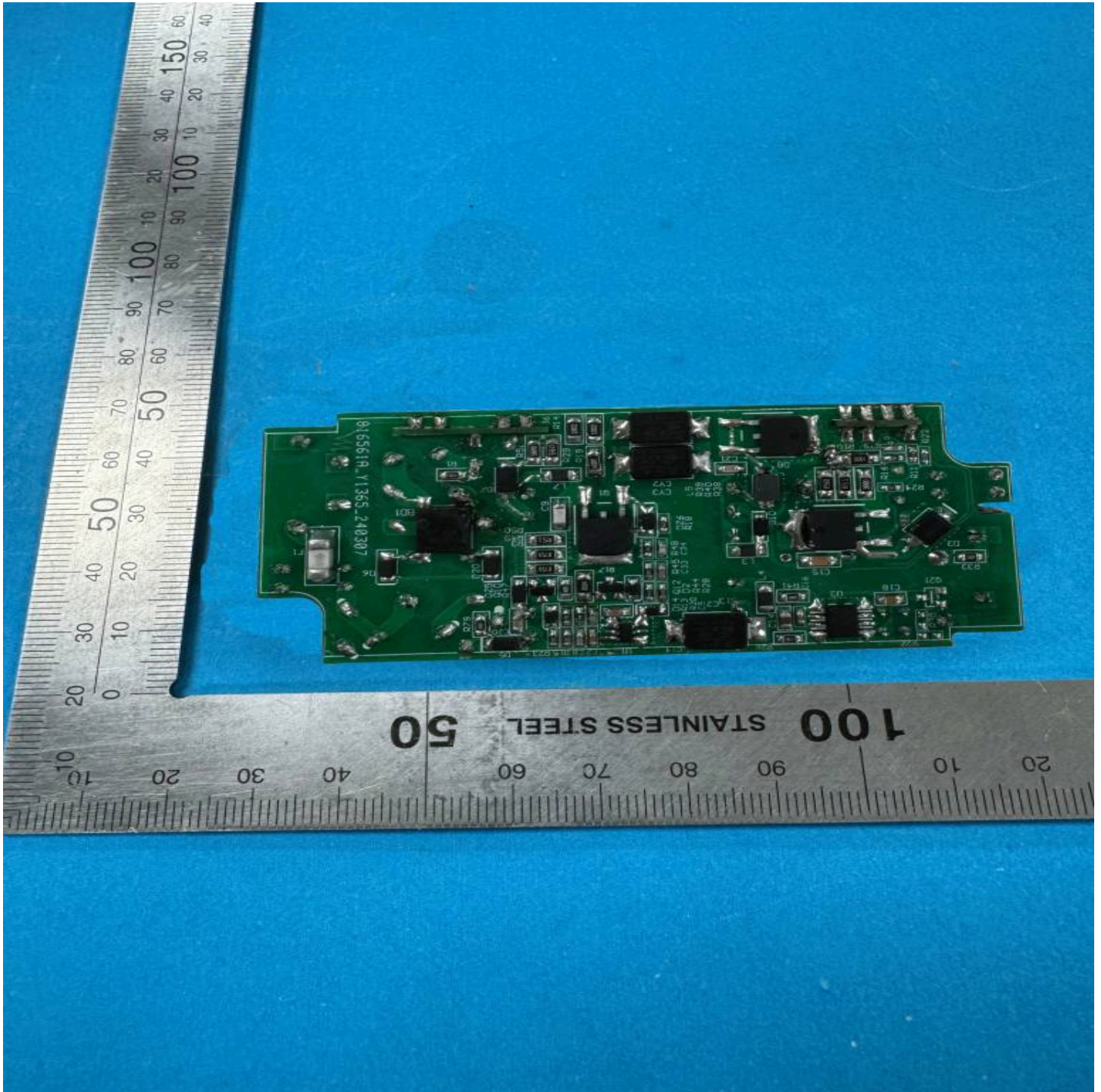




Figure-5 Page-1

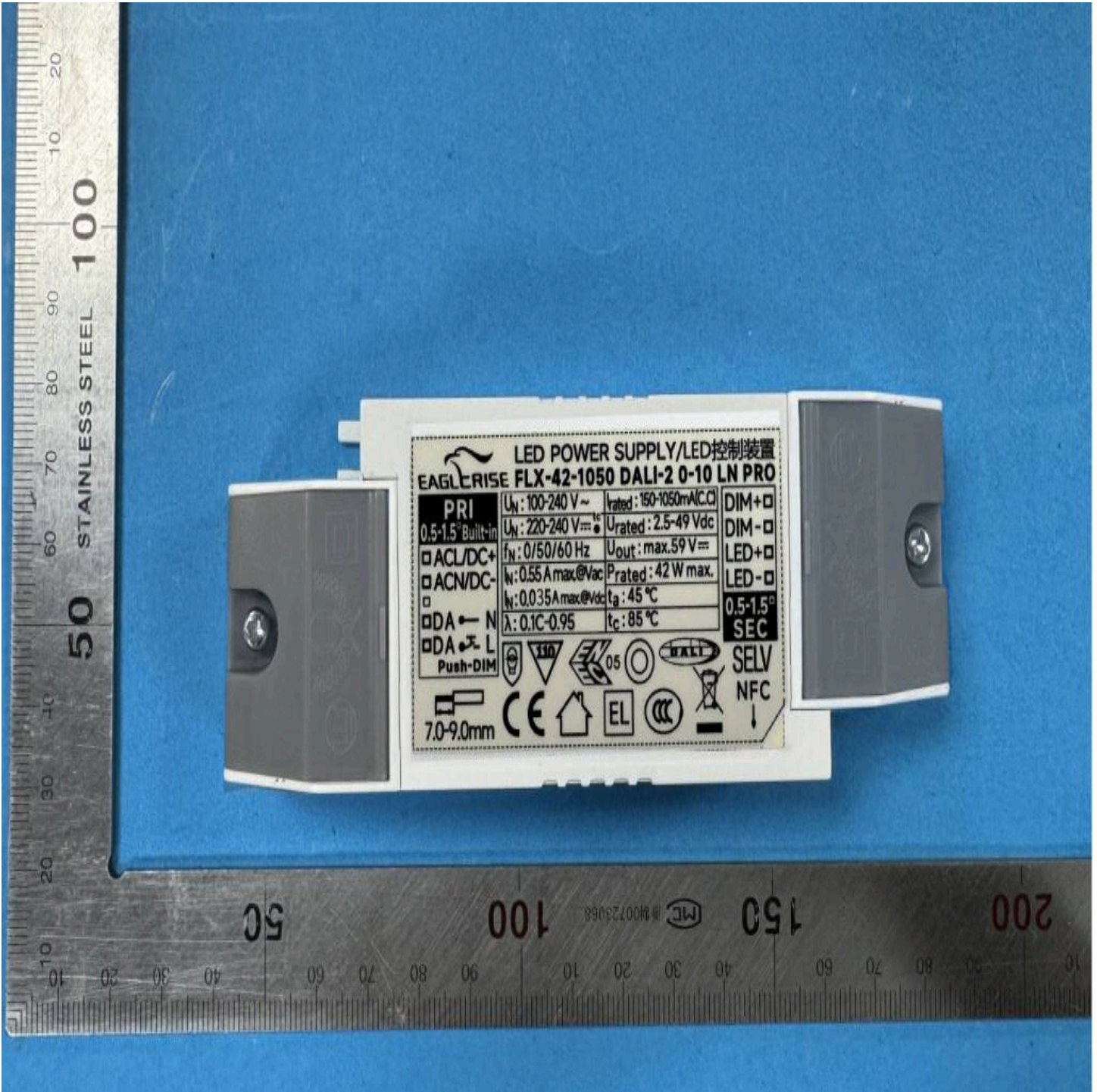




Figure-6 Page-1

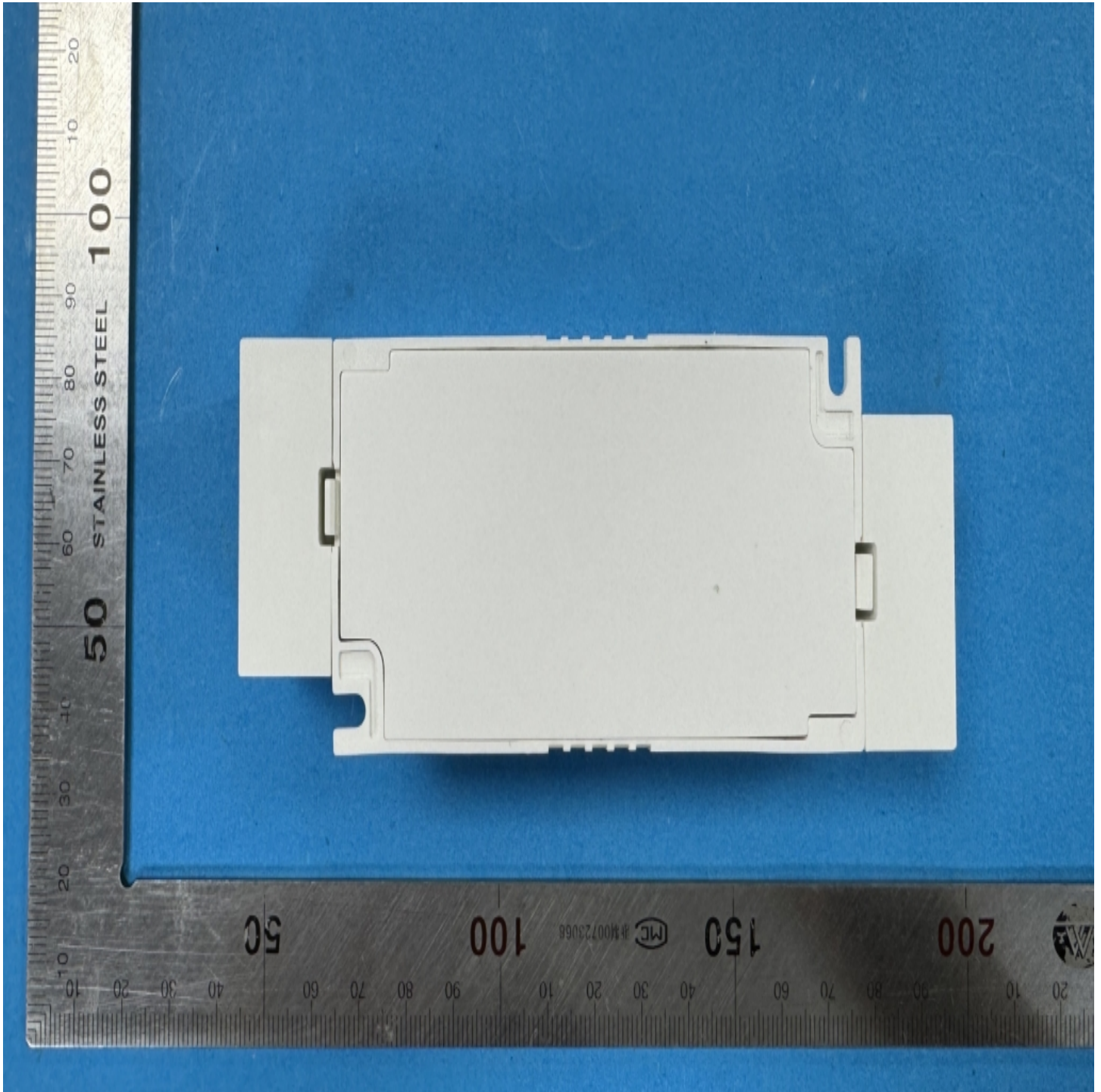


Figure-7 Page-1

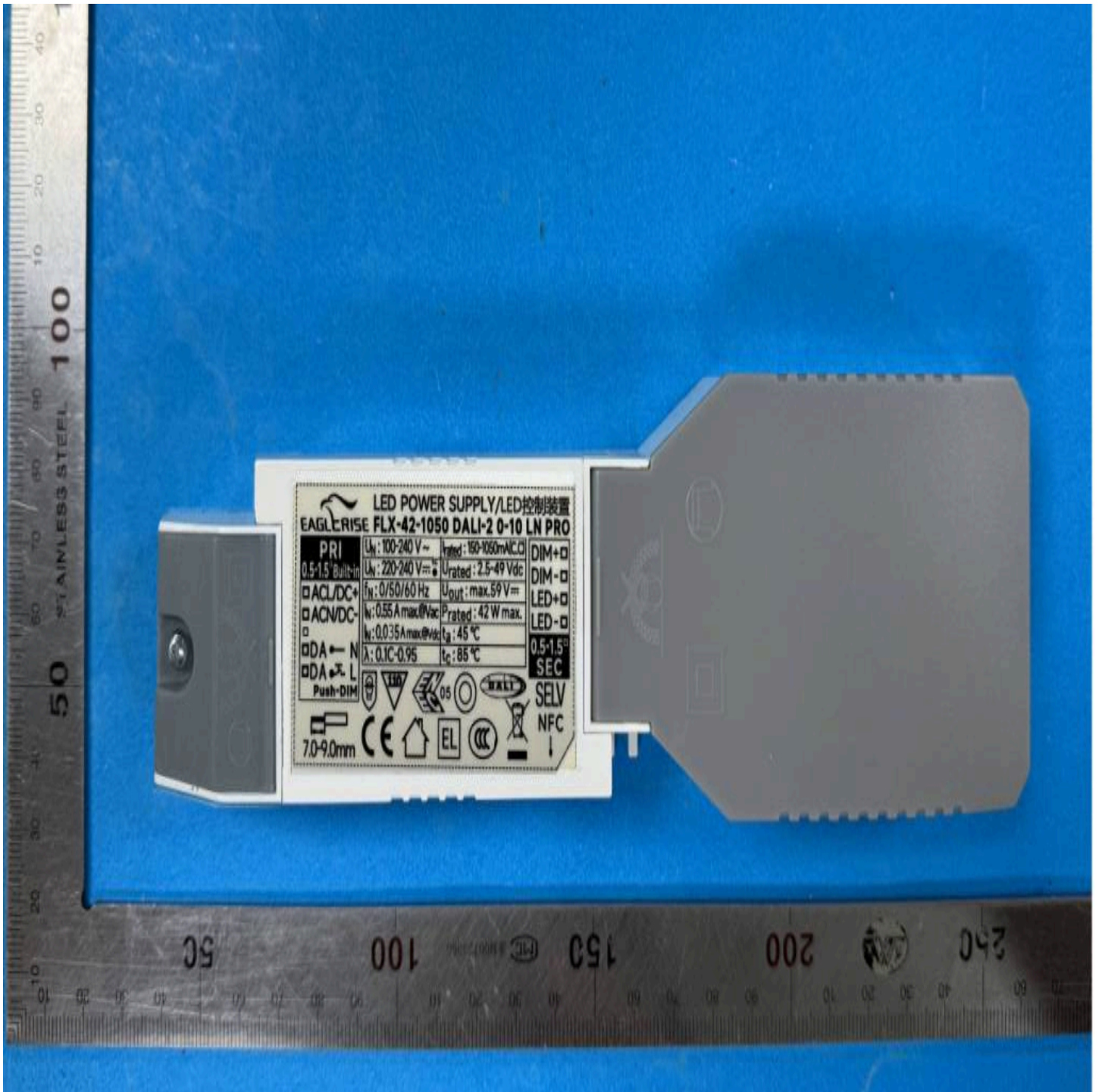
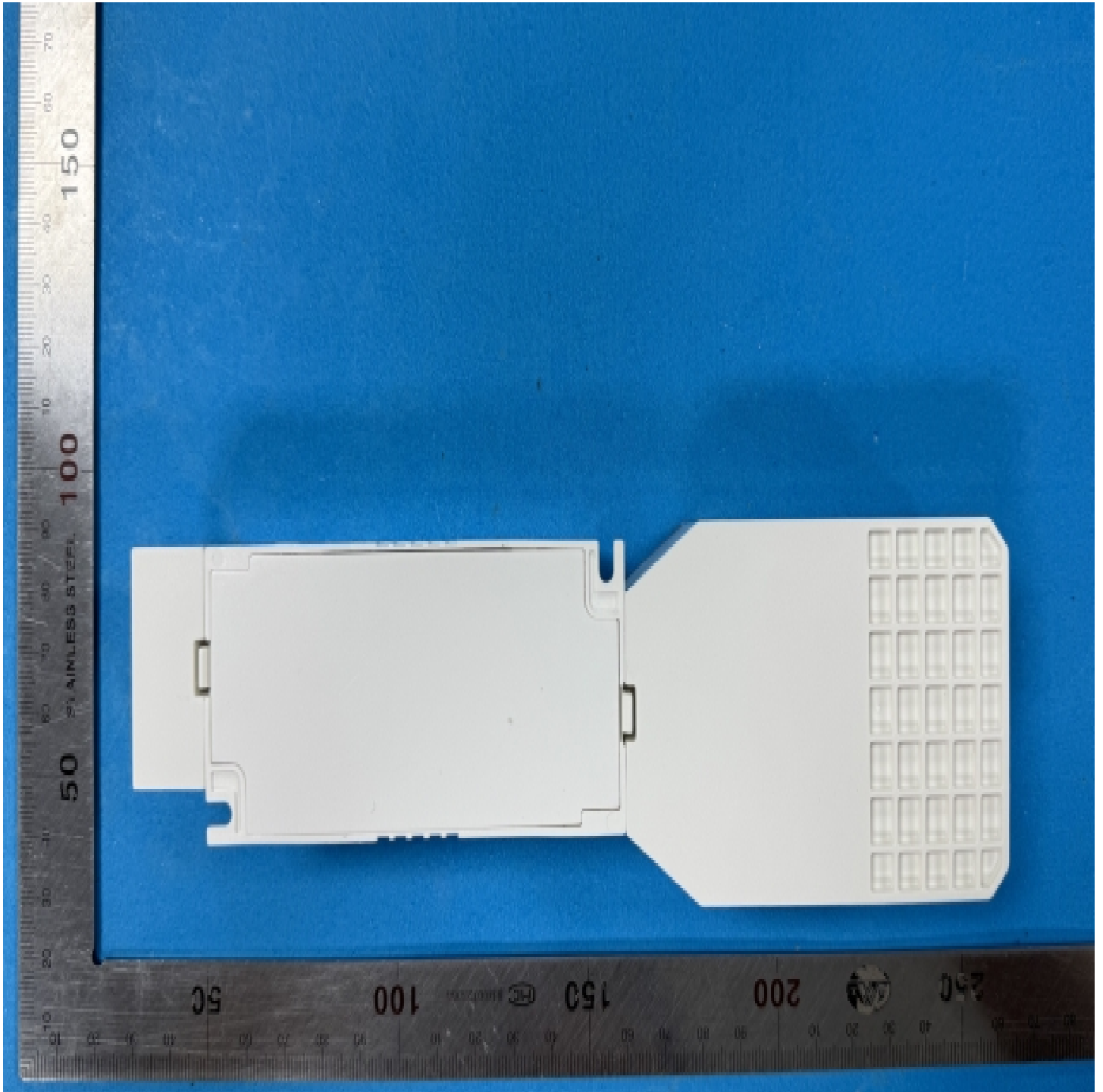
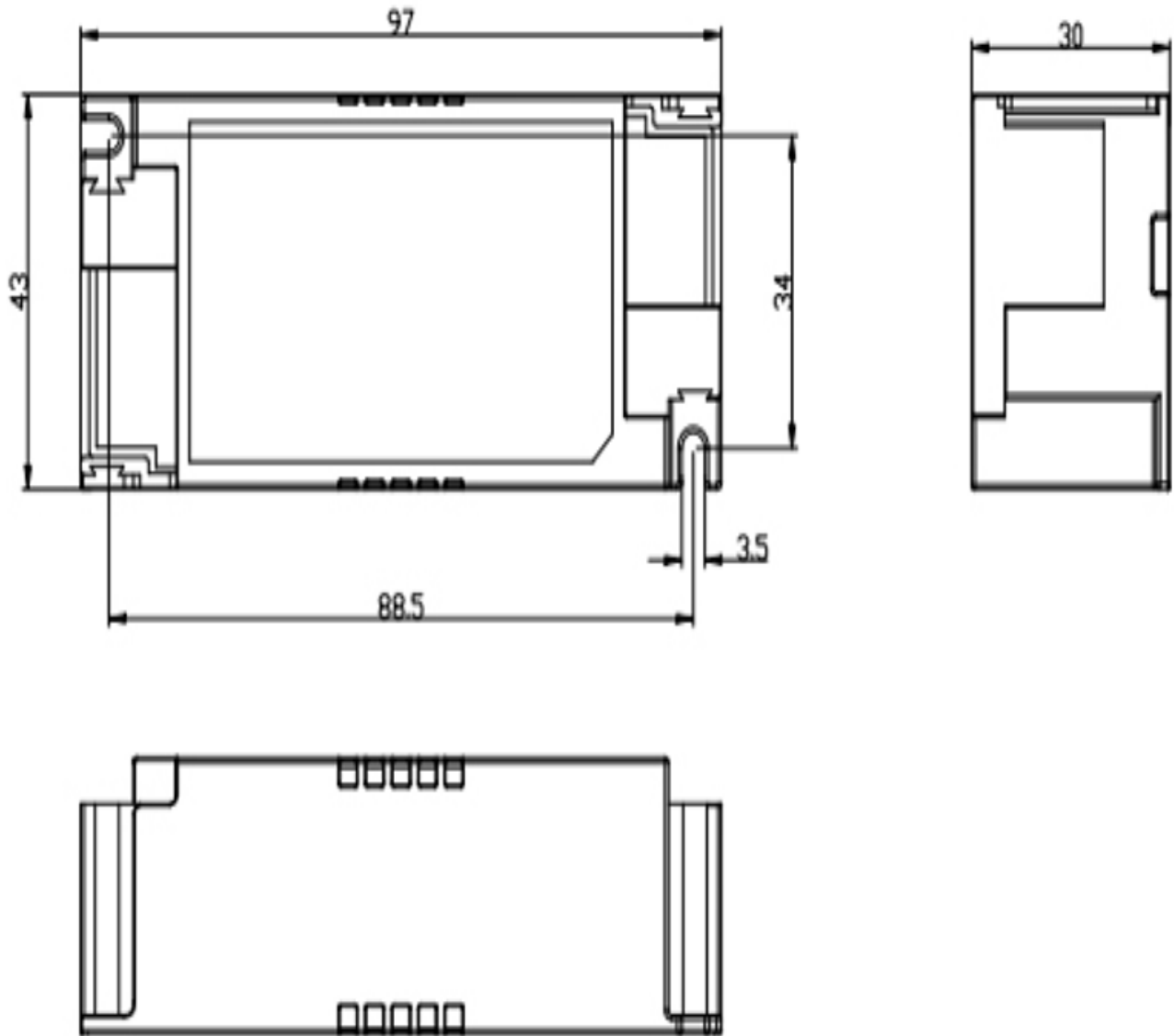
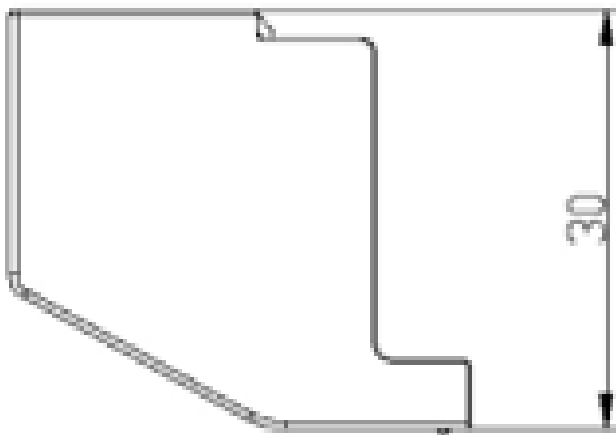
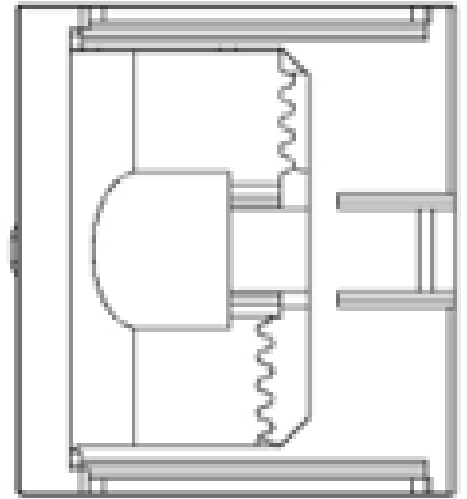
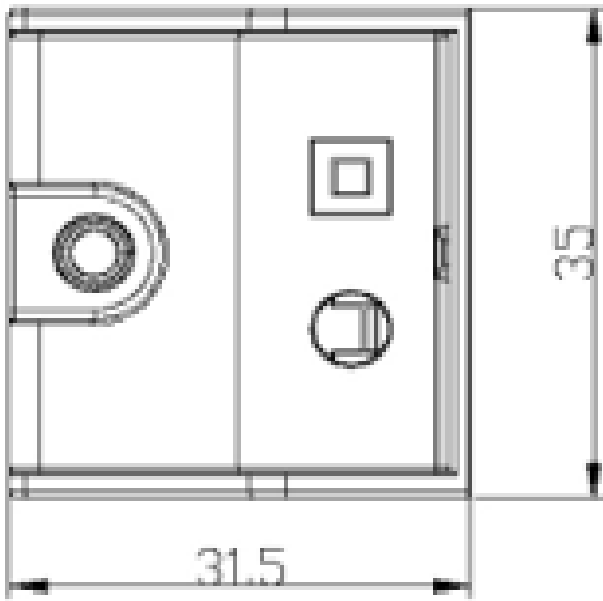
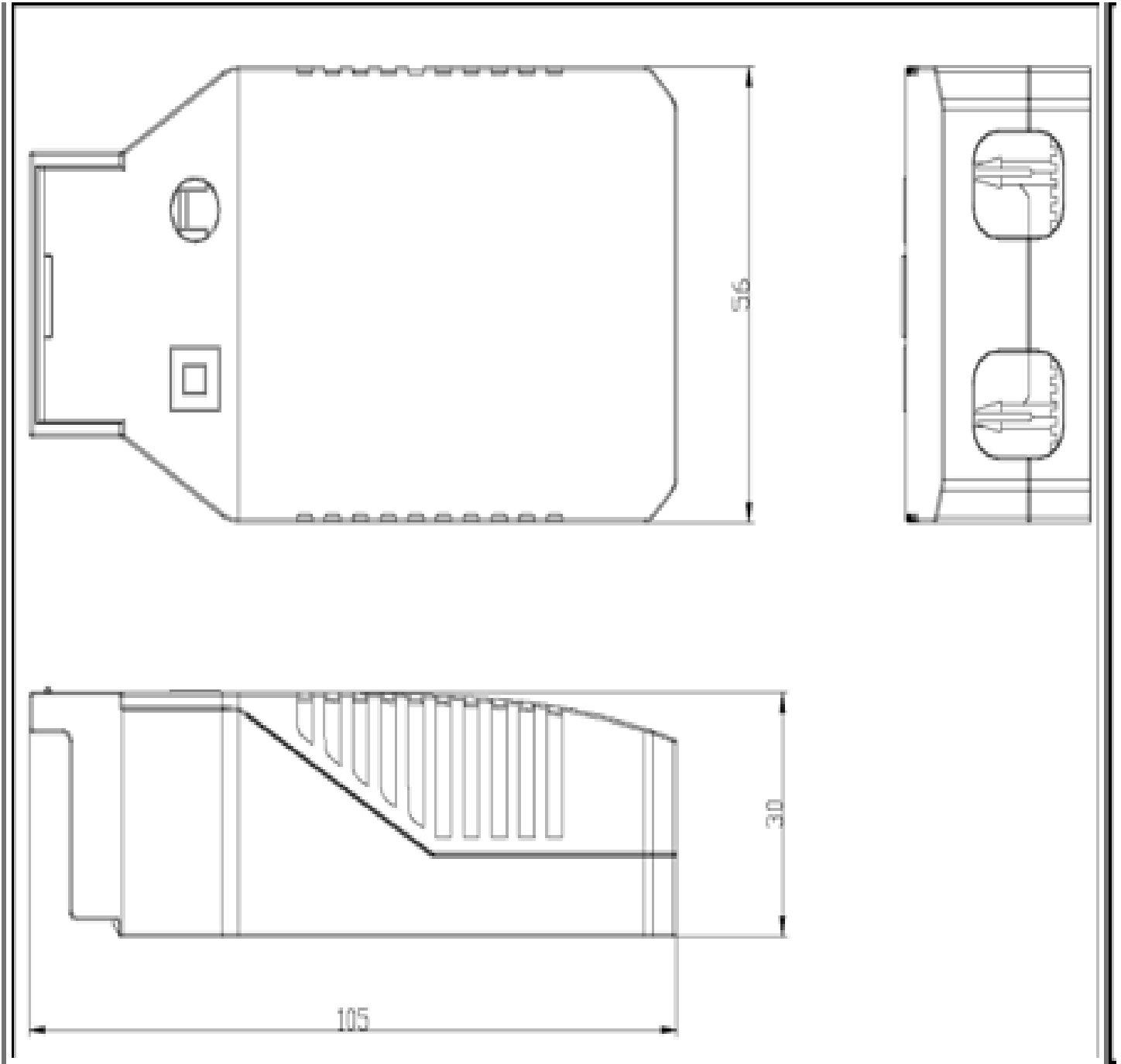


Figure-8 Page-1







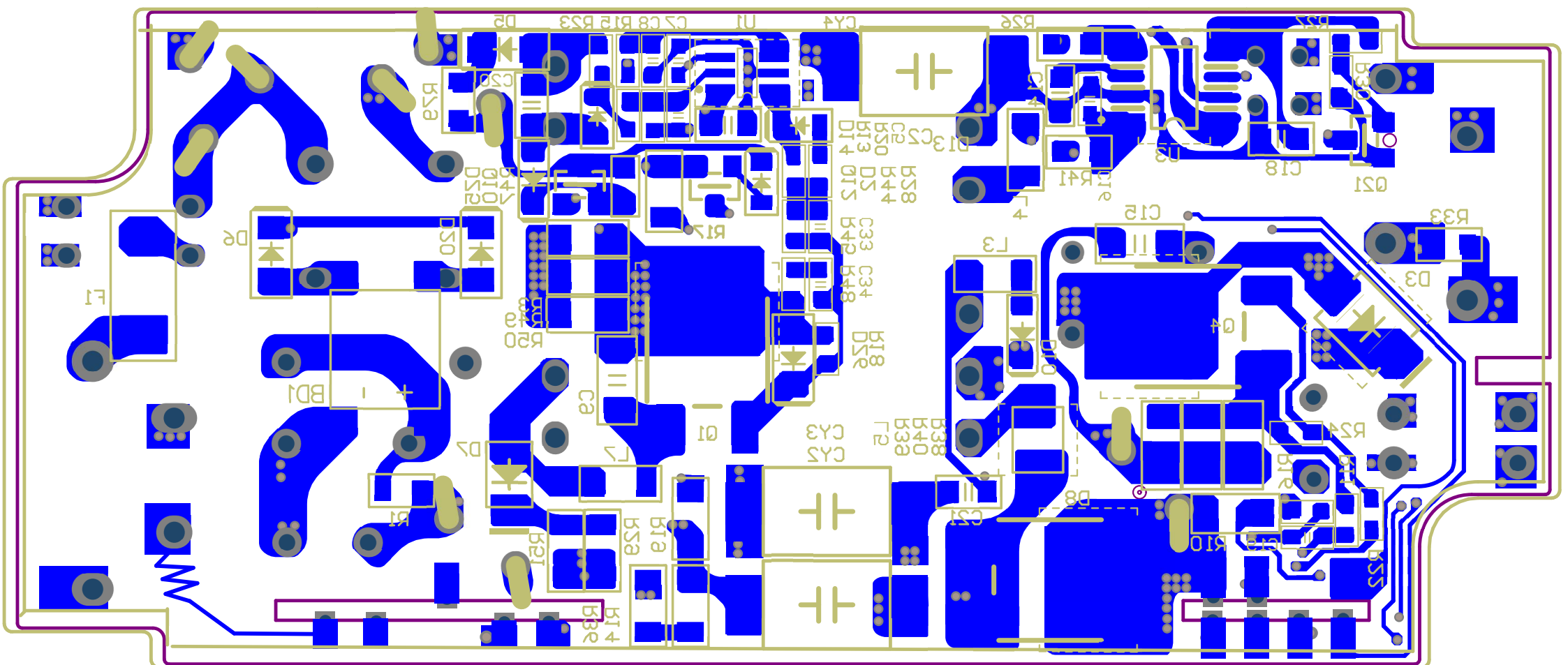


The following Page(s) are related to Illustration-3. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

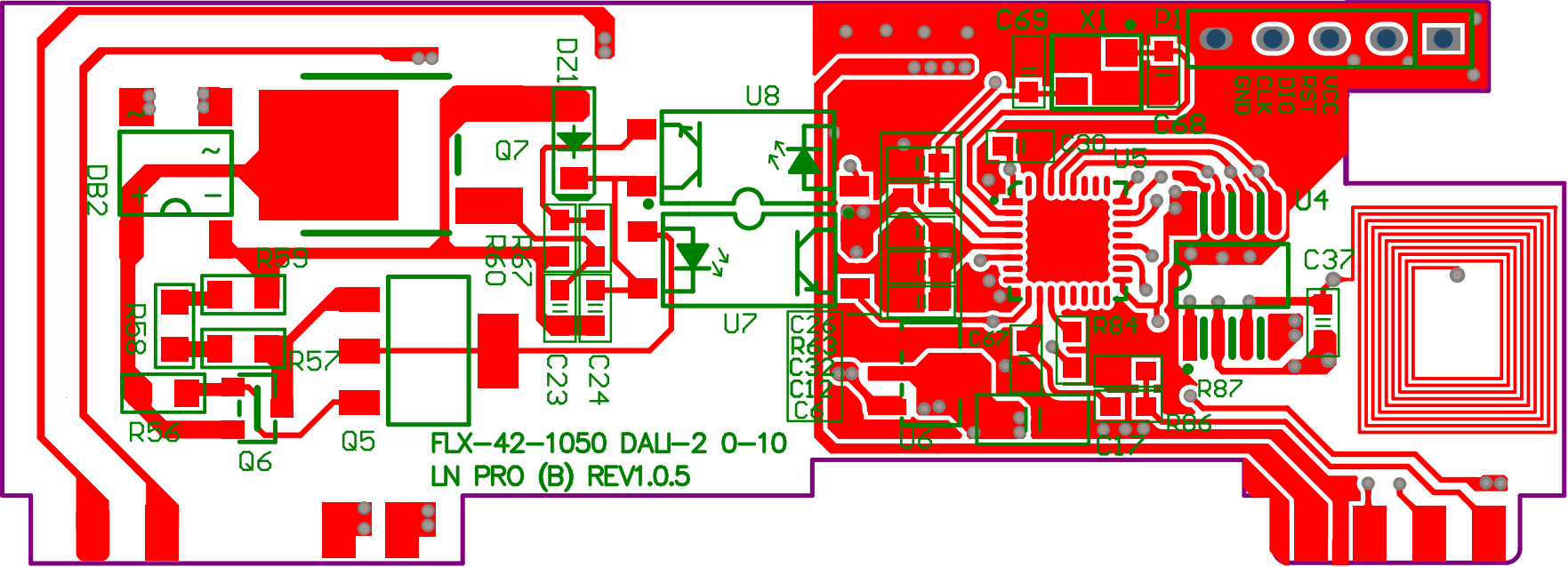




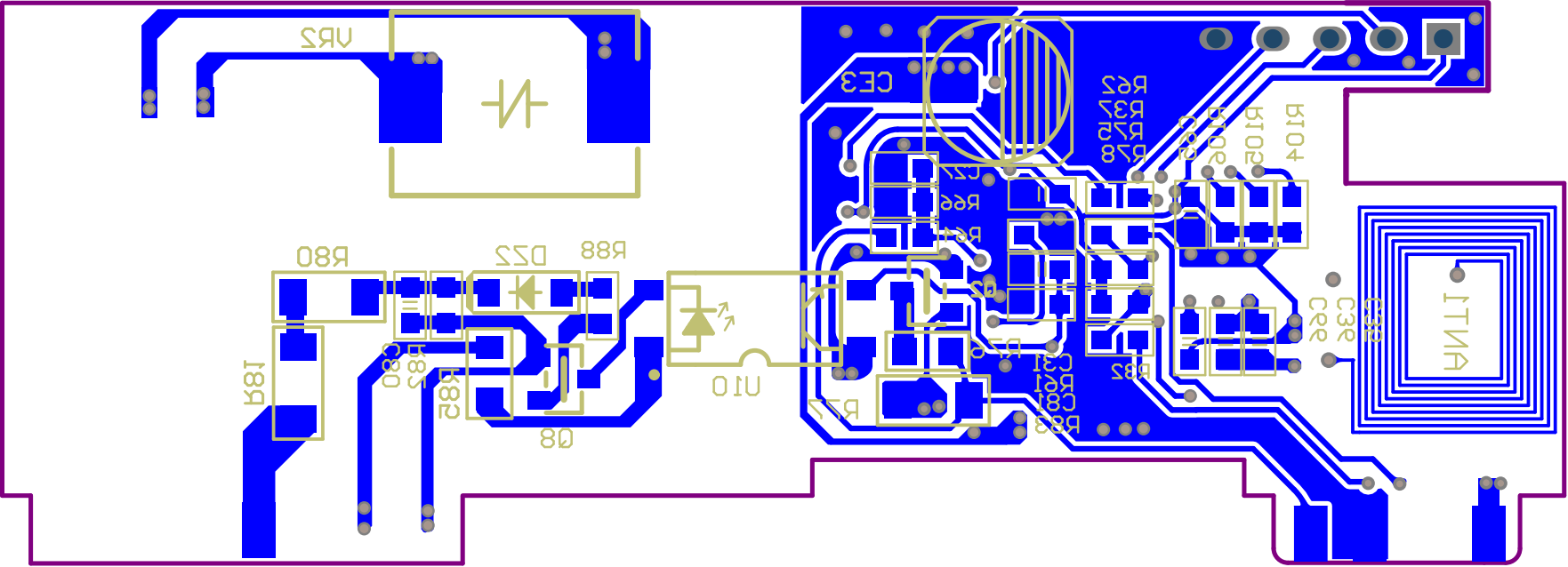




The following Page(s) are related to Illustration-4. The next supplement, if applicable, will be identified with a new Supplement Page Heading.



FLX-42-1050 DALI-2 0-10  
LN PRO (B) REV1.0.5



The following Page(s) are related to Illustration-5. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

CB4	1170350292	A	聚酯电容.334J/400V/耐高温110°C.CL21.ROHS.编带/脚距5MM.WJD-EN334J12110510
CB3	1170350308	A	聚酯电容.154J/400V/±5%.CL21H/-55~+110°C.ROHS.宽*高*厚=7.2*11*6MM.P=5MM/
CB2	117035T0001	C	聚酯电容.63V.1uF.±5%.CL233X.P=5mm.立式编带.直脚.长脚.H=18.5±1.0mm.RoHS.盒式
U6	104001T0002	A	稳压源1C.PJ54M33SQ.SOT-89.3.3V.350mA.平晶.RoHS
U4	104003T0014	B	NFC芯片.ST25DV04KC-1E8S3.SOP8.ST.13.56MHz.RoHS
U5	104003T0029	B	MCU.N32G031K8Q7.QFN32.国民技术.1.8-5.5V.-40-105°C.RoHS1956001592
C1,C17	1170060247	A	贴片电容.105K/100V/125°C/±10%/1206.ROHS.X7R.国巨、三星、风华、华科、TDK
C6,C12,C24	1170060337	B	贴片电容.475K±10%/16V.0603/X5R/85°C..ROHS.国巨、三星、风华、华科、TDK
C26,C30,C32	1170720019C	A	贴片电容.104J/50V/0603/±10%.X7R.ROHS.国巨、三星、风华、华科、TDK
C68-C69	1170720052C	A	贴片电容.10PF/50V/0603/±5%.ROHS.NPO
C67	1170720058C	A	贴片电容.221J/50V/0603/NPO/5%/..ROHS.国巨.风华、华科、村田.
R86	1180320012C	A	贴片电阻.0Ω/0603.ROHS.国巨、风华.厚声、华科
R60,R67,R87	1180320040C	A	贴片电阻.4.7K/0603/±1%.ROHS.国巨、风华.厚声、华科
R63	1180320045C	A	贴片电阻.10K/0603/±1%.ROHS.国巨、风华.厚声、华科
R84	1180320054C	A	贴片电阻.470Ω/0603/±5%.ROHS.国巨.风华高科
R56	1180330233C	A	贴片电阻.330Ω/0805/±1%.ROHS.国巨.风华高科
R57-R59	1180330252C	A	贴片电阻.68K/0805±1%.ROHS.国巨.风华.厚声.华科
X1	128007T0004	B	晶振.X3S016000B91H-X.3225.加高.±10nm.16MHz±0.2nF.无源.RoHS..1
Q5	128009T0001	A	三极管.PZTA94.SOT-223.PNP.RoHS1956001207
Q7	1280100246-L	A	MOS管.650V.2A.TO-252.N型.CR2N65A4K.平面.RoHS.华润微
Q7	1280100246	B	贴片MOS管.JCS2N65RC/2A/650V.DPAK封装.ROHS.华微.WED2N65L.稳先微
Q6	1280120223	A	贴片三极管.BC857C.SOT23.ROHS.PNP
DZ1	1280130271	A	贴片稳压管.5.6V/0.5W /±5%精度.SOD-123封装.ROHS
DB2	1280150211-Y	B	贴片整流桥.ABS10.1A.1000V.ABS.RoHS.旭茂微
DB2	1280150211	A	贴片整流桥.ABS10/1A/1000V.ABS封装.ROHS."强茂、钜兴.固得、银河、扬杰
DB2	1280150211-D	D	贴片整流桥.ABS10A.1A/1000V.ABS封装.ROHS.强茂
C23,C37	1420020001	N-PCBA	贴片N/A.物料统一使用.1420020001.ROHS
C27,C31,C65-C66	1170720019C	A	贴片电容.104J/50V/0603/±10%.X7R.ROHS.国巨、三星、风华、华科、TDK
C35-C36	1170720052C	A	贴片电容.10PF/50V/0603/±5%.ROHS.NPO
R62	1180320038C	A	贴片电阻.1.5K/0603/±1%.ROHS.国巨.ROHM
R61	1180320040C	A	贴片电阻.4.7K/0603/±1%.ROHS.国巨、风华.厚声、华科
R75,R78,R104-R106	1180320045C	A	贴片电阻.10K/0603/±1%.ROHS.国巨、风华.厚声、华科
R32,R37,R88	1180320047C	A	贴片电阻.1K/0603/±1%.ROHS.国巨.风华.厚声.华科

R64	1180320049C	A	贴片电阻.300K/0603/±1%.ROHS.国巨.风华高科
R83	1180320051C	A	贴片电阻.47K/0603/±1%.ROHS.国巨.风华.厚声.华科
R66	1180320063C	A	贴片电阻.15K/0603/±1%.ROHS.国巨.风华.厚声.华科
R85	1180320077C	A	贴片电阻.20K/0603/±1%.ROHS.国巨.风华.厚声.华科
R76	1180330367C	A	贴片电阻.2K/0805±1%.ROHS.国巨.风华高科
R80-R81	1180330379C	A	贴片电阻.1.5M/0805±1%.ROHS.国巨.风华高科
R77	1180340218C	B	贴片电阻.30kΩ.±1%.1206.RoHS..
Q2	128003T0004	A	MOS管.600V.0.030A.SOT-23.N型.F601D-G.平面.RoHS1956001459
Q8	1280120201	A	贴片三极管.SMD.2N5551.ROHS.β≥110.WKN-2N5551.扬杰.宝利达(ON)
DZ2	1280130276	D	贴片稳压管.MMSZ5237B/8.2V/0.5W.塑封SOD-123.ROHS
R82	1180320088C	A	贴片电阻.270K/0603/±1%.ROHS.国巨.风华.厚声.华科
C80-C81	1420020001	N-PCBA	贴片N/A.物料统一使用.1420020001.ROHS
U2	104003T0106	B	DC-DC控制芯片.ER2301.SOP8.调光.芯格诺.RoHS.U
C22	1170050214	A	贴片电容.471J/50V/125°C/±5%.0805/NPO.ROHS.0.8±0.1.W.JH-0805F471J-NPO-
C10	1170060298C	A	贴片电容.221J/1KV/1206.NPO材质-55--125.ROHS.GRM31A5C3A221JW01D.
C3	1170060313C	A	贴片电容..102J/1KV/125°C/±5%.1206/NPO.ROHS.村田/国巨/TDK/风华
R4	1180320012C	A	贴片电阻.0Ω/0603.ROHS.国巨、风华.厚声、华科
R2	1180320038C	A	贴片电阻.1.5K/0603/±1%.ROHS.国巨.ROHM
R5	1180320110C	A	贴片电阻.24KΩ/±1%/0603.ROHS.国巨
R12,R35	1180340224C	A	贴片电阻.47Ω/1206/±1%.ROHS.国巨、风华.厚声、华科
R8-R9,R21	1180340362C	A	贴片电阻.300K/1206/±1%.ROHS.国巨.风华高科
D11	1280110278	B	贴片二极管.1A/400V.ES1004FL.ROHS.SOD-123FL.扬杰E1G.钨兴
D4	1280140222	A	贴片肖特基.SK5BB/100V/5A.SMB.ROHS.海格电子.扬杰
C36,C38	1170060264	A	贴片电容.106K/25V/125°C/±10%.1206/X7R.ROHS.国巨、三星.风华、华科、TDK
C13	1170720007	A	贴片电容.334K/25V/0603/±10%.ROHS.125°C.X7R
U3	104003T0167	B	调光转换IC.XP1101.SOP-8.芯格诺.0-10V.PWM.RoHS..1956010089
L5	1100120207	A	贴片磁珠.AVE-3.0*2.5*4.0-A90I.9A.E:50Ω±1%/100MHZ.ROHS.彦佰、全能
L7	1100150001	A	贴片磁珠.Z=50±25%.100MHZ.BEAD1206S500A40T.ROHS.MAX:4A
L3-L4,R40,R50	1180340360C	A	贴片电阻.0.51Ω/1206±1%.ROHS..国巨、风华.厚声、华科
C2,C18	1170050206C	A	贴片电容.50V.100nF.±10%.125°C.X7R.0805.RoHS.
C20	1170050214	A	贴片电容.471J/50V/125°C/±5%.0805/NPO.ROHS.0.8±0.1.W.JH-0805F471J-NPO-
C14	1170050287C	A	贴片电容.225K/50V/0805/125°C/±10%.X7R.ROHS.国巨.村田.华新科

C21	1170050302C	A	贴片电容.100PF/100V/0805/±5%/NPO.ROHS.品牌:三星,国巨,风华,AVX
C33	1170050357C	B	贴片电容.681J/50V/0603/NPO.ROHS.国巨,村田
C15	1170060237	A	贴片电容.103K/100V/国巨.1206/X7R.ROHS.FJH-1206H103K-X7R
C9	1170060285	A	贴片电容.47PF/1KV/±5%/1206.NPO.ROHS.国巨、三星、风华、华科、TDK
C5,C8	1170720009	A	贴片电容.470J/50V/0603/±5%.ROHS.125°C.NPO
C7	1170720018	A	贴片电容.472K/50V/0603/±10%.X7R.ROHS.国巨、三星、风华、华科、TDK
C16	1170720019C	A	贴片电容.104J/50V/0603/±10%.X7R.ROHS.国巨、三星、风华、华科、TDK
C19	1170720034	A	贴片电容.100pF/0603/50V/±5%/125°C.ROHS.NPO.国巨、三星、风华、华科、TDK
C34	1170720059C	A	贴片电容.471J/50V/0603/NPO.ROHS.国巨、三星、风华、华科、TDK
R16,R24	1180320045C	A	贴片电阻.10K/0603/±1%.ROHS.国巨、风华、厚声、华科
R44	1180320054C	A	贴片电阻.470Ω/0603/±5%.ROHS.国巨.风华高科
R11,R28,R48	1180320066C	A	贴片电阻.100Ω/0603/±1%.ROHS.国巨.风华高科
R20	1180320080C	A	贴片电阻.2KΩ/0603/±1%.ROHS.国巨.风华高科
R22	1180320107C	A	贴片电阻.47Ω/0603/±1%.ROHS.国巨.风华高科
R15	1180320111C	A	贴片电阻.3KΩ/±1%/0603..ROHS.国巨
R45	1180320119C	A	贴片电阻.11KΩ/0603/±1%.ROHS.国巨.风华高科
R41	1180330202C	A	贴片电阻.100Ω/0805/±1%.ROHS..国巨、风华、厚声、华科
R33	1180330203C	A	贴片电阻.100K/0805/±1%.ROHS.国巨、风华、厚声、华科
R47	1180330204C	A	贴片电阻.10K/0805/±1%.ROHS.国巨、风华、厚声、华科
R1	1180330245C	A	贴片电阻.4.7K/0805/±1%.ROHS.国巨.风华.厚声.华科
R26	1180330393C	A	贴片电阻.3.3K/0805/±1%.ROHS.国巨.风华高科
R79	1180330418C	A	贴片电阻.1Ω/0805/±1%.ROHS.国巨.风华高科
R14,R36	1180340203C	A	贴片电阻.10K/1206/±1%.ROHS.国巨、风华、厚声、华科
R29,R51	1180340313C	A	贴片电阻.56Ω/1206±5%.CR-06.ROHS.国巨.风华高科
R38	1180340353C	A	贴片电阻.3Ω/1206/±1%.ROHS.国巨.风华.厚声.华科
R3,R49	1180340397C	A	贴片电阻.0.75Ω/1206±1%.ROHS.国巨、风华、厚声、华科
R17,R19	1180340403C	A	贴片电阻.3M/1206±1%.ROHS.国巨、风华、厚声、华科
R39	1180340455C	A	贴片电阻.0.56Ω/1206/±1%.ROHS.国巨.风华高科
R18	1180340884	A	贴片电阻.6.2K/0603/±1%.1/10.ROHS.国巨.风华.厚声.华科
Q12	128003T0004	A	MOS管.600V.0.030A.SOT-23.N型.F601D-G.平面.RoHS1956001459
Q4	1280100315	B	贴片MOS管.FTD150N10N/14A/100V.DPAK.ROHS.IPS品牌
D2,D13-D14	1280110203-P	A	贴片超快恢复二极管.T-1N4148WB.100V.0.15A.SOD-323W.RoHS.晶导
D2,D13-D14	1280110203	B	贴片二极管.SOD-323.1N4148WS.ROHS.使用干锡膏工艺.WKM-



D7	1280110206	A	贴片二极管.1A/1000V.RSIM.ROHS.WKM-FR107.艾华科(先科)、强茂.扬杰、钜兴、银河
D5-D6,D20	1280110236-Y	A	贴片快恢复二极管.F7.1000V.1A.SOD123FL.RoHS.旭茂微
D5-D6,D20	1280110236	B	贴片二极管.SOD-123FL.DER1M代FR107贴片.ROHS.1A.艾华科(
D5-D6,D20	1280110236-P	B	贴片快恢复二极管.FR107W.1000V.1A.SOD-123FL.RoHS.晶导
D10	1280110278	B	贴片二极管.1A/400V.ES1004FL.ROHS.SOD-123FL.扬杰E1G.钜兴
D8	1280110281-Y	A	贴片超快恢复二极管.SF1004DS.400V.10A.TO-252/DS.RoHS.旭茂微
D8	1280110281	B	贴片二极管.10A/400V/ED1004CS/DPAK.TO252.ROHS.强茂
Q10	1280120209	A	贴片三极管.MMBT4401L.ON/SOT-23封装.ROHS.扬杰'ON'
DZ6	1280130288	A	贴片稳压管.6.2V/0.5W.塑封SOD-123.ROHS
DZ5	128013T0005	B	贴片稳压二极管.19V.±5%.0.5W.SOD-123.MMSZ4706.RoHS..1956007341
D3	1280140222	A	贴片肖特基.SK5BB/100V/5A.SMB.ROHS.海格电子.扬杰
Q1	128023T0008	C	GaN MOS.700V.11.5A.TO-252.INN700TK190B.RoHS..1956010558
R23	1180320077C	A	贴片电阻.20K/0603/±1%.ROHS.国巨.风华.厚声.华科
U1	104003T0149	B	反激控制芯片.XP3359-04.SOT23-6.恒压.芯格诺.RoHS..1956009812
R13	1180320076C	A	贴片电阻.3.3K/0603/±1%.ROHS.国巨.风华.厚声.华科
R10	1180340463C	A	贴片电阻.51Ω/1206/±1%.ROHS.国巨.风华高科
BD1	128015T0002	C	贴片整流桥.YBS3010.3A.1000V.YBS.RoHS..
Q21,R27,R30	1420020001	N-PCBA	贴片N/A.物料统一使用.1420020001.ROHS

The following Page(s) are related to Illustration-6. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

# 伊戈尔电气股份有限公司

## 产品承认书

产品名称: 变压器

使用机型: FLX-42-1050 Dali-2 0-10 LN Pro

物料编码:

版本: A

拟制	审核	批准	供应商名	供应商确认
陈嘉然	罗孝乾			

公司: 伊戈尔电气股份有限公司

地址: 广东省佛山市顺德区北滘镇环镇东路四号

电话: (+86) 0757-86256700

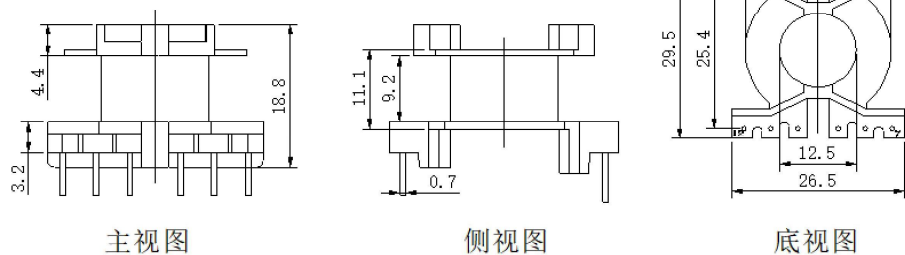
传真: (+86) 0757-86256788



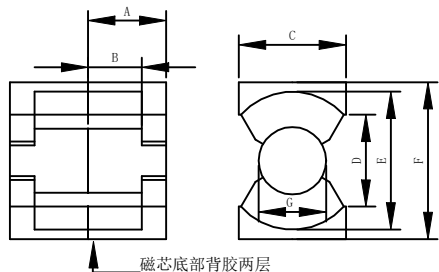
(收到此份承认书请签字回传)



### 1.骨架结构图(Skeleton structure diagram): 单位:mm



### 2.磁芯结构图(Core structure diagram):

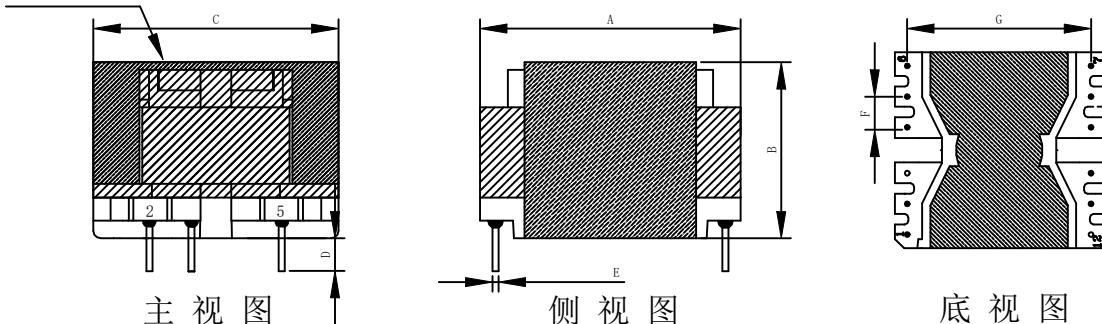


磁芯型号: PQ27/20, Ae=110.79mm<sup>2</sup>

序号 No.	技术要求 TECHNICAL DATA	公差 TOLERANCE	单位 UNIT
A	10.1	±0.4	mm
B	5.8	±0.4	mm
C	19	±0.45	mm
D	15.5	MIN	mm
E	22.5	±0.45	mm
F	26.5	±0.45	mm
G	∅12	±0.2	mm

### 3.产品结构图(Product structure diagram):

(贴物料编码)



项目 ITEM	序号 No.	技术要求 TECHNICAL DATA	公差 TOLERANCE	单位 UNIT
产品长度	A	31	MAX	mm
产品高度	B	23	MAX	mm
产品宽度	C	30.5	MAX	mm
引脚长度	D	4	±0.3	mm
引脚直径	E	0.74	±0.1	mm
引脚间距	F	3.8	±0.2	mm
引脚排距	G	25.4	±0.3	mm

### 4.包装和外观要求:

包装

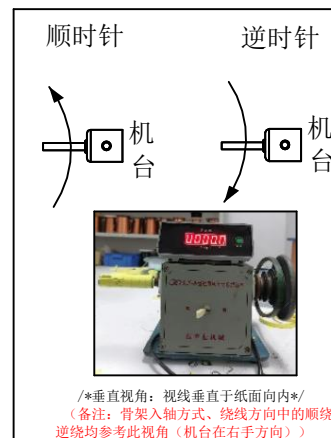
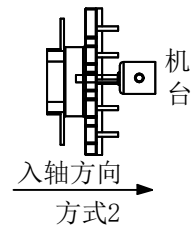
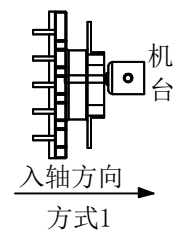
- 4.1 包装包含ROHS标识, 产品型号, 名称, 质量, 交期, 供应商出厂检验章。
- 4.2 产品有良好的独立包装并要封口. 纸箱不应有破损。
- 4.3 打开包装箱, 包装物不应损坏, 如包装箱内无填充物, 应增加填充物。

外观

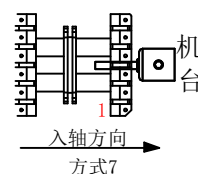
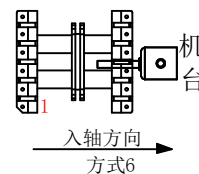
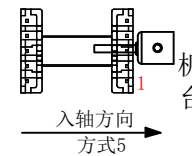
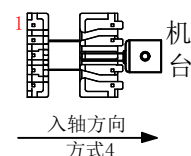
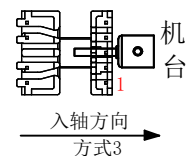
- 4.4 产品应有出厂检验报告。
- 4.5 外观整洁。

### 5.骨架入轴方式与顺绕、逆绕定义 (Skeleton entry axis)

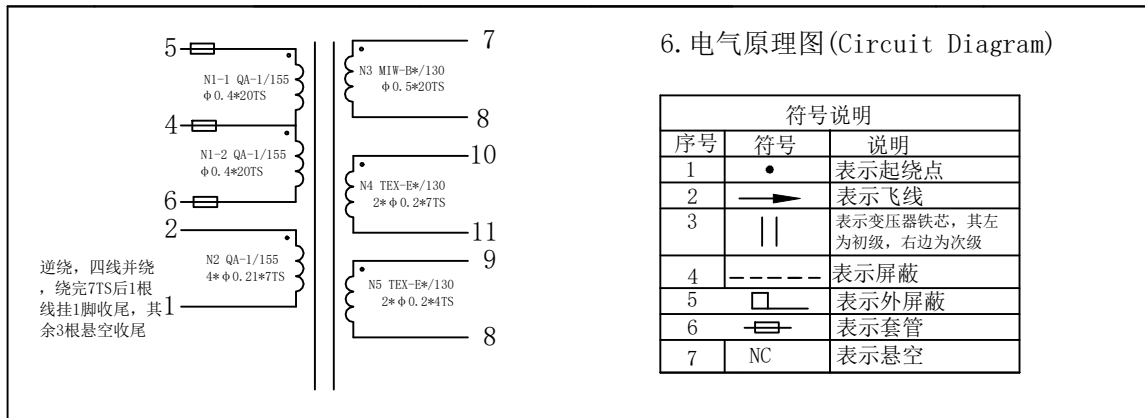
立式骨架



卧式骨架



产品尺寸  
(Dimension)



### 7. 绕线顺序表 (Winding Order)

序号 No	脚位 (PIN)		线材 (WIRE)			绕线结构 Winding Structure			麦拉胶 (MYLAR TAPE)			套管 (TUBE)	入轴 方式	备注 Remarks
	起头 Start	收尾 Finish	股数	线径 (mm)	材质 Material	圈数 Turns	绕线 类型	方式 Pattern	颜色 Colour	宽度 (mm)	层数 Layer			
N1-1	5	4	1	0.4	QA-1	20	1	顺绕	黄	≥9.2	2	24L	1	
N2	2	1	4	0.21	QA-1	7	1	逆绕	黄	≥9.2	3	/	1	逆绕，四线并绕，绕完7TS后1根线挂1脚收尾，其余3根悬空收尾
N3	7	8	1	0.5	MIW-B*	20	1	顺绕	黄	≥9.2	3	/	1	
N1-2	4	6	1	0.4	QA-1	20	1	顺绕	黄	≥9.2	3	24L	1	
N4	10	11	2	0.2	TEX-E	7	2	顺绕	黄	≥9.2	2	/	1	
N5	9	8	2	0.2	TEX-E	4	2	顺绕	黄	≥9.2	3	/	1	

### 制作工艺说明 (Manufacture Specification)

(1) 骨架上剪掉3、12脚，4脚剪去2/3，其余脚不剪。

(2) 针脚侧磁芯用20.4mm 宽麦拉胶背胶2层（可选用更合适尺寸的麦拉胶）。

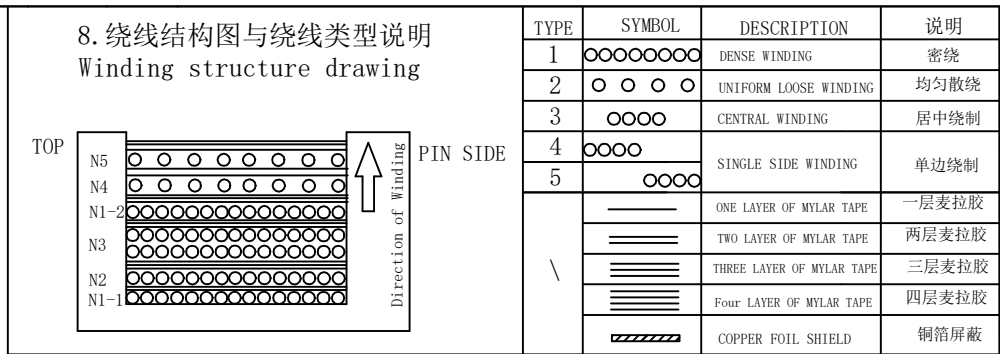
(3) 在变压器一边磁芯中柱结合处点1点软胶300B-TPG 固定（能粘合两端磁芯）。

(4) 上好锡的线包套上PQ27/20磁芯，磁芯外包2层19mm宽麦拉胶固定。然后沿线包方向包2层9.2±0.2mm宽麦拉胶固定。沿磁芯方向直接包1层0.025mm\*10mm 宽自粘铜箔，铜箔首尾需重叠，再沿线圈方向直接包1层0.025mm\*8mm 宽自粘铜箔，铜箔首尾也需重叠。包成十字铜箔屏蔽，十字重叠处用锡焊好，形成闭合回路。接Φ0.2mm以上漆包线或者镀锡线，一端接铜箔用锡焊好，一端引出挂2脚。沿线包包两层30±0.5mm麦拉胶（麦拉胶宽度可适当调整），高出部分反折回磁芯顶部，再沿磁芯方向包两层19±0.5mm麦拉胶。

(5) 产品必须真空处理（抽真空时间约20-30分钟）和浸油处理（绝缘漆与稀释剂的配比为1.2:1，以4#量杯测滴落时间为12-16秒为标准，然后放入烤箱烘烤约4小时，烘烤温度为110±10度，最终以烤干为主。要求烤干后再次上锡，保证针脚的可焊性合格。成品的磁芯与线包不能有松动）。

(6) 将标签（贴物料编码）贴在顶部磁芯的麦拉胶上（见产品结构图主视图所示）。

备注：麦拉胶宽度公差允许+0.5/-0mm，自粘铜箔宽度公差允许±0.5mm。

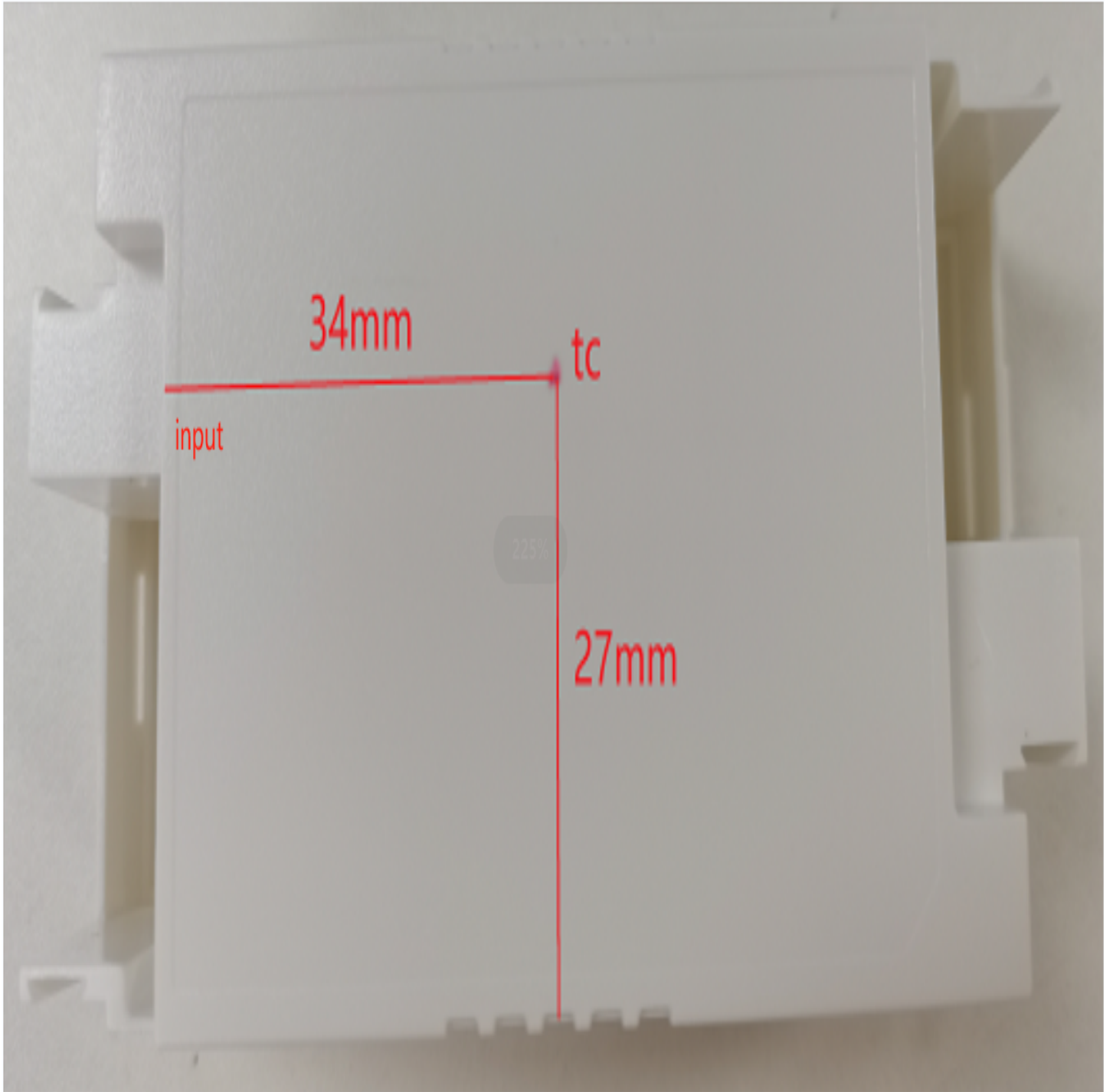


### 9. 电气特性 (Electric Characteristic)

序号	测试项目	测试脚位	测试规格	测试条件	测试设备
1	感量	5-6	380uH ± 5%	1KHz; 0.3V, 25°C	CH3259
2	漏感	5-6	≤70uH	10KHz; 0.1V; 25°C 短路其它绕组	CH3259
3	匝比	N1:N2:N3:N4:N5	40:7:20:7:4 ± 0.3Ts	20KHz; 1V, 25°C	CH3259
4	绝缘电阻	初级对次级	100 Mohm Min	AT DC 500V	
		初级对磁芯			
5	耐压 HI-POT	初级对次级	4.2KVAC/1.0mA/3S	50Hz; 25°C	CS2672
		初级对磁芯	1.5KVAC/1.0mA/3S		
		初级对辅助绕组	0.5KVAC/1.0mA/3S		

### 10. 材料清单 (Material List)

项目	型号	材料 Material	SPEC		厂家 Manufacturer	approved
			°C	UL-94		
磁芯	PQ27/20	KP95			开元	附承认书
骨架	RH-PQ-2620-1 PQ2620 (6+6P)	T-375J	150	V-0	长春人造树脂股份有限公司	E59481 (S)
漆包线	QA-1	4*Φ0.21mm/Φ0.4mm	155	/	梅州兴宁金雁电工有限公司	E238500
铁氟龙管	CB-TT-T	24L	200	V-0	深圳长园集团股份有限公司	E180908
麦拉胶	CT-280	9.2mmX0.055mm 19mmX0.055mm 20.4mmX0.055mm 30mmX0.055mm	130	/	惠州亚华胶粘带有限公司	E165111
锡条	锡条	环保高温锡		/		
助焊剂	助焊剂	环保助焊剂	130	/		
绝缘漆	Better 116C	环保绝缘漆	200	/	广州贝特新材料有限公司	E230067
稀释液	Better 116	环保稀释剂	200	/	广州贝特新材料有限公司	E316816
自粘铜箔	CU	0.025*8mm 0.025*10mm	130	/	电强	
三层绝缘线	TEX-E	2*Φ0.2mm	130	/	古河	E206440
四层绝缘线	MIW-B*	Φ0.5mm	130	/	HUIZHOU HUAYING ELECTRONIC TECHNOLOGY CO LTD	E470559



APPENDIX A - FIELD REPRESENTATIVE'S RESPONSIBILITIES AND INSTRUCTIONS FOR EXAMINATION OF THE PRODUCT

FIELD REPRESENTATIVE'S RESPONSIBILITIES

The Field Representative's responsibilities include, but are not limited to:

Examine the construction of production bearing, or intended to bear, the UL Mark or Markings to determine compliance with the description of the product and any other requirements expressed in this Procedure.

Where so specified by Appendix B, select samples to be forwarded to the appropriate UL Testing Laboratory for Follow-Up Tests. The packaging and shipment of samples are the responsibility of the manufacturer.

Where so specified by Appendix D, inspect the test records and facilities of the manufacturer to verify that:

- a. The proper number of samples are undergoing the required tests,
- b. The required tests are being performed correctly,
- c. The proper information is being recorded and is up-to-date,
- d. The instruments being used for the tests have been calibrated at the prescribed interval and are in good working order.

Report to the manufacturer and the UL Responsible Office by means of a Variation Notice (VN) if:

- a. Variations in construction are found,
- b. The manufacturer's method and/or frequency of test is not as described,
- c. The records maintained by the manufacturer are not as described,
- d. The manufacturer's inspection program is not being performed as described,
- e. The manufacturer's test equipment is not properly calibrated, or
- f. Nonconforming test results are witnessed during tests conducted specifically for the Field Representative.

Explain to the manufacturer that a Variation Notice is a means of communication with the manufacturer and forms a record of those items where nonconformance with the Procedure has been encountered.



## PROCEDURE IN THE EVENT OF NONCONFORMANCE

When a product does not comply with the Follow-Up Service Procedure require that the manufacturer either:

- a. Remove any markings referencing UL from the product, or obliterate these markings where the marking is imprinted, die-stamped, molded, etc., or
- b. Modify all products to bring them into compliance with the Follow-Up Service Procedure, or
- c. Hold shipment pending further instructions from UL, or
- d. Demonstrate that one of the conditions shown below exists and be able to provide any of the referenced information or documentation. Under the following conditions, variations from Procedure described constructions shall be noted on a Variation Notice, but the manufacturer is not required to remove UL markings, rework the product or hold shipment. The options to not remove Marks, or rework, or hold shipment when these conditions are encountered can only be authorized through CAS at the Responsible Office.
  1. A part is called out as Listed and the manufacturer or part number is not as described and the alternate part being used is Listed and all other attributes for the part are met.
  2. A part is called out as a Recognized Component (R/C) and the manufacturer or part number is not as described and the alternate part being used is Recognized under the described category and all other attributes as shown in the Recognized Component Directory for the part are met.
  3. Internal wiring is identified by UL Style Number and the manufacturer is using (R/C) Appliance Wiring Material (AWM) with Style Numbers not referenced in the Procedure description. The manufacturer must be able to provide documentation that the voltage and temperature ratings of the alternate Style Number are equal to or greater than the ratings of the Style Numbers specified in the Procedure. AWM with Style Numbers not specified in the Procedure must be rated VW-1.

If the rejection of the product is questioned by the manufacturer or Applicant, the material may be held at the point of inspection, typically at the factory, pending an appeal. The manufacturer has the right to appeal a decision with which they disagree. Appeals of technical decisions and held shipments should be directed to the Responsible Office. To resolve issues involving variations in construction, the manufacturer and Applicant may also be offered the option of contacting a Customer Service Professional.

Should UL grant temporary authorization for the continued use of the UL Mark, such temporary authorization shall only be for the time needed to review and/or process the Procedure revisions, or as otherwise specified to cover a particular lot or production run. The manufacturer shall satisfy the Field Representative that all marks referencing UL are removed from the rejected material. Those marks referencing UL not destroyed during their removal from the product shall be turned over to the Field Representative for destruction.

APPENDIX B

RESERVED FOR FUTURE USE

(INSTRUCTIONS FOR FIELD REPRESENTATIVE'S SAMPLE SELECTION)

APPENDIX C

RESERVED FOR FUTURE USE

(INSTRUCTIONS FOR FOLLOW-UP TESTS AT UL)

APPENDIX D - MANUFACTURER' S RESPONSIBILITIES, CONSTRUCTION CONSIDERATIONS,  
AND REQUIREMENTS FOR FACTORY TESTS

The Follow-Up Service Procedure covering the product is loaned to the manufacturer and constitutes the basis on which the product is judged for compliance with the applicable requirements.

MANUFACTURER'S RESPONSIBILITIES

The manufacturer's responsibilities include, but are not limited to:

Control of the UL Mark - Restrict the use of markings that reference UL (either directly by use of the name, an abbreviation of it, or the UL symbol, Classification Mark or Recognized Component Mark, or indirectly by means of agreed-upon markings that are understood to indicate acceptance by UL) to those products that are found by the manufacturer's own inspection to comply with the Follow-Up Service Procedure description. Use of such markings is further limited by the agreements that have been executed by the Subscriber and UL. Confine the application of markings referencing UL to the location or locations authorized in these Appendix Pages or the Follow-Up Service Procedure.

Access to Factory - During hours in which the factory is in operation, provide the Field Representative with free access to any portion of the premises where the product or components thereof are being fabricated, processed, finished or stored, and to the test area assigned for the Field Representative's use. The Field Representative shall be permitted to inspect and subject to prescribed tests, prior to shipment, any product bearing or intended to bear markings referencing UL.

Production-Line Tests - Conduct the Factory Tests, detailed on the following pages.

Required Records - Maintain records of test performance. The records shall include the model or catalog designation of the product, the date of production, the tests performed, number of units tested, test results and action taken on rejections. Records for test performance shall be retained for six (6) months and shall be readily available for review by the Field Representative. Exception - Records of test results need not be maintained for 100% Production-Line Tests.

Test Equipment and Personnel - Provide, at a convenient location, all required test equipment and facilities and any required personnel for conducting all tests that are to be performed at the factory. These shall be available when needed so that the inspection work can proceed without undue delay.

Test Equipment Calibration - Determine that required test equipment is functioning properly daily, and have it calibrated at least annually, or whenever it has been subject to abuse (such as being dropped or struck with an object) or its accuracy is questionable. The test equipment and instruments shall be calibrated either by the manufacturer or by an outside laboratory. In either case, it shall be calibrated by comparison with a standard that is traceable to the applicable National Standard. A letter from the outside laboratory or from an off-site manufacturer's calibration lab stating that their lab standards are directly traceable to their country's National Standard and outlining their traceability pathway is considered adequate proof of traceability. For in-house calibrations, the Standard (weight and gauge blocks, etc.) used shall be calibrated every three years, or whenever the Standard has been subject to some form of abuse that may affect the Standard's fitness for use. The Standard shall be stored to protect it from damage or deterioration per the Standard manufacturer's recommendations. Records of the calibration of the test equipment and Standard(s) shall be maintained until the next required calibration is completed and recorded, and shall be readily available for review by the Field Representative.

## PRODUCTION-LINE DIELECTRIC VOLTAGE WITHSTAND TEST

General - The manufacturer shall subject 100% of production of all LED drivers to a routine Production-Line Dielectric Voltage-Withstand Test in accordance with the following.

Alternate- The manufacturer may choose to perform the production-line insulation resistance test.

## Test Equipment -

The equipment used to perform the test shall provide the following features:

- a. Either a visible and/or audible means of indicating an electrical breakdown to the operator.
- b. Either a manually resettable device to restore the equipment after electrical breakdown, or an automatic feature that rejects any nonconforming unit.
- c. If the output of the test-equipment transformer is less than 500 volt-amperes, the equipment shall include a voltmeter in the output circuit to indicate the test potential directly.
- d. If the output of the test-equipment transformer is 500 volt-amperes or more, the test potential may be indicated (1) by a voltmeter in the primary circuit or in a tertiary-winding circuit, (2) by a selector switch marked to indicate the test potential, or (3), in the case of equipment having a single test-potential output, by a marking in a readily visible location to indicate the test potential. When a marking is used to indicate the test potential without an indicating voltmeter, the equipment shall include a positive means, such as an indicator lamp, to indicate that the manually resettable device has been reset following a dielectric breakdown.

## Sensitivity Requirements -

At least once each year the sensitivity of the dielectric equipment is to be checked. The sensitivity of the equipment is to be such that when adjusted to produce the required test voltage and with a 120,000 ohm resistor across the test terminals, the equipment indicates a "breakdown" (a nonconforming performance indication by the tester). The resistor shall be provided by the manufacturer and be verified to have a resistance equal to or greater than 120,000 ohm. If the equipment does not meet this sensitivity test, it shall be readjusted and provision made to maintain the proper calibration. The manufacturer shall also investigate and advise UL of the effect of the non-conformance on product already tested/shipped and the corrective action plan to resolve the non-conformance. The manufacturer will also conduct an analysis of the impact on production that was tested with equipment not meeting the Sensitivity Test requirements. The manufacturer shall provide UL a summary of the analysis, the corrective action plan, and resolution process for affected production.

Test Definitions, for the purpose of this test, the following definitions apply -

Live Part - Any conductive part where the measured voltage is greater than 30 V rms or 42.4 V peak (between parts of opposite polarity) to ground.

Accessible Dead Metal Part - A metal part, not conductively connected to the power supply circuit under conditions of normal use of the product that can be contacted by a user.

Grounding Conductor - A conductor employed to connect non-current-carrying parts of equipment, and enclosure to a grounding electrode. The grounding electrode is, in turn, connected to earth ground or to some conducting body that serves in place of earth ground.



## Test Method -

Each device shall withstand without electrical breakdown, as a routine production-line test, the application of a potential at a frequency within the range of 40 - 70 hertz or derived from direct current between:

- a) Live parts of the supply circuit (or primary winding) and dead metal parts that are exposed or are likely to become grounded with Test Voltage A or B;
- b) Live parts of the supply circuit (or primary winding) and output circuit (or secondary winding) with Test Voltage A or B; and
- c) Live parts of the output circuit (or secondary winding) and dead metal parts that are exposed or are likely to become grounded with Test Voltage C.

Devices without accessible dead metal parts, or grounding lead wire from an internal connection within need only be tested to (b).

Devices without an isolated output (direct connected type) need only be tested to (a) and (c).

Devices without 1)- accessible dead metal parts, or grounding lead wire from an internal connection within and 2)- an isolated output (direct connected type) are exempt from this test.

## Test Voltage -

The test voltage shall be in accordance with conditions A, B, or C in the table below, and using either alternating or direct current.

If agreeable with the manufacturer, all lead wires may be connected together for Test Methods (a) and (c). Test Method (b) would still need to be done as a separate condition

Test Voltage Condition	Application time, seconds	Applied potential, AC	Applied potential, DC
A	60	1000 + 2 times V <sup>a</sup>	1400 + 2.8 times V <sup>a</sup>
B	1	1200 + 2.4 times V <sup>a</sup>	1700 + 3.4 times V <sup>a</sup>
C	1	500	500 times 1.4
<sup>a</sup> "V" is the maximum marked input voltage, the voltage to ground, or the output voltage, whichever is higher.			

In the event of a test failure, the production piece must be repaired, set aside for later repair, or the production piece shall be scraped.

#### Production-line Insulation Resistance Test

General- in lieu of the production line dielectric voltage withstand test, the manufacturer shall subject 100% of production to a routine insulation resistance test.

Test Equipment- A commercially available DC insulation tester capable of delivering an open circuit voltage of 500 V dc shall be used.

Test Method- The following parts of each device shall be subjected to the insulation resistance test:

- a) Live parts of the supply circuit (or primary winding) and dead metal parts that are exposed or are likely to become grounded;
- b) Live parts of the supply circuit (or primary winding) and output circuit (or secondary winding); and
- c) Live parts of the output circuit (or secondary winding) and dead metal parts that are exposed or are likely to become grounded.

Note 1- Devices without accessible dead metal parts, or grounding lead wire from an internal connection within need only be tested to (b).

Note 2- Devices without an isolated output (direct connected type) need only be tested to (a) and (c).

Test Voltage- 500 V dc as described under test equipment. The test voltage shall be applied between the parts noted under test method- 'a', 'b', 'c'. The test voltage should be applied for a duration of 60 s.

Exception- In cases where integral voltage-limiting devices (SPDs) are rated below 500 Vdc, the test voltage may be reduced to 0.9 times the SPDs' clamping voltage. For example, if the SPDs are rated 400 Vdc, the test voltage would be 360 Vdc.

Note 1- If agreeable with the manufacturer, all lead wires may be connected together for Test Methods (a) and (c). Test Method (b) would still need to be done as a separate condition

Note 2- The specified time duration is intended to account for expected initial high capacitive and absorption currents. A lower time duration is acceptable if the manufacturer can demonstrate that insulation resistance tests will result in consistent readings for the product under test.

Test Compliance criteria- The measured resistance should not be less than 2 M $\Omega$ .

In the event of a test failure, the product under test must be repaired, set aside for later repair, or it shall be scrapped.

## APPENDIX E - CONSTRUCTION CONSIDERATIONS

## QUALITY ASSURANCE PROGRAM FOR INCOMING PARTS AND MATERIALS

The manufacturer shall have implemented at the factory a quality assurance program to verify that incoming parts and materials comply with purchase orders and applicable Procedure requirements. The following shall be included as applicable:

## Plastic enclosures

The manufacturer's program shall identify materials and parts that are required to be Listed or Recognized as well as any specific ratings, manufacturer name or catalog designation as indicated in the Procedure. The manufacturer's program shall also identify any mechanism (i.e. sampling, inspection, or visual examination plan) used to evaluate incoming shipment and the procedures used for rejected materials.

Appropriate documentation from the supplier shall accompany each shipment and shall be maintained on file by the manufacturer for a minimum of six months.

Once each year the Field Representative shall review the manufacturer's records in order to confirm that the manufacturer's system is being implemented and to verify that:

- Incoming materials are being checked as defined by the manufacturer.
- Shipment and lot traceability records are being maintained to provide a means for determining if corrective action is needed.
- Rejected materials are segregated or processed to prevent rejected lots from blending with accepted material.

### Power Supply Cords

A. Non-Detachable Power Supply Cord - A non-detachable power supply cord as described in the individual sections of the Procedure must be provided and shipped with the unit in all cases and must be as described in each Procedure section or the Section General.

B. Detachable Power Supply Cord - Equipment designed for use with a Listed detachable supply cord is not required to be shipped with a supply cord.

1. If a detachable power supply cord is shipped with the equipment, it should either:
  - a) Comply with the specific description in the Procedure, as suitable for the North American market, or
  - b) Be suitable for products for use outside of the North American market. In this case, the manufacturer is to supply the UL Representative with sufficient documentation and/or information that allows the Representative to verify that the products are intended to be sold outside of the North American market and that the power supply cord is appropriately certified for use in the destination country (or countries) and it is appropriately rated based on the marked ratings of the product.
2. If a detachable power supply cord is not provided, there are no additional Certification requirements. However it is recommended for the manufacturer to supply- with the product- instructions for obtaining a power supply cord that is appropriate for the destination country (or countries) and appropriately rated based on the marked ratings of the product.



FOLLOW-UP SERVICE PROCEDURE  
(TYPE R)

LIGHT-EMITTING-DIODE DRIVERS  
(FKSZ, FKSZ7)

Manufacturer:	SEE ADDENDUM FOR MANUFACTURER LOCATIONS
Applicant: (372327-004)	120419 (Party Site) Eaglerise Electric & Electronic (China) Co Ltd GUICHENG SCIENCE & TECHNOLOGY PARK A3 GUICHENG STREET FOSHAN Guangdong 528200 CN
Listee/Classified Company: (372327-004)	120419 (Party Site) SAME AS APPLICANT

**Use of the Mark**

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed in the addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

It is the responsibility of the Applicant, Manufacturer(s), and Listee/Classified Company to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

**Additional Responsibilities**

Additional responsibilities, duties and requirements for the Applicant and Manufacturers are defined under Additional Resources at the following website: <https://www.ul.com/fus>. Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at <https://www.ul.com/aboutul/locations/>, select a location and enter your request, or call the number listed for that location.

**Acceptance of Follow-Up Services**

The Applicant and the specified Manufacturer(s) and any Listee/Classified Company in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant, the specified Manufacturer(s), and any Listee/Classified Company will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of a) use of the prescribed UL Mark, b) acceptance of the factory inspection, or c) payment of the Follow-Up Service fees. The Service Agreement incorporates such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking the following link: <https://www.ul.com/resources/contracts/follow-up-service-terms>. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

**Use and Ownership of the Follow-Up Service Procedure**

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the Applicant, the specified Manufacturer(s), and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding

that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

**Definition of Terms**

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

**No Third Party Liability**

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

**Certification Body**

UL LLC has signed below solely in its capacity as the certification body to indicate that this Follow-Up Service Procedure fulfills the requirements for certification documentation issued by the certification body. The certification body's accreditation status for the applicable certification scheme and identification of the accreditation body can be found at <https://www.ul.com/resources/accreditation>.

Deborah Jennings-Conner  
VP Regulatory Services  
UL LLC

LOCATION

2247343 (Party Site)  
Eaglerise Electric & Electronic (Ji An) Co., Ltd.  
West Zone Jian County Industrial Park  
Jian Jiangxi 343100 CN

Factory ID: None

UL Contracting Party for above site is: UL GmbH