1.0 Reference and Address			
Report Number	200312165GZU-001	Original Issued: 7-Apr-2020	Revised: 29-Sep-2020
Standard(s)	Automatic Electrical Controls - Part 1: General Requirements [UL 60730-1:2016 Ed.5] Automatic Electrical Controls - Part 1: General Requirements [CSA E60730-1:2015 Ed.5]		

Applicant	Shenzhen Sonoff Technologies Co.,Ltd	Manufacturer	**Dongguan SI Electronic Co., Ltd**
Address	Room 1001, 10F, Building 8, Lianhua Industrial Park, Longyuan Road, Longhua District, SHENZHEN Guangdong	Address	Floor 1& Floor 2, Bldg B, Fuzhu 1st Street, Yinyang Industrial Zone, Zhangyang Zhangmutou Town, DONGGUAN, Guangdong
Country	China	Country	China
Contact	Patton Pang	Contact	Hui Liu
Phone	(+86)18194017416	Phone	(+86)13929272740
FAX	--	FAX	--
Email	patton.pang@itead.cc	Email	sales@si-ltd.com

2.0 Product Description	
Product	Smart Wi-Fi Plug
Brand name	Sonoff
Description	The product covered by this report are direct plug-in Smart Wi-Fi Plug intended for indoor dry location use.
Models	S31, S31 Lite
Model Similarity	Models S31 Lite is identical to S31, except not provided with electric quantity circuit (for electric measurement).
Ratings	120V ac, 60Hz, 15A max, General Use
Other Ratings	NA

3.0 Product Photographs

Photo Group 1 - Main Product Photos, refer to File E498650 Vol.1 Sec.1 Figs. 1 thru 6.

4.0 Critical Components

Photo #	Item no.[1]	Name	Manufacturer/ trademark[2]	Type / model[2]	Technical data and securement means	Mark(s) of conformity [3]
1	1	Main Product Components	Various	Various	Refer to UL File E498650 Vol.1 Sec.1, pages 7 thru 9 for component descriptions.	NR

NOTES:

1) Not all item numbers are indicated (called out) in the photos, as their location is obvious.

2) “Various“ means any type, from any manufacturer that complies with the "Technical data and securement means" and meets the "Mark(s) of conformity" can be used.

3) Indicates specific marks to be verified, which assures the agreed level of surveillance for the component. "NR" - indicates Unlisted and only visual examination is necessary. "See 5.0" indicates Unlisted components or assemblies to be evaluated perio

5.0 Critical Unlisted CEC Components

No Unlisted CEC components are used in this report.

6.0 Critical Features

Recognized Component - A component part, which has been previously evaluated by an accredited certification body with restrictions and must be evaluated as part of the basic product considering the restrictions as specified by the Conditions of Acceptability.

Listed Component - A component part, which has been previously Listed or Certified by an accredited Certification Organization with no restrictions and is used in the intended application within its ratings.

Unlisted Component - A part that has not been previously evaluated to the appropriate designated component standard. It may also be a Listed or Recognized component that is being used outside of its evaluated Listing or component recognition.

Critical Features/Components - An essential part, material, subassembly, system, software, or accessory of a product that has a direct bearing on the product's conformance to applicable requirements of the product standard.

Construction Details - For specific construction details, reference should be made to the photographs and descriptions. All dimensions are approximate unless specified as exact or within a tolerance. In addition to the specific construction details described in this Report, the following general requirements also apply.

1. Spacing -In primary circuits, 1.5 mm minimum spacing are maintained through air and over surfaces of insulating material between current-carrying parts of opposite polarity, 1.5 mm minimum between such current-carrying parts and uninsulated grounded parts, 3.0 mm minimum between such current-carrying parts and accessiable surface.
2. Mechanical Assembly - Components such as switches, fuseholders, connectors, wiring terminals and display lamps are mounted and prevented from shifting or rotating by the use of lockwashers, starwashers, or other mounting format that prevents turning of the component.
3. Corrosion Protection - All ferrous metal parts are protected against corrosion by painting, plating or the equivalent.
4. Accessibility of Live Parts - All uninsulated live parts in primary circuitry are housed within a non-metallic enclosure constructed with no openings other than those specifically described in Sections 4.
5. Grounding - All exposed dead-metal parts and all dead-metal parts within the enclosure that are exposed are connected to the grounding lead of the power supply cord or the equipment grounding terminal
6. Polarized Connection - This product is provided with a polarized power supply connection. All single pole switches and fuses are connected only to the ungrounded supply circuit conductor.
7. Internal Wiring - NA
8. Schematics -Refer to UL File E498650 Vol.1 Sec.1,Illustrations 3 thru 8 for schematics requiring verification during Field Representative Inspection Audits.
9. Markings - Refer to UL File E498650 Vol.1 Sec.1 page 3.
10. Installation, Operating and Safety Instructions - NA

7.0 Illustrations

Illustration 1 - UL File E498650 Vol.1 Sec.1

8.0 Test Summary			
Evaluation Period	2020/3/23	Project No.	200312165GZU
Due to the previous testing performed under UL File E498650 Vol.1 Sec.1, no additional testing was necessary.			

8.1 Signatures			
A representative sample of the product covered by this report has been evaluated and found to comply with the applicable requirements of the standards indicated in Section 1.0.			
Completed by:	Ron Chen	Reviewed by:	Sunny Tang
Title:	Engineer	Title:	Reviewer
Signature:	*Signature on file*	Signature:	*Signature on file*

9.0 Correlation Page For Multiple Listings	
The following products, which are identical to those identified in this report except for model number and Listee name, are authorized to bear the ETL label under provisions of the Intertek Multiple Listing Program.	
BASIC LISTEE	Shenzhen Sonoff Technologies Co.,Ltd
Address	Room 1001, 10F, Building 8, Lianhua Industrial Park, Longyuan Road, Longhua District, SHENZHEN Guangdong
Country	China
Product	Smart Wi-Fi Plug

MULTIPLE LISTEE 1	None
Address	
Country	
Brand Name	
ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 1 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 2	None
Address	
Country	
Brand Name	
ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 2 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 3	None
Address	
Country	
Brand Name	
ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 3 MODELS	BASIC LISTEE MODELS

10.0 General Information

The Applicant and Manufacturer have agreed to produce, test and label ETL Listed products in accordance with the requirements of this Report. The Manufacturer has also agreed to notify Intertek and to request authorization prior to using alternate parts, components or materials.

COMPONENTS

Components used shall be those itemized in this Intertek report covering the product, including any amendments and/or revisions.

LISTING MARK

The ETL Listing mark applied to the products shall either be separable in form, such as labels purchased from Intertek, or on a product nameplate or other media only as specifically authorized by Intertek. Use of the mark is subject to the control of Intertek.

The mark must include the following four items:

1) applicable country identifiers "US" and/or "C" or "US", "C" and "EU"
2) the word "Listed" or "Classified" or "Recognized Component" (whichever is appropriate)
3) a control number issue by Intertek
4) a product descriptor that identifies the standards used for certification. Example:

For US standards, the words, “Conforms to” shall appear with the standard number along with the word, “ Standard” or “Std.” Example: “Conforms to ANSI/UL Std. XX.”

For Canadian standards, the words “Certified to CAN/CSA Standard CXX No. XX.” shall be used, or abbreviated, “Cert. to CAN/CSA Std. CXX No. XX.”

Can be used together when both standards are used.

Note: A facsimile must be submitted to Intertek, Attn: Follow-up Services for approval prior to use. The facsimile need not have a control number. A control number will be issued **after signed Certification Agreements** have been received by the Follow-up Services office, approval of the facsimile of your proposed Listing Mark, satisfactory completion of the Listing Report, and scheduling of a factory assessment in your facility.

MANUFACTURING AND PRODUCTION TESTS

Manufacturing and Production Tests shall be performed as required in this Report.

FOLLOW-UP SERVICE

Periodic unannounced audits of the manufacturing facility (and any locations authorized to apply the mark) shall be scheduled by Intertek. An audit report shall be issued after each visit. Special attention will be given to the following:

1. Conformance of the manufactured product to the descriptions in this Report.
2. Conformance of the use of the ETL mark with the requirements of this Report and the Certification Agreement.
3. Manufacturing changes.
4. Performance of specified Manufacturing and Production Tests.

In the event that the Intertek representative identifies non-conformance(s) to any provision of this Report, the Applicant shall take one or more of the following actions:

1. Correct the non-conformance.
2. Remove the ETL Mark from non-conforming product.
3. Contact the issuing product safety evaluation center for instructions.

10.1 Evaluation of Unlisted Components

Because Unlisted Components are uncontrolled, and they do not fall under a third party follow up program, Intertek may require these components to be tested and/or evaluated at least once annually, more often for certain components, as part of the independent certification process. The Unlisted Components in Section 5.0 require testing and/or evaluation as indicated.

The Applicant will be notified, in writing, via the applicable contact methods, as defined in Section 1.0, when these components must be selected and sent to Component Evaluation Center (CEC) for re-evaluation.

Due to particular testing requirements, some components may be requested to be shipped to specific labs. Thus, specific shipment destination(s) for each sample will be provided in the written notification.

Managing CEC Location:
Intertek Testing Services Shenzhen Limited Guangzhou Branch
ETL Component Evaluation Center
Room 02, &101/E201/E301/E401/E501/E601/E701/E801 of Room 01 1-8/F., No. 7-2, Caipin Road, Science City

GETDD Guangzhou, Guangdong, China
Attn: Ms. Joey Kuang
Sample Disposition: Due to the destructive nature of the testing, all samples will be discarded at the conclusion of testing unless, the manufacturer specifically requests the return of the samples. The request for return must accompany the initial component shipment.

11.0 Manufacturing and Production Tests

The manufacturer agrees to conduct the following Manufacturing and Production Tests as specified:

Required Tests

Dielectric Voltage Withstand Test

11.1 Dielectric Voltage Withstand Test

Method

One hundred percent of production of the products covered by this Report shall be subjected to a routine production line dielectric withstand test.

The test shall be conducted on products, which are fully assembled. Prior to applying the test potential, all switches, contactors, relays, etc., should be closed so that all primary circuits are energized by the test potential. If all primary circuits cannot be tested at one time, then separate applications of the test potential shall be made.

The test voltage specified below shall be applied line conductors and grounding conductor, line conductors and accessible surfaces.. The test voltage may be gradually increased to the specified value but must be maintained at the specified value for one second or one minute as required.

Test Equipment

The test equipment shall incorporate a transformer with an essentially sinusoidal output, a means to indicate the applied test potential, and an audible and/or visual indicator of dielectric breakdown.

The test equipment shall incorporate a voltmeter in the output circuit to indicate directly the applied test potential if the rated output of the test equipment is less than 500VA.

If the rated output of the test equipment is 500VA or more, the applied test potential may be indicated by either:

1 - a voltmeter in the primary circuit;

2 - a selector switch marked to indicate the test potential; or

3 - a marking in a readily visible location to indicate the test potential for test equipment having a single test potential output.

In cases 2 and 3, the test equipment shall include a lamp or other visual means to indicate that the test potential is present at the test equipment output. All test equipment shall be maintained in current calibration.

Products Requiring Dielectric Voltage Withstand Test:

Product	Test Voltage	Test Time
All products covered by this Report.	1250V AC	60 s
	or	
	1500 AC	1 s

12.0 Revision Summary				
The following changes are in compliance with the declaration of Section 8.1:				
Date/ Proj # Site ID	Project Handler/ Reviewer	Section	Item	Description of Change
29-Sep-2020 200929044GZU	Ron Chen/  Sunny Tang 	2	--	Deleted rating:50Hz

File E498650
Project 4788342017

June 28, 2019

REPORT

on

MISCELLANEOUS CONTROLS

SHENZHEN SONOFF TECHNOLOGIES CO LTD
SHENZHEN, GUANGDONG, CHINA

DESCRIPTION

PRODUCT COVERED:

USL, CNL – Operating Control, Smart Wi-Fi Plug, Models S31 and S31 Lite.

GENERAL CHARACTER:

The devices covered in this report are smart plugs for use in indoor locations and intended to directly plug into wall receptacle (NEMA 5-15R) to control household or commercial appliances. The device consists of one NEMA 5-15P plug and one NEMA 5-15R receptacle. The controls employ a relay with normally open contacts connecting in series with ungrounded side of the receptacle as load switching device. They control the load by responding to the preset timer parameters or the on/off signal through smart phone or tablet, etc.

The devices utilize switching mode power supply (SMPS) circuit to reduce the line power to ELV, limited energy (<=15W) to supply the logic circuits. The entire printed wiring board assembly is enclosed in an enclosure and prevented users from accessing to the live parts.

The devices are investigated as Operating Control (non-safety), Type 1.B action only. No safety or protective function is evaluated.

MODEL DIFFERENCES:

Models S31 Lite is identical to S31, except not provided with electric quantity circuit (for electric measurement).

RATINGS (For more information about client declarations for these products refer to the Constructional Data Form, ILL. 1.):

Electrical -

INPUTS:

Control Input Item	Input Rating	Terminals
Plug Input	120V ac, 50/60Hz	(Plug) L pin, N pin

COMMUNICATION:

Type	Rating	Terminal
N/A	N/A	N/A

OUTPUTS:

Type	Rating	Terminal
Receptacle Output (Relay K1, N.O., Type 1.B)	120V ac, 50/60Hz, 15A max, General Use	(Receptacle) L contacts, N contacts

Temperature - Operating ambient temperature 0~30°C
Shipping and Storage Temperature: -40°C to 60°C

Control Type - Direct Plug-in
Software Class – A
Overvoltage Category – II
Pollution Degree – 2
Protection against Electric Shock – Insulation-Encased Class I
Environmental - IP20 (NEMA 1)
Automatic Action – Micro-disconnection (Type 1.B)

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Use - For use only in products where the acceptability of the combination is determined by UL LLC.

USL indicates evaluation to UL 60730-1, Standard for Automatic Electrical Controls, Part 1: General Requirements.

CNL indicates investigation to Canadian Standard for Automatic Electrical Controls, Part 1: General Requirements CAN/CSA-E60730-1.

The units are for use in an extended environment: 0°C to 30°C, 0% to 90% relative humidity.

CONSTRUCTION DETAILS:

The product shall be constructed in accordance with the following description.

Markings - All markings are permanently ink-stamped, silk-screened, molded or provided on a Marking and Labeling System (PGDQ2/8 or PGJI2/8) suitable for application to the surface involved, rated 80°C minimum.

The following markings are provided:

A. Listed Company's name, trade name, trade mark or UL file number,
B. Model number,
C. Date code,
D. "Indoor Use Only" or  or any equivalent statement or identification,
E. Rating (Current, voltage, Hz, etc.).

The date code shall be the date or other dating period of manufacture not exceeding any three consecutive months. The date of manufacture may be abbreviated; or may be in a nationally accepted conventional code or in a code affirmed by the manufacturer, provided that the code:

a) Does not repeat in less than 20 years, and

b) Does not require reference to the product records of the manufacturer to determine when the product was manufactured.

Where lack of space prevents legible marking as specified, the control shall be marked with A), B) and C) only. All other markings are placed in the user manual or the stuffer sheet that accompanies the product.

CONSTRUCTION DETAILS: (CONT'D)

Instruction Manual – Provided with each unit or maybe an instruction guide the user to access electronic manual or instruction, including the following information. (it's considered to be met if such information has been provided by marking.)

1) 'Type 1 enclosure' or 'IP20' or the equivalent;
2) Operating temperature of the control;
3) 'Operating Control' or the equivalent;
4) 'Type 1.B action' or the equivalent;
5) 'Pollution degree 2' or the equivalent.

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

Mechanical Electrical Connections - For electrical connection, internal wiring and leads of components are provided with crimp-on terminals such as closed loop, spade type with upturned ends, quick connect with integral detent or locking type, or are mechanically secured and soldered.

Corrosion Protection - All parts of these devices are either constructed of corrosion resistant material or are plated or painted for protection against corrosion. Where corrosion protection is specified, all surfaces of the part are so protected, unless otherwise specified.

Dimensions - All dimensions are nominal unless otherwise specified.

Internal Wiring – Unless otherwise noted, all internal wiring is 18 AWG, rated 105°C, 300 V minimum.

Soldered Connections - All soldered connections are made mechanically secure 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.

Printed Wiring Boards - Unless otherwise specified, all printed wiring boards are Recognized Components (ZPMV2):

1) suitable for the solder time and temperature used by the manufacturer,
2) having a PTI rating of at least 175 V (CTI <= 3),
3) having an operating temperature rating of at least 105°C,
4) having a minimum flame rating of 94V-2, and
5) suitable for direct support of live parts.

The printed wiring board used has a thickness of 1.5 mm except otherwise specified.

Clearance – This component has been judged on the basis of the required clearances in the UL60730-1/CSA E60730-1 standards, Table 22, Case A. The clearance requirements are based on the following parameters:

TABLE: clearance measurements				
distance under consideration	type of insulation	pollution degree	rated impulse voltage (V)	case A clearance (mm)
				req.
Plug L to N	FI	2	1500	0.5
Receptacle L to N	FI	2	1500	0.5
L to N before fuse, including pin and trace of fuse	FI	2	1500	0.5
Receptacle contacts to enclosure surface may be contacted	RI	2	1500	1.5
Live part of PCB to enclosure surface may be contacted	RI	2	1500	1.5
Line/Neutral to GND terminal	BI	2	1500	0.5

Creepage – This component has been judged on the basis of the required creepages in the UL60730-1/CSA E60730-1 standards, Table 23. The creepage requirements are based on the following parameters:

TABLE: creepage measurements (other than functional insulation)					
distance under consideration	type of insulation	rated voltage (V)	pollution degree	material group	Creepage (mm)
					required
Receptacle contacts to enclosure surface may be contacted	RI	120	2	IIIa	3.0
Live part of PCB to enclosure surface may be contacted	RI	120	2	IIIa	3.0
Line/Neutral to GND terminal	BI	120	2	IIIa	0.5(+)

Creepage – This component has been judged on the basis of the required creepages in the UL60730-1/CSA E60730-1 standards, Table 24. The creepage requirements are based on the following parameters:

TABLE: Creepage measurements (functional insulation only)					
distance under consideration	PWB material (PTI)	working voltage (V)	pollution degree	material group	creepage(mm)
					Required
Plug L to N (PWB)	≥175	120	2	IIIa	0.5(+)
Plug L to N (Other than PWB)	≥175	120	2	IIIa	1.5
Receptacle L to N (PWB)	≥175	120	2	IIIa	0.5(+)
Receptacle L to N (Other than PWB)	≥175	120	2	IIIa	1.5
L to N before fuse (PWB) , including pin and trace of fuse	≥175	120	2	IIIa	0.5(+)
L to N of Relay Contacts (PWB)	≥175	120	2	IIIa	0.5(+)

(+) Required creepage distance cannot be less than the Required Clearance Distance.

FIGURES AND ILLUSTRATIONS:

Figures -

Fig. No.	Description	Model
1	Overall front view	S31
2	Overall rear view	S31
3	Disassemble view	S31
4	Disassemble view	S31
5	Top view of Main PCB	S31
6	Bottom view of Main PCB	S31

Illustrations -

Ill. No.	Description	Model
1	CDF (Constructional Data Form)	All
2	User Manual	All
3	Component and Trace Layouts for Main PCB	All
4	Dimension Drawing of housing	All
5	Dimension Drawing of Plug Blades	All
6	Dimension Drawing of Receptacle Contacts	All
7	Specification of Transformer	All
8	Specification of Inductor (L1)	All

SMART WI-FI PLUG, MODEL S31 – FIGS. 1 THRU 4

General – Figs. 1 thru 4 show the overall view and disassemble views of the device. They also represent model S31 Lite except other specified.

1. Housing – Consists of Front Housing & Rear Housing & Corner Cover. R/C (QMFZ2/8), SABIC INNOVATIVE PLASTICS US L L C (E121562), type 940(f1), rated V-0, HWI: 3, HAI: 3, CTI: 2, 120 degree C, Dielectric Strength (kV/mm):33, Volume Resistivity (10x ohm-cm):15. Measured 2.1 mm thickness minimum. Suitable for direct support of live parts. See ILL. 4 for dimension details. Front Housing & Rear Housing secured together by screws. Corner Cover snap fitted to Rear Housing. (Engineering note: The receptacle openings configuration complies with NEMA 5-15R.)

2. Side Cover - R/C (QMFZ2/8), **SABIC INNOVATIVE PLASTICS US L L C (E121562), type 940(f1), rated V-0, HWI: 3, HAI: 3, CTI: 2, 120 degree C.** Measured 2.1 mm thickness minimum. Secured to Housing by snap fit. See ILL. 4 for dimension details.

3. Plug Blades – NEMA 5-15P configuration, non-polarized. Consists of two blades for "L/N" and one grounding pin. Made of brass with bright nickel-plating. Secured to the rear housing by molded and soldered to the PCB. See ILL. 5 for construction and dimension details.

4. Receptacle Contacts - Consists of two contacts for "L/N" and one contact for grounding. Made of **copper alloy.** Soldered on the PCB and fit with the front housing construction. See ILL. 6 for construction and dimension details.

5. Control PCBs – Consists of WIFI PCB & Main PCB.

   a) WIFI PCB – All located in ELV, limited energy (<=15W) circuit. Trace and component layouts may be varied. Components may be varied. Measured overall 32 mm by 25 mm, 1.2 mm thick.

   b) Main PCB – See Figs. 5 & 6 for details.

SMART WI-FI PLUG, MODEL S31 – FIGS. 5 & 6

General – Figs. 5 & 6 show the front view and bottom view of the Main PCB for Model S31 respectively. It also represents Model S31 Lite except for otherwise specified.

1. Printed Wiring Board – Refer to requirements in CONSTRUCTION DETAILS except rated 130°C. See ILLs. 2 & 3 for component and trace layouts. Overall measured 34.3 by 64.2 mm wide, 1.5 mm thick minimum.

2. Fuse (F1) – R/C (JDYX2/8), XC ELECTRONICS (SHENZHEN) CORP LTD (E249609), type 4T, rated 1A, 300V ac.

3. Varistor (RV1) – R/C (VZCA2/8), LIEN SHUN ELECTRONICS CO LTD (E315524), type 10D471K, SPD type 5, rated operating voltage 300V ac, max ambient temperature 105 degree C, with measured limited voltage (MLV) 1230V and discharge current (In) 3kA.

   Alternate – Any R/C (VZCA2/8), Type 5 SPD, rated min. 300V ac, MLV 1230V maximum and In 3kA minimum.

4. X Capacitor (C2) – R/C FOWX2/8, X2 or better, rated 47nF, 250V, 100 degree C minimum.

5. Bridge Rectifier (U1) – Type ABS8 or equivalent rated minimum 1A , 800V.

6. Electrolytic Capacitor (C8, C11) – Rated 4.7uF, 400V minimum, 105 degree C minimum.

7. Inductor (L1) – Axial-lead type. Rated 330uH, DC resistance 5 ohms maximum, refer to ILL. 8 for details.

8. SMPS Circuit – Non-safety isolated type. It consists of the following critical components.

   1) Switching Chip (U2) – Type CR1511, by DIALOG SEMICONDUCTOR (UK) LTD.

   2) Pulse Transformer (T1) – Type EE10, by SHENZHEN **XINCHUANGLONG ELECTRONIC** TECHNOLOGY CO LTD. Class A insulation. See ILL. 7 for construction details.

   3) Capacitors (C6) - SMD type, rated 470pF, 250V minimum.

   4) Resistors -

R16, R17	SMD type, rated 1.5M ohms, 0.25W.
R13	SMD type, rated 200k ohms, 1/8W.

5) Diode –

D6, D7	SMD type, rated minimum 1A forward average current and 1000V reverse voltage.
D4	SMD type, rated minimum 1A forward average current and 40V reverse voltage.

6) Y Capacitor (C7) – R/C FOWX2/8, rated **220pF**, 400V, Y1 type.

7) Electrolytic Capacitor (C9) - Rated 470uF, 10V minimum, 105°C minimum.

8. Sensing Resistor (R9) – SMD type, rated 0.001 ohms, 3W minimum.

9. Relay (K1) – R/C (NLDX2/8), Dongguan Golden Electrical Appliance Co Ltd (E321783), type GN-1A-5L, rated 16A, 277 Vac, General use, 100K cycles, max ambient temperature 105°C. Class F insulation.

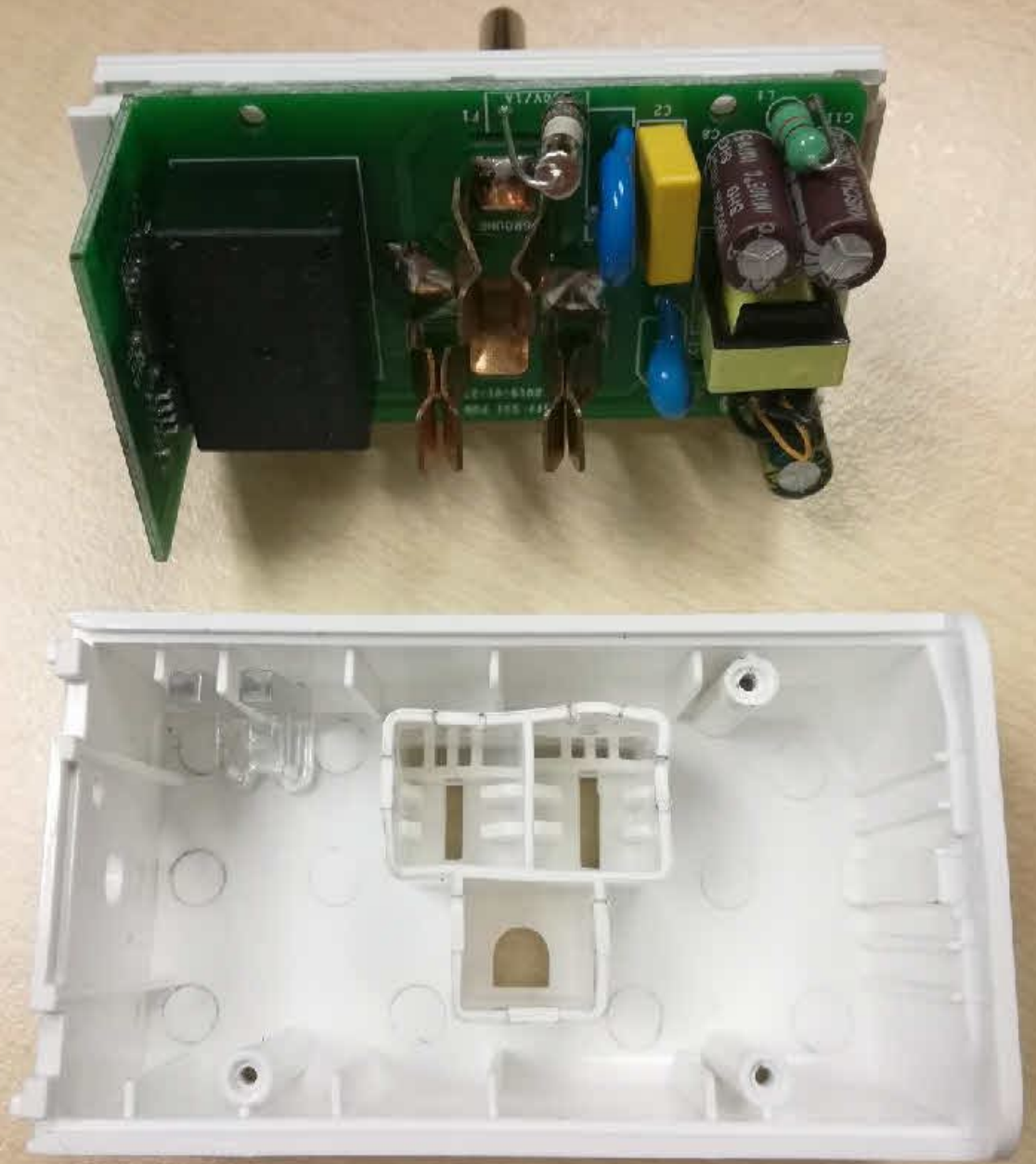
10. Resistor (R11) - SMD type, rated 4.64 ohm, 0805 package.

11. Resistors and Capacitors – (For Model S31 only) SMD type, rated as below:

R25	0 ohm, 1206 package
R26, R28	200K ohm, 0805 package
R27, R31	1K ohm, 0603 package
C22, C23	33 nF, 50V minimum, 0603 package


SONOFF
Model:S31
Input:120 AC 50/60Hz
Output:120 AC 50/60Hz
15A max. for general use
Wi-Fi:IEEE 802.11 b/g/n
2.4GHz
FCC ID:2APN5S31
MADE IN CHINA
c UL us
LISTED


SONOFF
Model:S31
Input:120 AC 50/60Hz
Output:120 AC 50/60Hz
15A max. for general use
Wi-Fi:IEEE 802.11 b/g/n
2.4GHz
FCC ID:2APN5S31
MADE IN CHINA
c UL us
LISTED




Sonoff S31 POW V1.2
2019-01-23
D3
D1
C3
C18
R8
R5
C14
N
L1
R16R17
F1


R28
R32
R30
R29
R26
C24
R37
C1
GND
C23
R31
R27
C22
R19
R20
D2
Q1
R25
R9
R15
R12
C5
D7
R14
BR1

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Compliance Review Conducted by: Carla Hu/Matt Li (Printed Name) Carla Hu/Matt Li (Signature) Date 2019-06-10

Where a clause specifies a dimension, the measurement instrument(s) used to measure the dimension shall be identified (this should correlate to the measurement instrument list at the beginning of the package). The applicable dimension may be recorded in the comment column, if necessary as determined by the Level 2 Staff or Level 3 Reviewer.

CONSTRUCTION DATA FORM

General - This form is intended to capture all of the specific features (construction and performance) of a product including its intended application so as to properly investigate and certify the device. The entries in this form reflect those that are listed in table 1 of UL/IEC 60730-1 and the applicable part 2's. While completing this form for integrated/incorporated controls, consideration shall be given to end-product requirements. For audit purposes, please ensure that the entries correspond to the edition and issue date of the standard(s) that are being used in the evaluation and complete these fields for each applicable standard. If the entries are not up to date, please revise accordingly.

UL~~/IEC~~ 60730-1 - Automatic Electrical Controls ~~for Household and Similar Use~~, General Requirements, Edition __5th__, Issue date: _2016-08-03_:

1 Manufacturer	SHENZHEN SONOFF TECHNOLOGIES CO LTD	
- Place of manufacture	301, 3F, BLDG 52, the Third Industrial Park, Bantian, Longgang Dist Shenzhen, GD, 518055 China	
2	Unique Type reference	S31, S31 Lite
3	Rated voltage or rated voltage range in volts (V)	120V ac, 50/60Hz, 15A max
4	Nature of supply	AC
5	Nominal frequency	60Hz
6	Purpose of control	Operating Control
6a	Construction of control	Direct Plug-in Control
7	Type of load declared controlled by each circuit (for each terminal)	

INPUTS		
Control Input Item	Input Rating	Terminals
Plug Input	120V ac, 50/60Hz, 15A max	(Plug) L pin, N pin

COMMUNICATION		
Type	Rating	Terminal
--	--	--

OUTPUTS		
Type	Rating	Terminal
Receptacle Output	120V ac, 50/60Hz, 15A max, General Use	(Receptacle) L contacts, N contacts

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Compliance Review Conducted by: Carla Hu/Matt Li (Printed Name) Carla Hu/Matt Li (Signature) Date 2019-06-10

15	Degree of protection	IP20
17	Terminals suitable for the connection of external conductors, and if they are suitable for line or neutral conductors, or both	NEMA 5-15 Plug
18	Terminals for external conductors for other sizes than those indicated in the table of 10.1.4.	N/A
19	For screwless terminals the method of connection and disconnection	N/A
20	Details of any special conductors which are intended to be connected to the terminals for internal conductors	N/A
21	Maximum terminal temperature	N/A
22	Temperature limit of the switch head	0 - 30°C
-	a) Switching temperature or temperature range	N/A
-	b) Temperature limit of the sensing element	N/A
-	c) Temperature limit of the capillary tube	N/A
-	d) Filling of sensing element	N/A
23	Temperature of the mounting face	N/A
24	Protection against electric shock Class	Class I
25	For Class II controls, the symbol for Class II construction	N/A
26	Number of cycles of manual action	N/A
27	Number of cycles of automatic action	6,000 cycles minimum
28	Aging requirements (y) in h	N/A
29	Types of disconnection in each circuit	1.B (Relay K1 N.O. contacts)
30	Resistance to tracking for all insulating materials used	

Parts	Manufacturer	Type	Color	PTI

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Compliance Review Conducted by: Carla Hu/Matt Li (Printed Name) Carla Hu/Matt Li (Signature) Date 2019-06-10

PCB	Any (ZPMV2/8)	Any	Green	>=175
Enclosure	SABIC INNOVATIVE PLASTICS US L L C (E121562)	940(f1)	ALL	>=175

31	Method of mounting	Direct Plug-in
31a	Method of earthing	Grounding pin and contact of Plug and receptacle for connected equipment use
32	Attachment method of non-detachable cords	N/A
33	Environmental stress, transportation condition of RS	-40-60 °C
34	Operating time	Continuous
35	Period of electric stress across insulating parts	Long period
36	Limits of the activating quantity of any sensing element over which micro-disconnection or electronic disconnection is secured	N/A
37	Rates of activating quantity	
	Minimum rising α1(k/h)	N/A
	Minimum falling β1(k/h)	N/A
	Maximum rising α2(k/h)	N/A
	Maximum falling β2 (k/h)	N/A
38	Values of overshoot of activating quantity for sensing controls which are necessary for correct action (e.g. 5%)	N/A
39	Type 1 or Type 2 action	Type 1
40	Additional features of TYPE 1 or TYPE 2 action (e.g. type 1 CL or type 2 AE)	1.B
41	Manufacturing deviation (for TYPE 2 action only)	N/A
42	Drift (for TYPE 2 action only)	N/A
43	Reset characteristics for cut-out action (min)	N/A
44	Hand held control/for hand held equipment	N/A
45	Any limitation to the number or distribution of FLAT PUSH-ON RECEPTACLES which can be fitted	N/A
46	OPERATING SEQUENCE for controls with more than one circuit, if significant	N/A
47	Extent of any SENSING ELEMENT	N/A

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Compliance Review Conducted by: Carla Hu/Matt Li (Printed Name) Carla Hu/Matt Li (Signature) Date 2019-06-10

48	OPERATING VALUE or OPERATING TIME	N/A
49	Pollution situation	2
50	Delivery exclusive to equipment Manufacturer	No
51	Heat fire resistance-category	N/A
52	The minimum parameters of any heat dissipator (e.g. heat sink) not provided with an ELECTRONIC CONTROL but essential to its correct OPERATION	N/A
53	Type of output waveform if other than sinusoidal	N/A
54	Details of the LEAKAGE CURRENT waveform produced after failure of the BASIC INSULATION	N/A
55	The relevant parameters of those ELECTRONIC DEVICES or other circuit components considered as unlikely to fail (see paragraph 1 of H.27.1.3.1)	N/A
56	Type of output waveform(s) produced after failure of an ELECTRONIC DEVICE or other circuit component	N/A
57	The effect on controlled output(s) after electronic circuit component failure if relevant (item c) of H.27.1.3)	N/A
58a	For integrated and incorporated ELECTRONIC CONTROLS, if any protection against mains borne perturbations, magnetic and electromagnetic disturbances is claimed, which of the tests of clause H.26 shall be performed and the effect on controlled output(s) and function after a failure to operate as a result of each test.	N/A
58b	For other than integrated and incorporated ELECTRONIC CONTROLS, the effect on controlled output(s) and function after a failure to operate as a result of the tests of clause H.26	Not affected
59	Any component on which reliance is placed for ELECTRONIC DISCONNECTION which is disconnected as required by note 14, to table 13.2	N/A
60	Category (surge immunity)	Class 3
J.1.61	According to the use of a THERMISTOR	N/A
J.1.62	R/T characteristics	N/A

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Compliance Review Conducted by: Carla Hu/Matt Li (Printed Name) Carla Hu/Matt Li (Signature) Date 2019-06-10

J.1.63	R/T characteristics DRIFT	N/A
J.1.64	Number of cycles	N/A
J.1.65	Method of R/T measurement	N/A
66 -72	See SOFTWARE SPECIFIC DECLARATIONS and DOCUMENTATION MAPPING FOR DETAILS	
73	Controls subjected to a second fault analysis and declared condition as a result of the second fault:	N/A
74	External load and emission control measures to be used for test purposes	N/A
75	Rated Impulse voltage	1500V (II)
76	Type of printed circuit board coating	N/A
77	Temperature for the ball pressure test	N/A
78	Maximum declared torque on single bush mounting using thermoplastic material	N/A
79	Pollution degree in the micro-environment of the creepage or clearance if cleaner than that of the control, and how this is designed	N/A
80	Rated impulse voltage for the creepage or clearance if different from that of the control, and how this is ensured	N/A
81	The values designed for tolerances of distances for which the exclusion from fault mode "short" is claimed	N/A
J.1.82	For Type 2.AL action: $TT_{I\text{-}max}$, time to trip value	N/A
J.1.83	For Type 2.AL action: $I_{T\text{-}max}$, current limit value	N/A
J.1.84	For Type 2.AL action: Tmin, minimum operating ambient	N/A
85	For Class III controls, the symbol for Class III construction	N/A
86	For SELV or PELV circuits, ELV limits	N/A
87	Value of accessible voltage of SELV/PELV if different from 8.1.1	N/A
88	Annex U	N/A

Additional Info:

	INTENTIONALLY WEAK PARTS (PWB traces), dimensions:	N/A

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Compliance Review Conducted by: Carla Hu/Matt Li (Printed Name) Carla Hu/Matt Li (Signature) Date 2019-06-10

SOFTWARE SPECIFIC DECLARATIONS and DOCUMENTATION MAPPING:

66	Software sequence documentation *12) 13) 15) 18)*	N/A
67	Program documentation *12) 14) 18)*	N/A
68	Software fault analysis *12) 15) 18)*	N/A
69	Software class(es) and structure *17)*	N/A
70	Analytical measures and fault/error control techniques employed *12) 16)*	N/A
71	Software fault/error detection time(s) for controls of software classes B or C *12) 19)*	N/A
72	Control response(s) in case of detected fault/error *12)*	N/A

12) For controls declared as entirely software class A, the information in requirements 66, 67, 68, 70, 71 and 72 is not required. For controls declared as software classes B or C, information shall be provided only for the safety-related segments of the software. Information on the non-safety related segments shall be sufficient to establish that they do not influence the safety-related segments.

13) The software sequence shall be documented and, together with the operating sequence of table 1 requirement 46, shall include a description of the control system philosophy, the control flow, data flow and the timings.

14) Programming documentation shall be supplied in a programming design language declared by the manufacturer.

15) Safety-related data and safety-related segments of the software sequence, the malfunction of which could result in non-compliance with the requirements of 17, 25, 26 and 27, shall be identified. This identification shall include the operating sequence and may, for example, take the form of a fault tree analysis which shall include those fault/errors of table H.11.12.7 which could result in non-compliance. The software fault analysis shall be related to the hardware fault analysis in H.27.

16) Measures to be declared are those chosen by the manufacturer from the requirements of H.11.12.2 to H.11.12.7 inclusive.

17) Within a control, different software classes may apply to different control functions. Examples of control functions that may be classified under software classes A to C are as follows:
Class A - See definition H.2.21.1.
Class B - See definition H.2.21.2.
Class C - See definition H.2.21.3.

18) Examples of other information which may be suitable for inclusion in the documentation required by notes 12) to 17) are:
Original software system specification, for example:
Functional specification, including procedure for restart on loss of supply
Module design, including description of equipment interfaces, and description of user interfaces
Detailed design, including description of use of memory
Code listing, including programming language identification, comments and listing of subroutines
Test specification
Manuals for installation, use and/or maintenance

19) This can be expressed as a time following the execution of a specific software segment.

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Compliance Review Conducted by: Carla Hu/Matt Li Carla Hu/Matt Li Date 2019-06-10

Printed Name Signature

Documentation Sequence Mapping to Manufacturer's Documents
(See footnotes 12-19 of table H.7 in the standard)

Document Requirement	Manufacturer's Document Name - Number
Risk Analysis Approach and Results	N/A
Software Development Plan	N/A
System Architecture	N/A
Programmable Component and Software Requirements Specification	N/A
Software Design	N/A
Software Design and Code Analysis	N/A
Tool Documentation (V & V, Calibration, Bug List and Bug Fixes, or Third Party Certification)	N/A
OTS Software Documentation (Description, Version, Usage, Interface; Verification & Validation, or Certification; Bug List)	N/A
Test Documentation (Test Plan, Test Methods, Test Procedures, and Test Results)	N/A
Software Development and Post-Release Tests	N/A
Operational Tests (Failure Mode and Stress)	N/A
User Documentation	N/A
Configuration Management Plan	N/A
Software Change and Document Control	N/A
Software Identification	N/A

Additional Info - means shall be employed to address the following:

Means shall be employed for the prevention, detection, and resolution of non-terminating and non-deterministic states and error states that are capable of affecting the intended operation of the software.

- division by zero;
- under/overflow.

SHENZHEN SONOFF TECHNOLOGIES CO LTD 李冉冉

(Stamp and signature of the manufacturer)

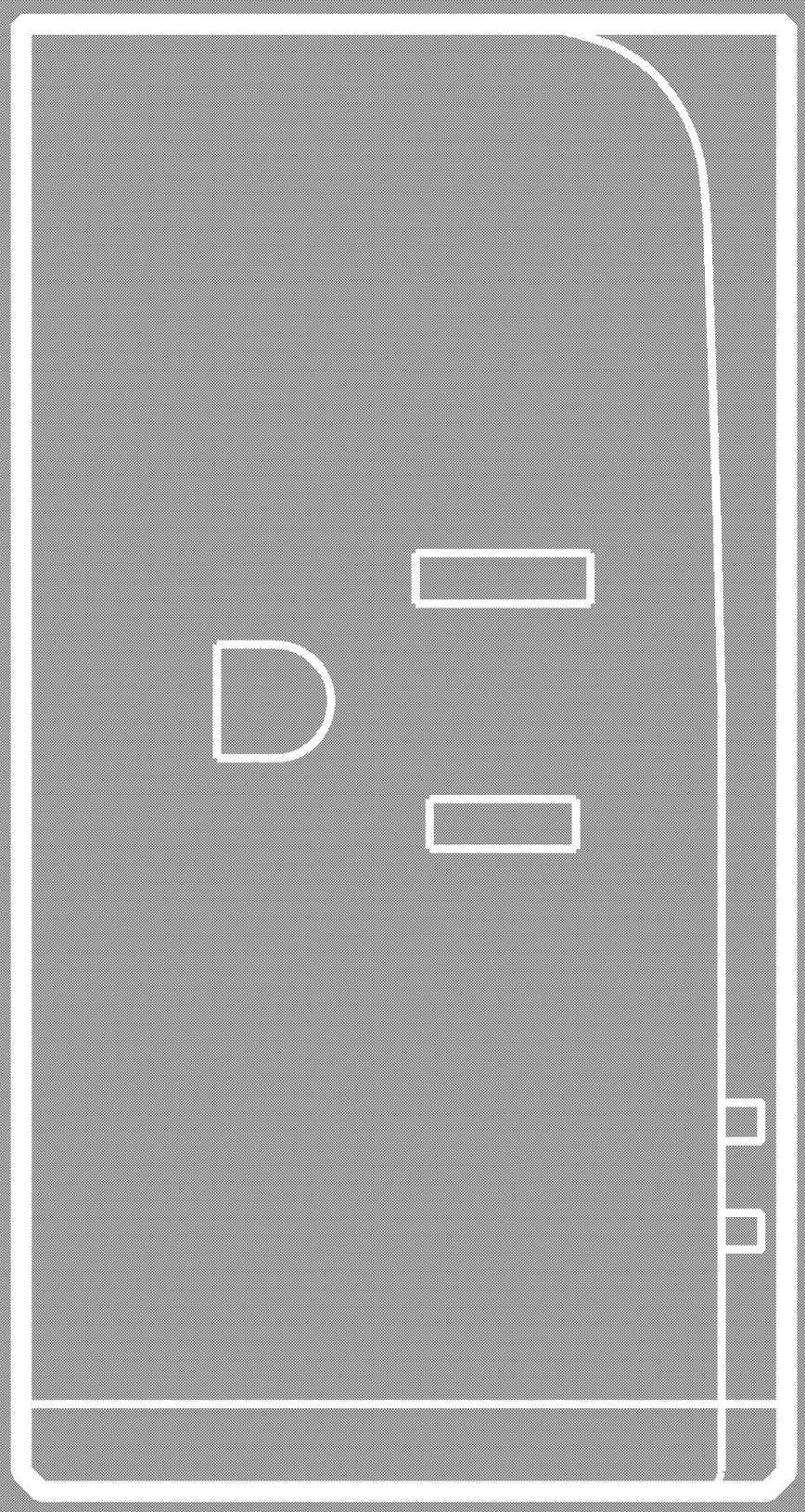
2019-06-12

(Date)

File E498650 Vol.1 Sec.1 Ill 2 Issued: 2019-06-28

S31

User manual V1.0



Wi-Fi Smart Plug with Power Monitoring

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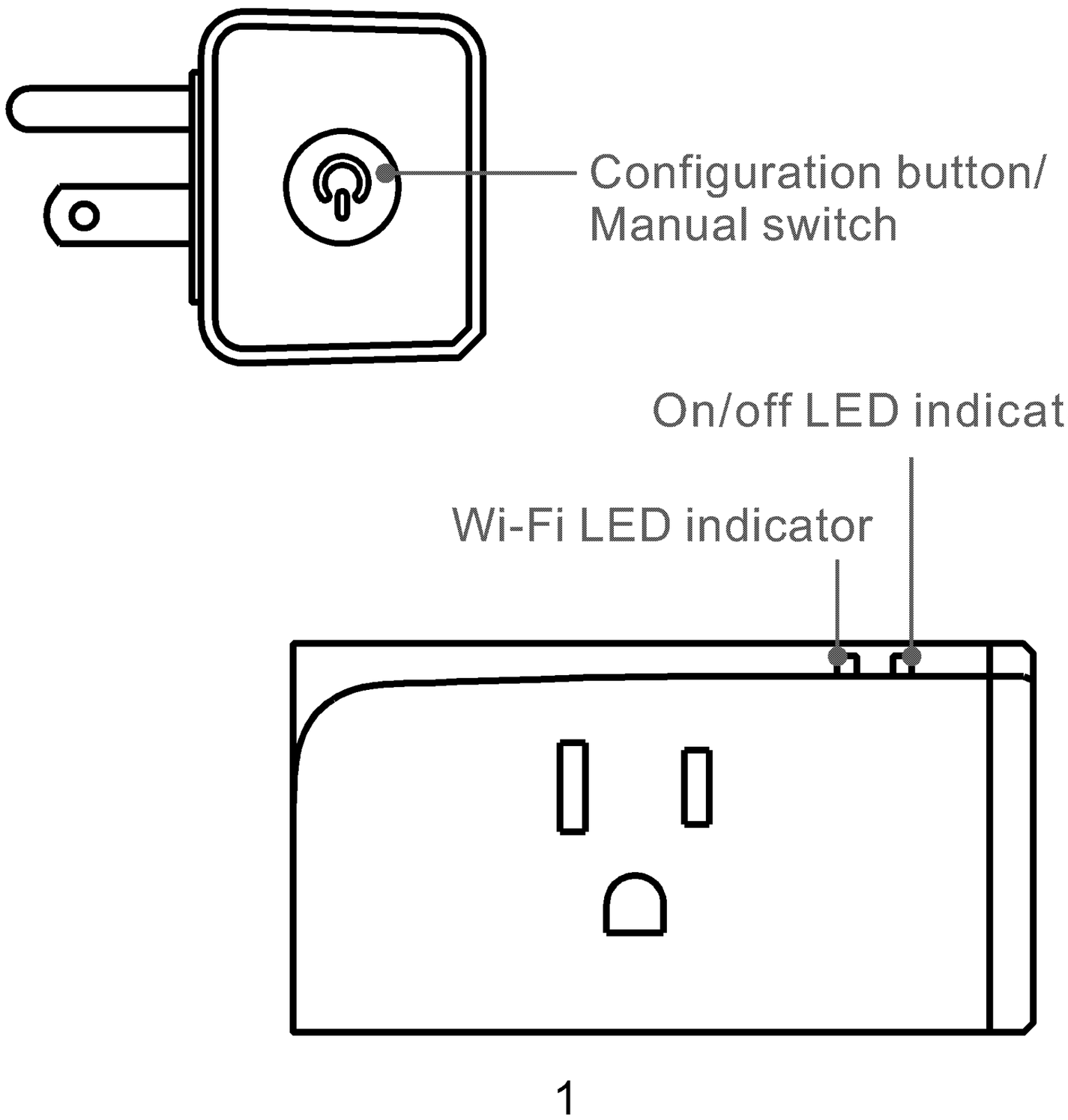
Specifications

Model	S31
Input	120V AC 60Hz
Output	120V AC 60Hz
Current	15A max. for general use
Operating temps	0-30℃
Operating systems	(Android 4.1 & iOS 9.0) or higher
Wi-Fi	IEEE 802.11 b/g/n 2.4GHz
Material	PC V0
Dimension	76x40x33mm

Product Introduction



1

Features

S31 is a Wi-Fi smart plug with power monitoring that can be used to turn on/off devices from anywhere, schedule power on/off and share APP with your family to control.

App Control

Timing Schedule

Voice Control

Share Control

Sync Status

No Hub Required

Smart Scene

LAN Control

Use Instruction

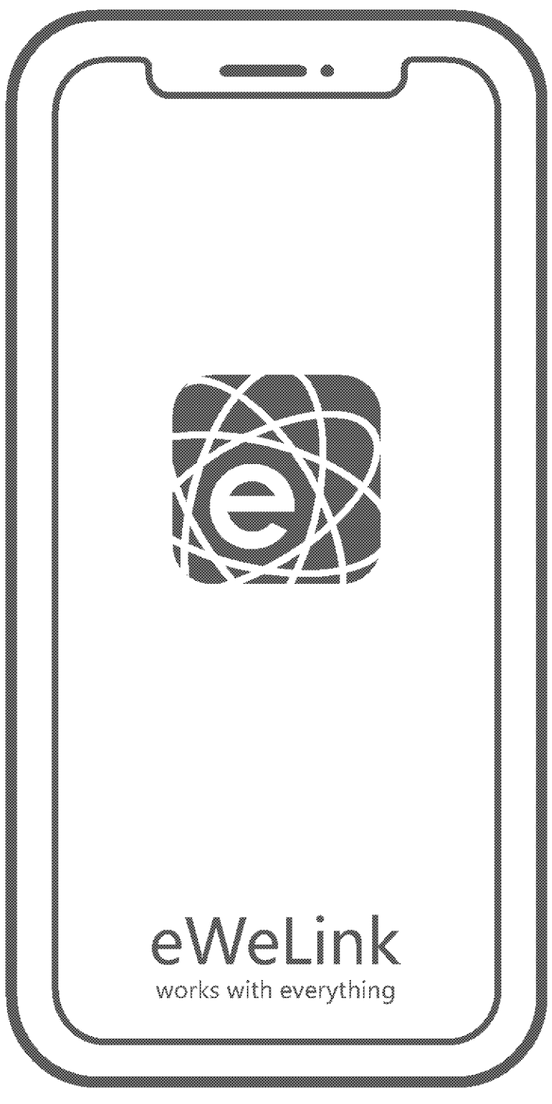
1 Download the APP

eWeLink

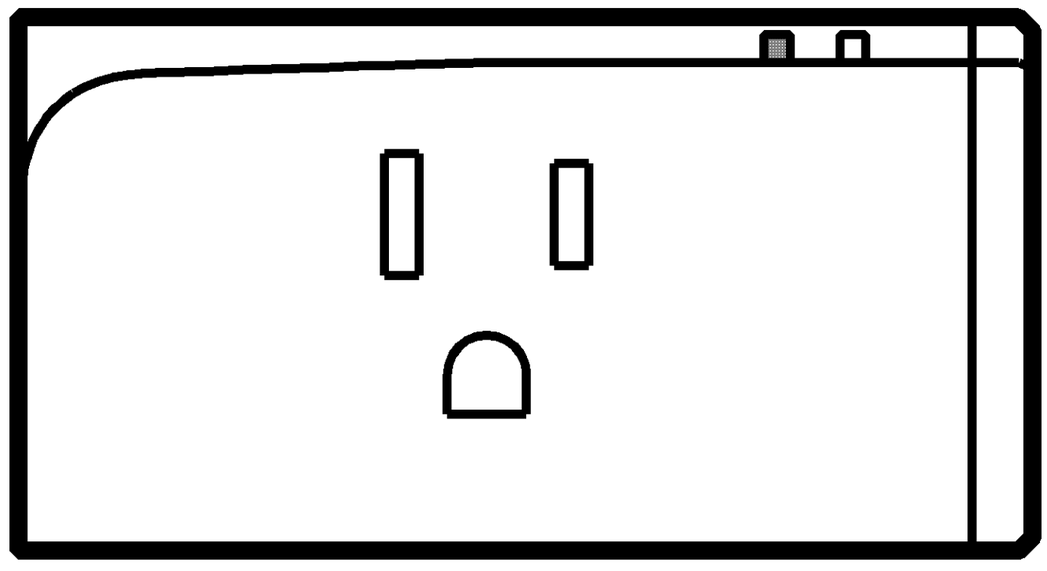
eWeLink

Download on the App Store

GET IT ON Google Play



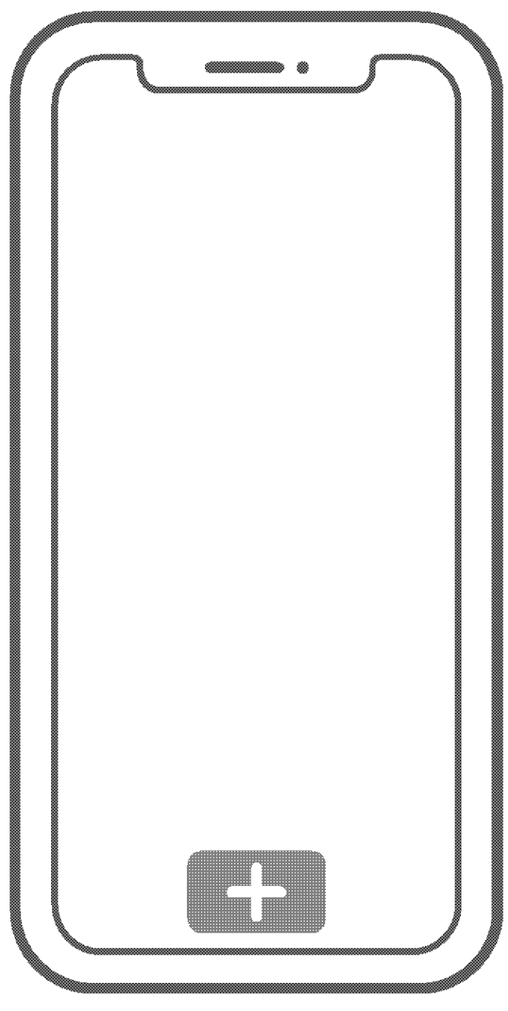
2 Power on



After powering on, the device will enter the quick pairing mode (Touch) during the first use.the Wi-Fi LED indicator changes in a cycle of two short and one long flash.

> The device will exit the quick pairing mode (Touch) if not paired within 3mins. If you want to enter this mode, please long press the manual button for about 5s until the Wi-Fi LED indicator changes in a cycle of two short and one long flash and release.

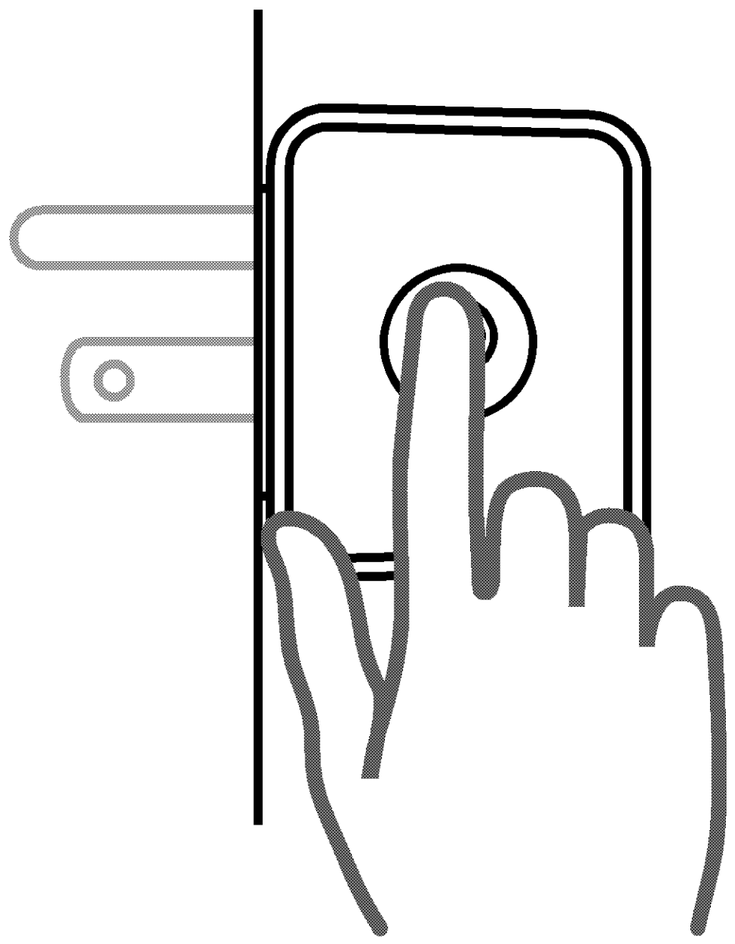
3 Add the device



Tap “+” to operate following the prompt on the APP.

Factory Reset

Long press the pairing button for about 5s until the Wi-Fi LED indicator changes in a cycle of two short and one long flash and release, then the reset is successful. The device enters quick pairing mode (Touch).



Please reset the switch to factory defaults if you want to use other Wi-Fi networks, then reconnect the network.

FCC Warning

Changes or modifications not expressly approved by the party responsible for compliance could avoid the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.

Temperature:
Operating Temperature 0~30℃
Shipping and Storage Temperature: -40℃ to 60℃

Use Method: Plug and Play

Software Class: A

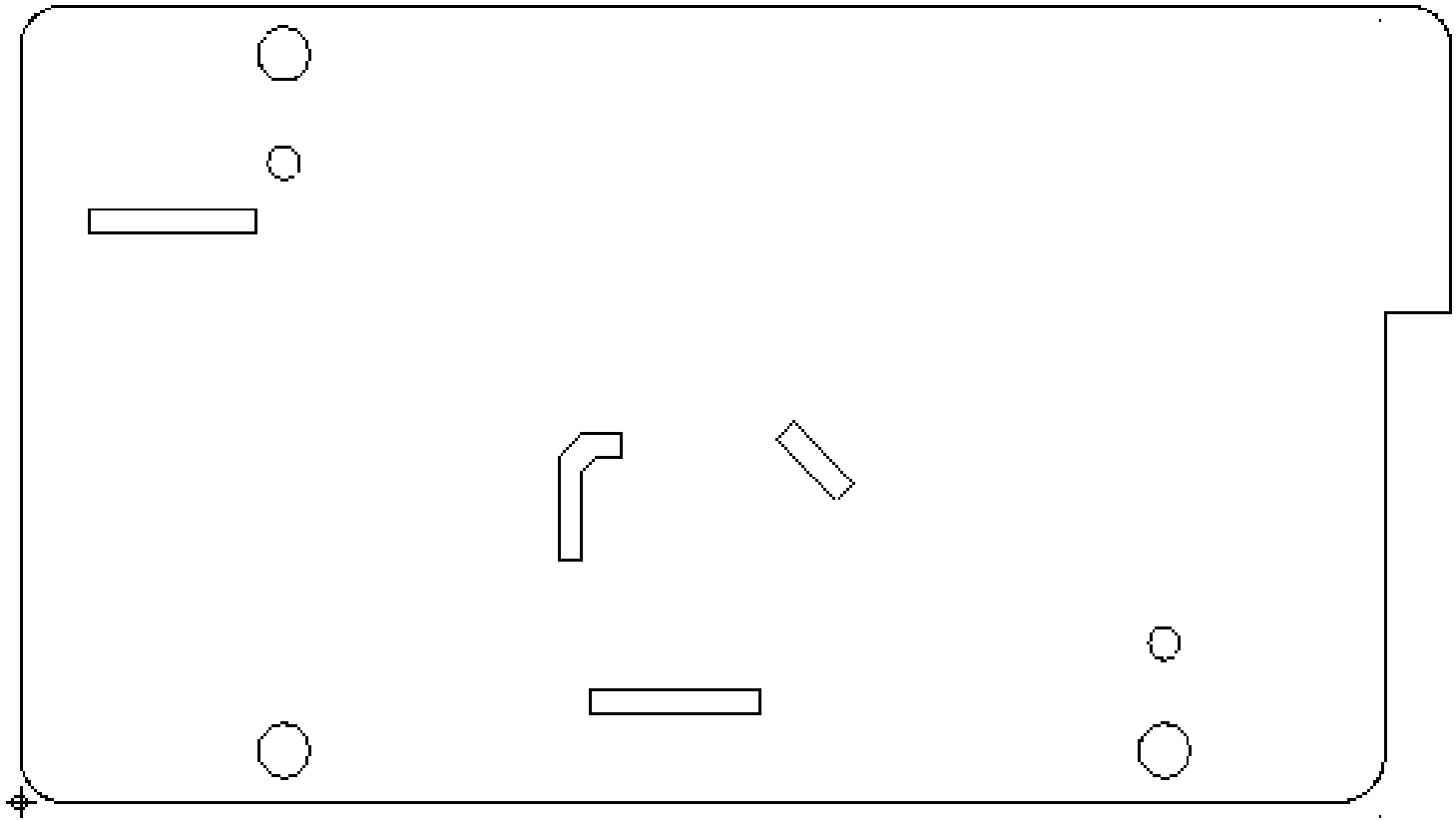
Overvoltage Category: II

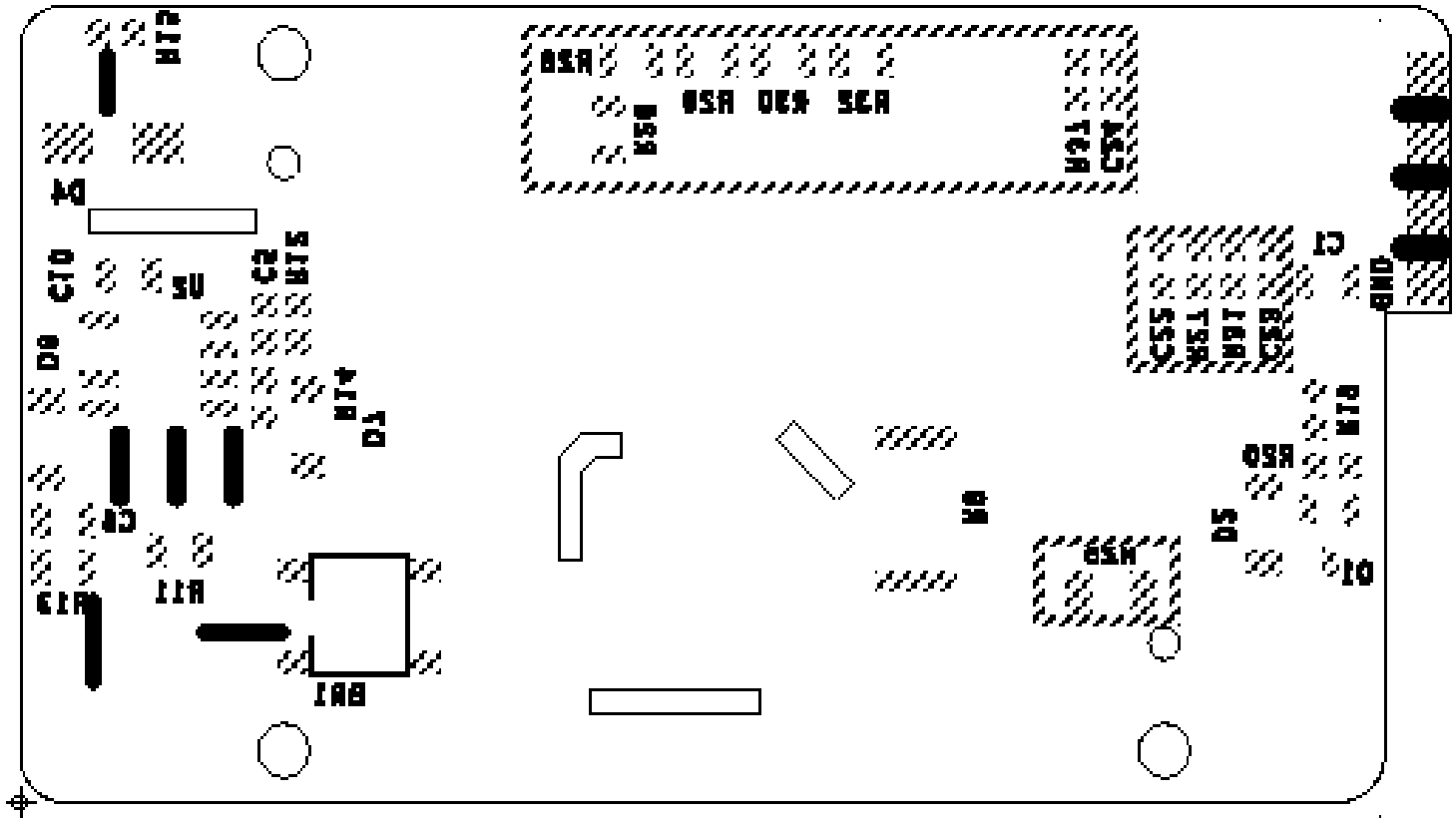
Pollution Degree: 2

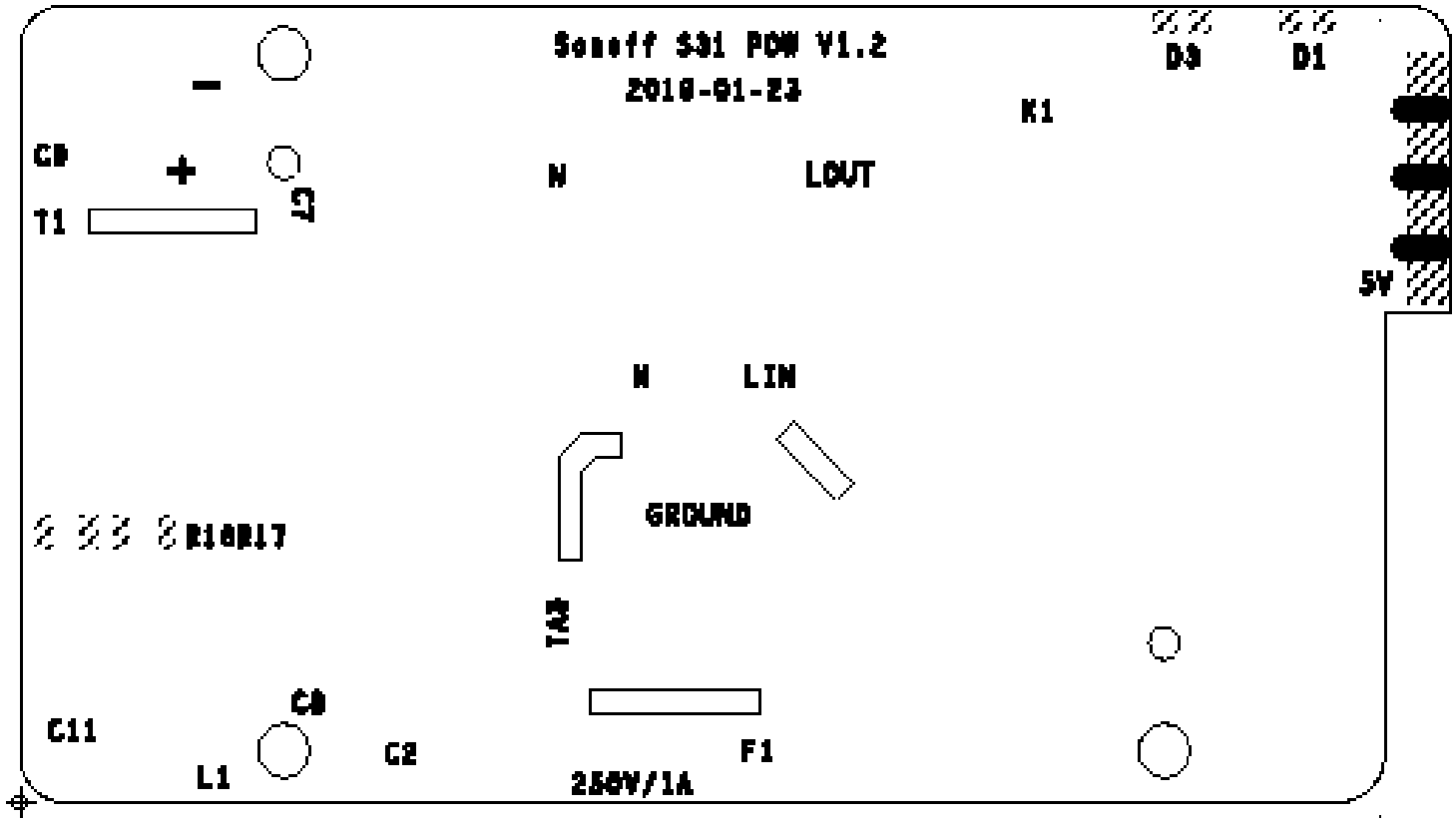
Protection against Electric Shock:
Insulation-encased Class I

Environmental: IP20 (NEMA 1)

Automatic Action: Micro-disconnection (Type 1.B)






Sonoff S31 POW V1.2
2018-01-23
D3
D1
K1
C9
T1
C3
N
LOUT
5V
N
LIN
GROUND
R18R17
TA2
C11
C8
L1
C2
F1
250V/1A

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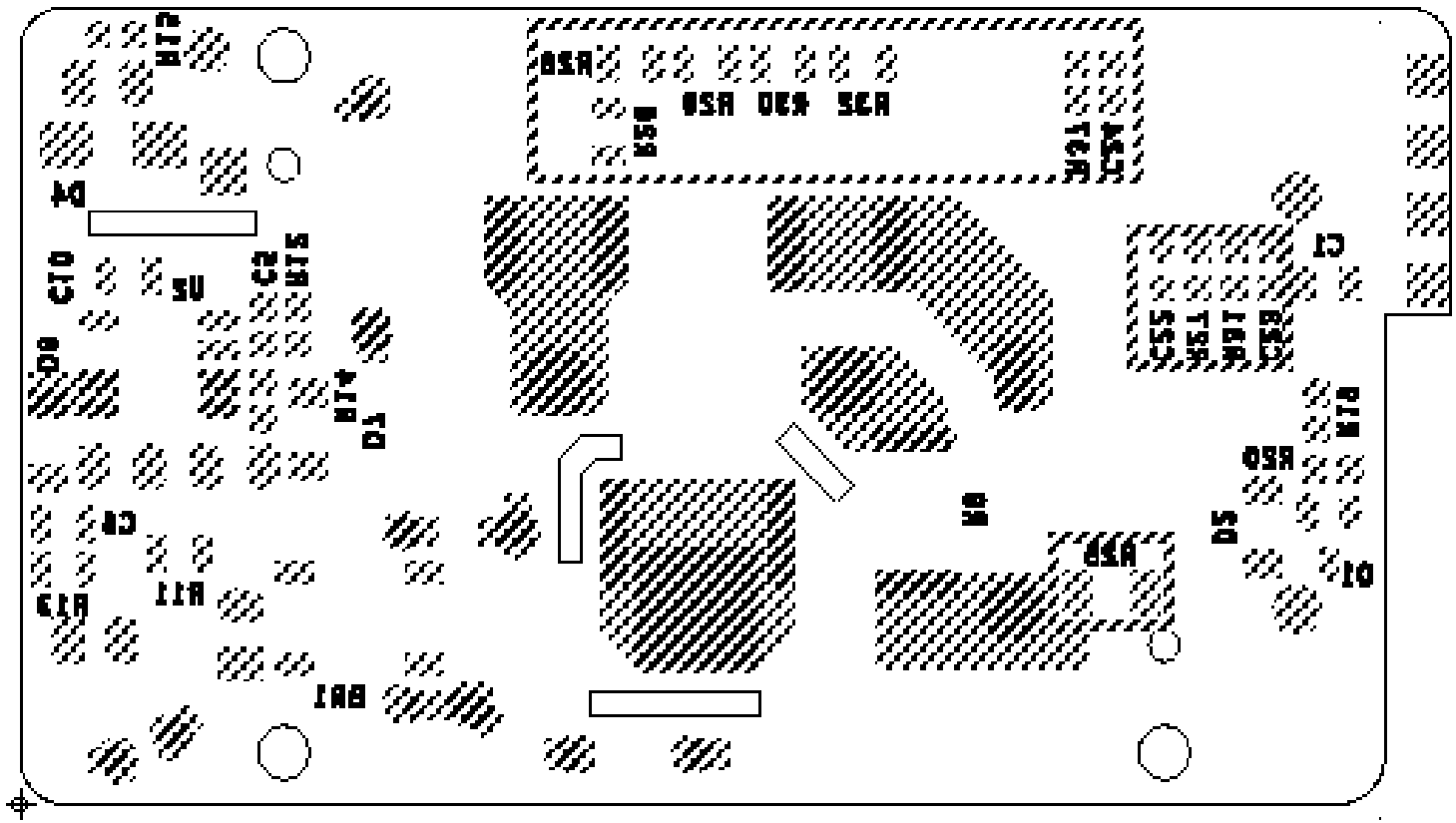

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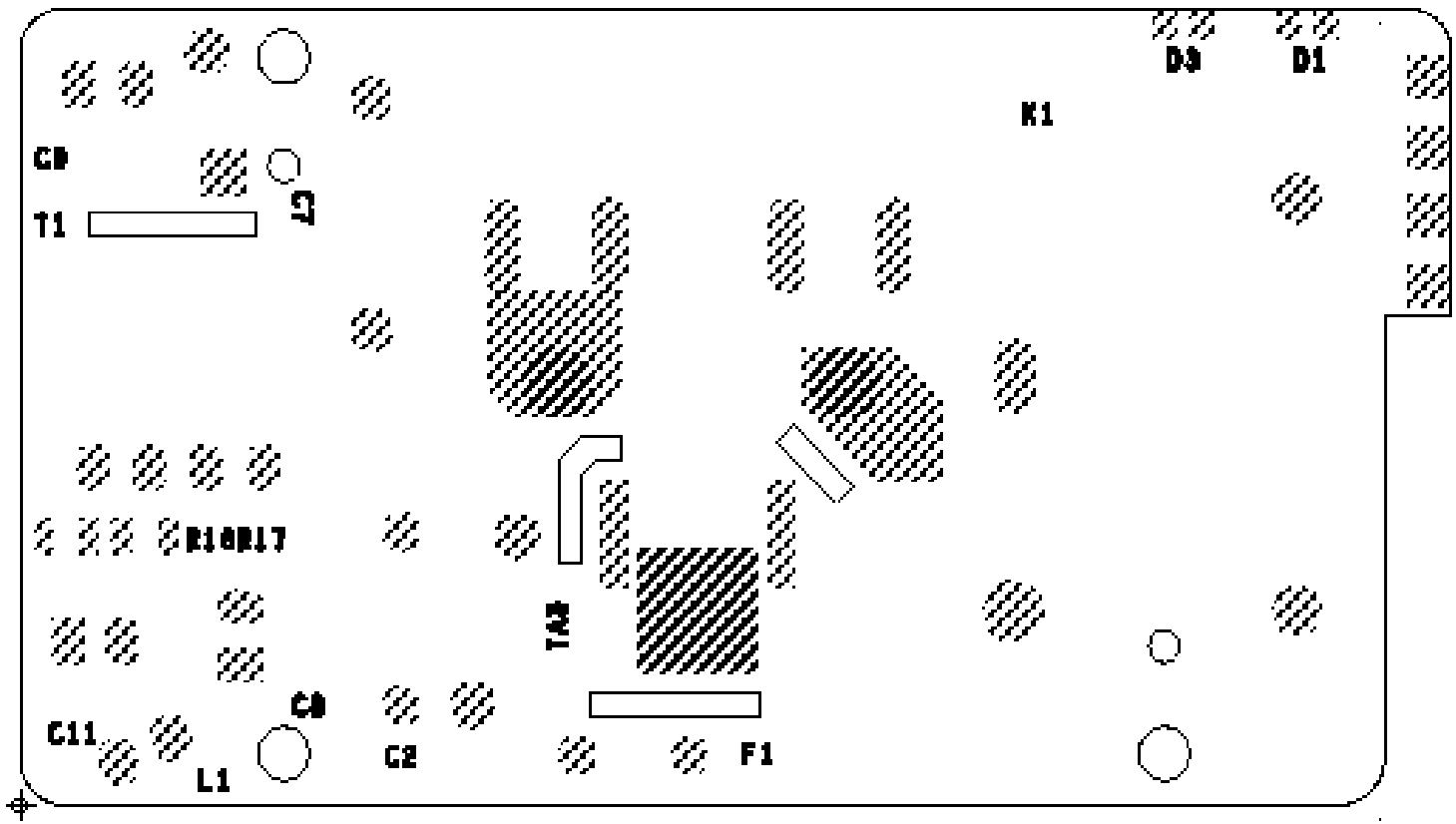

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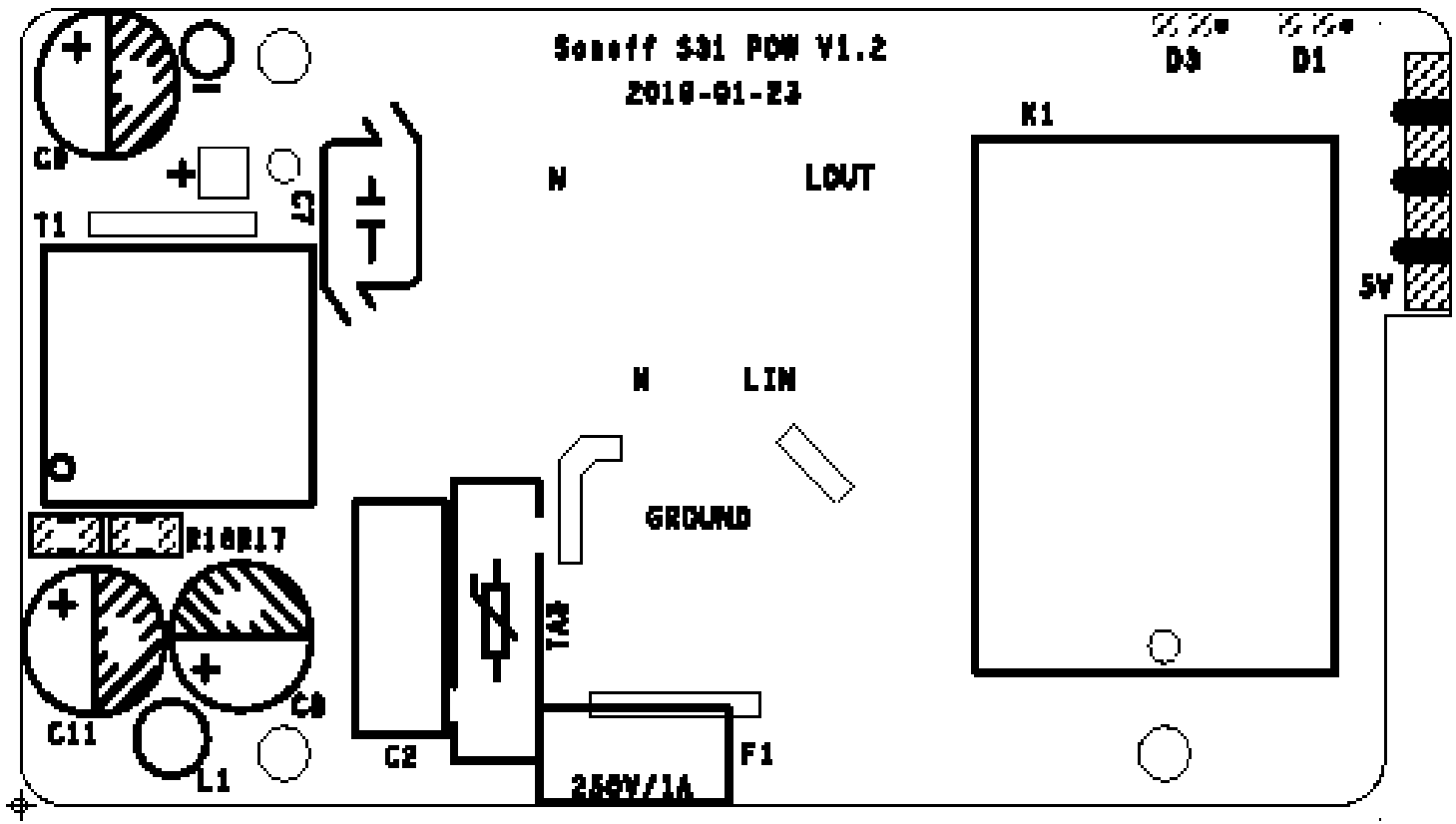
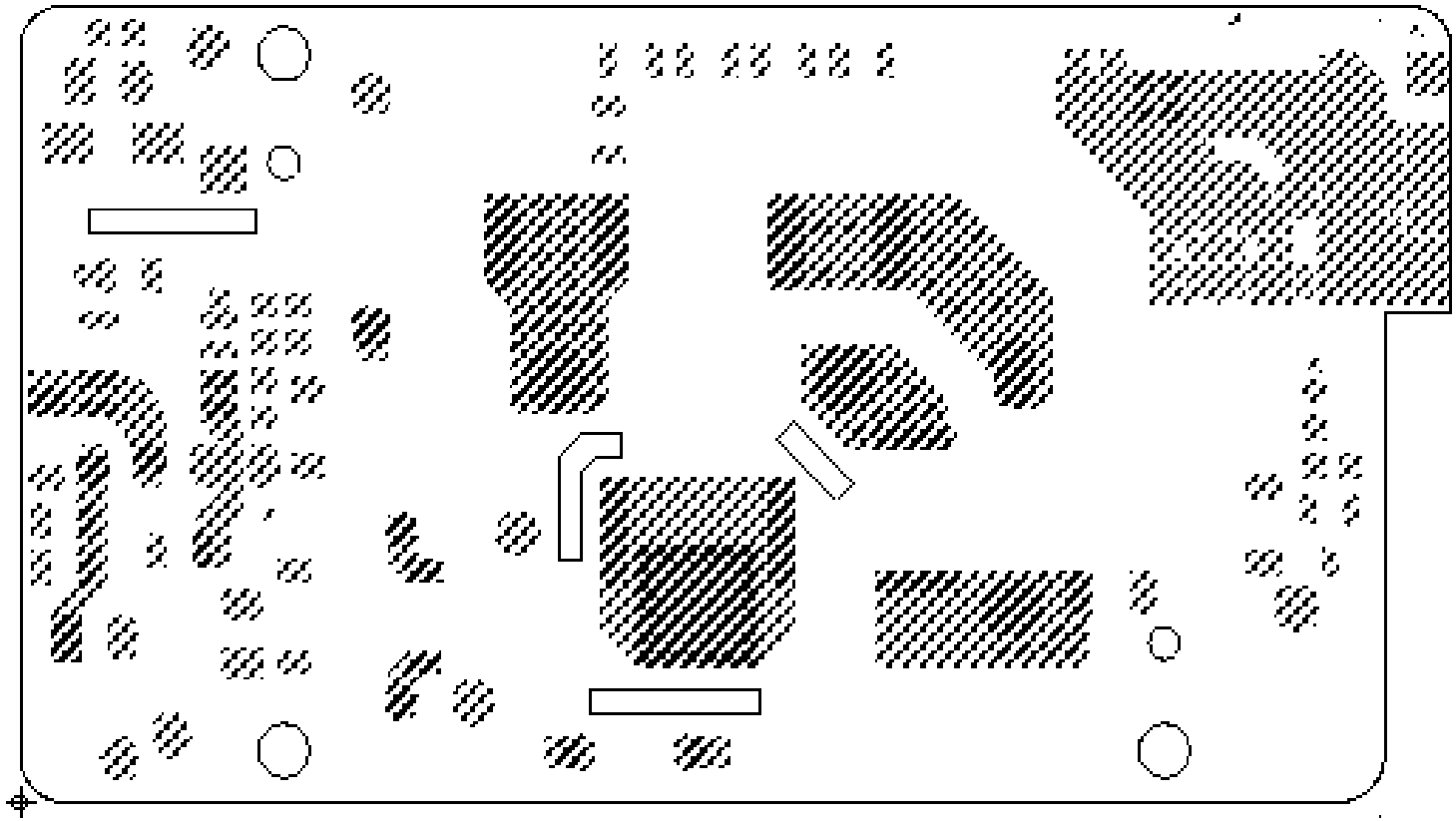

Sonoff S31 POW V1.2
2018-01-23
D3
D1
K1
CP
C3
T1
N
LOUT
N
LIN
5V
R16R17
GROUND
TA2
C11
C9
C2
L1
F1
250V/1A

File E498650 Vol.1 Sec.1 Ill 3 Issued: 2019-06



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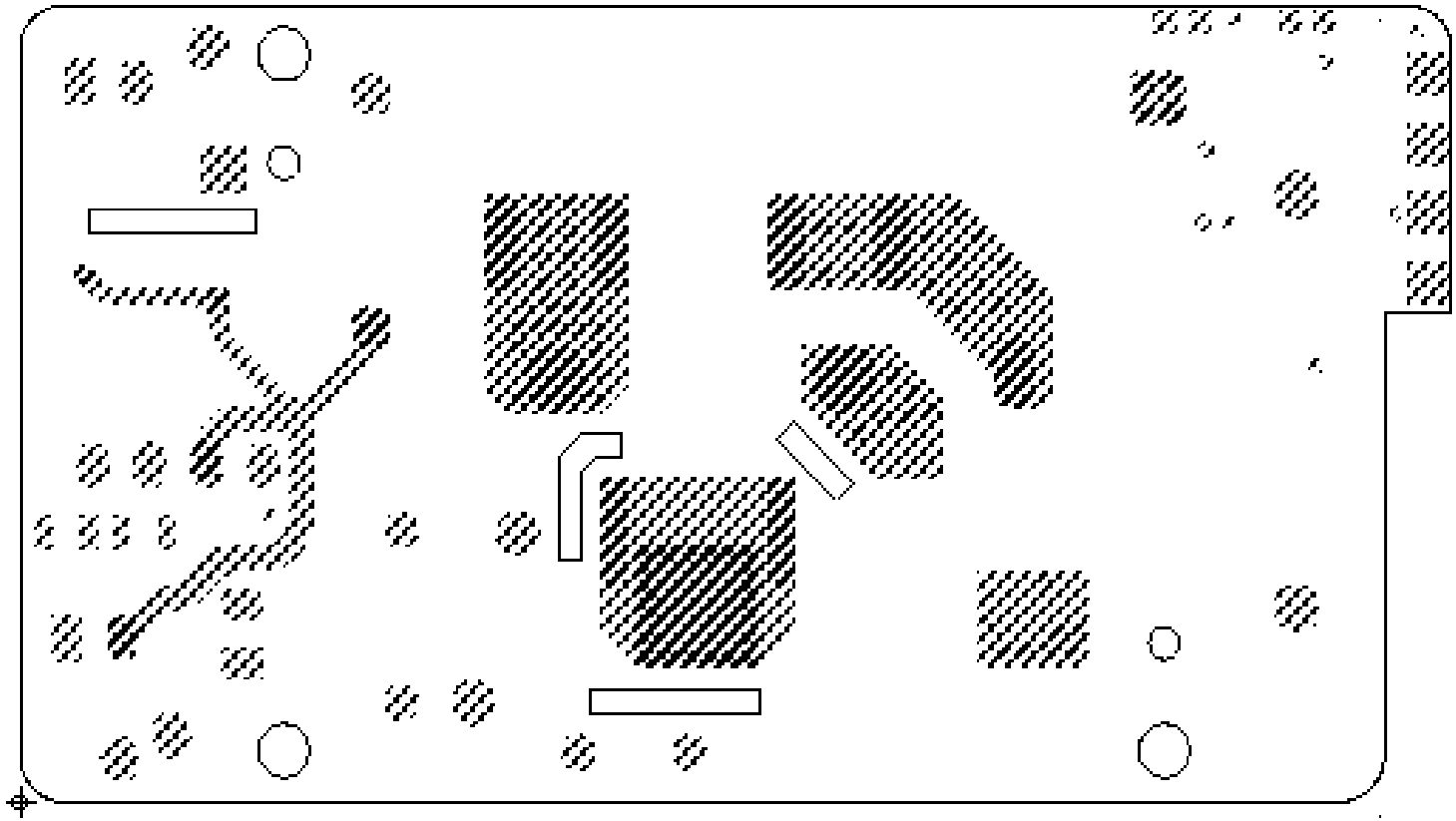

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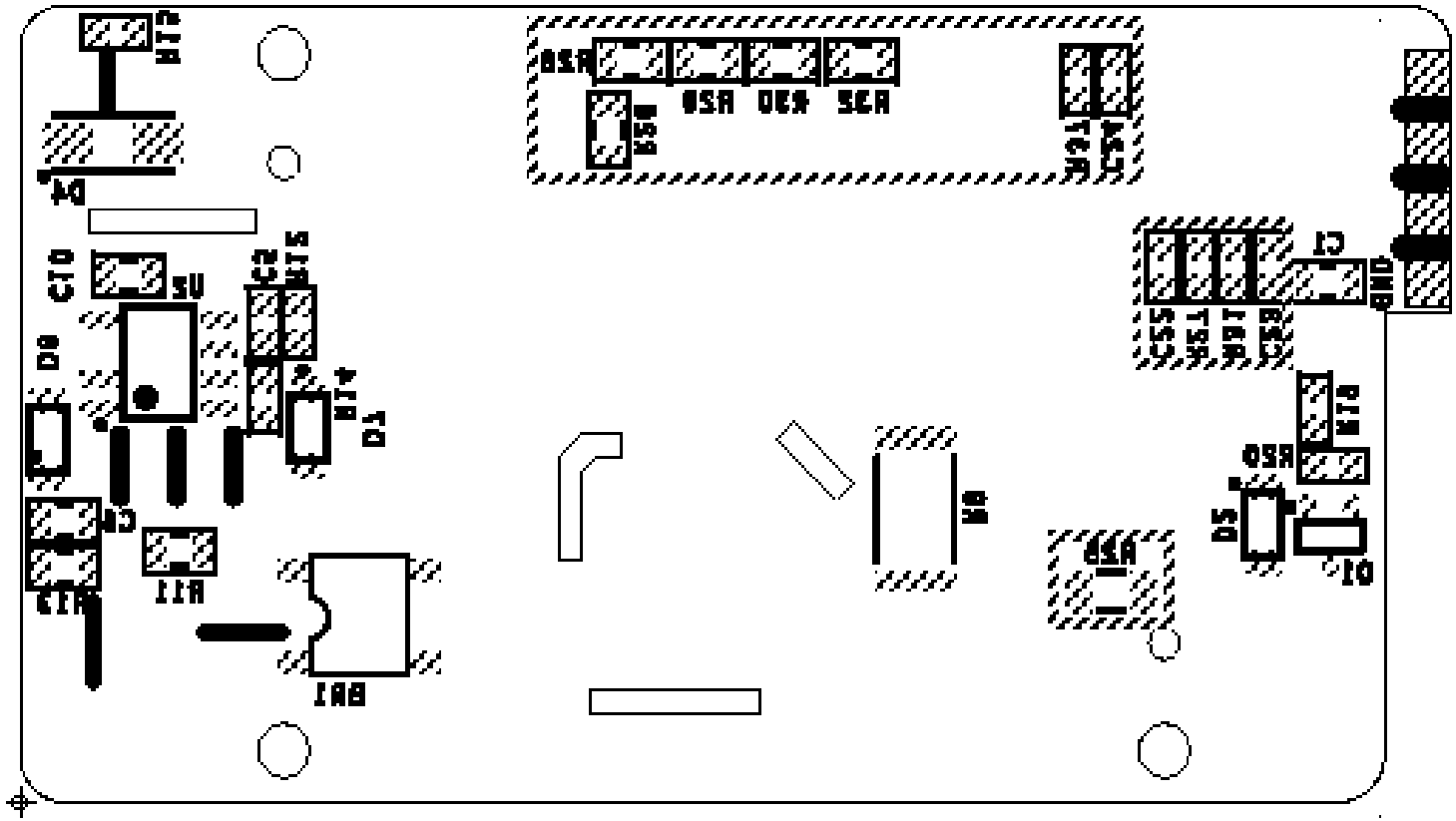

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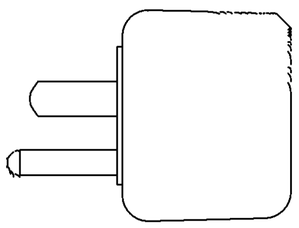

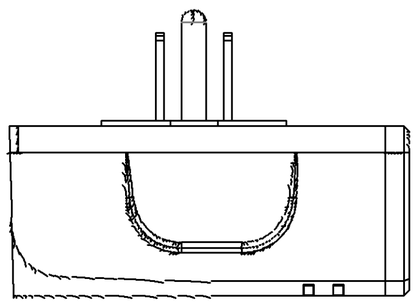

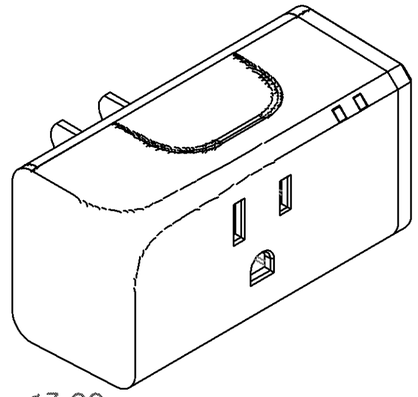

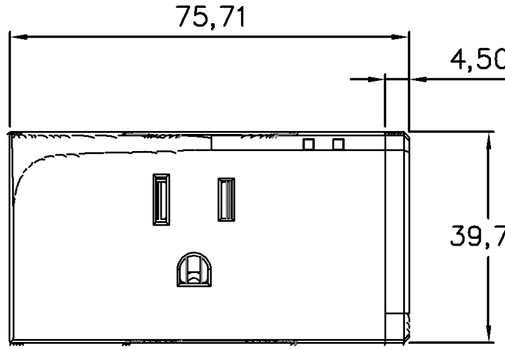

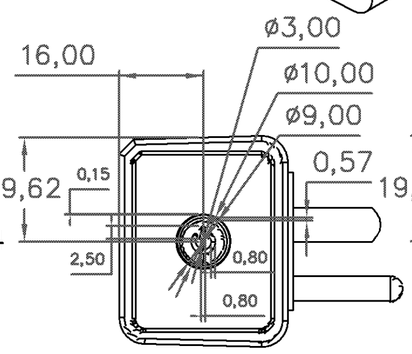

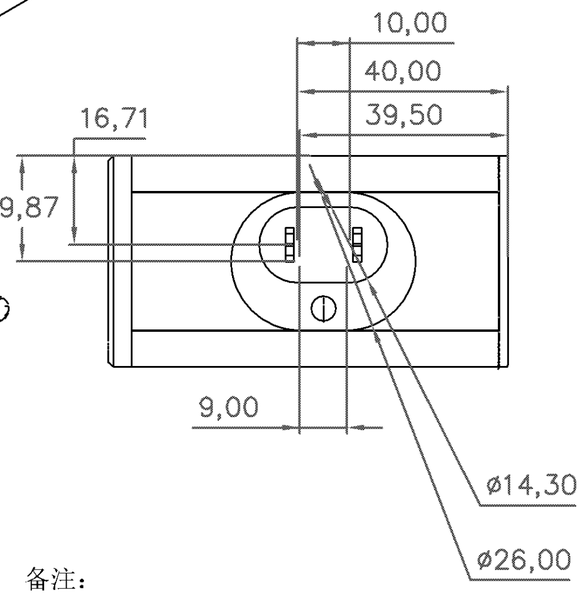

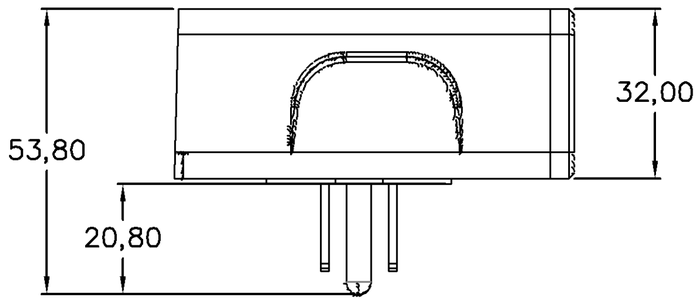

备注：
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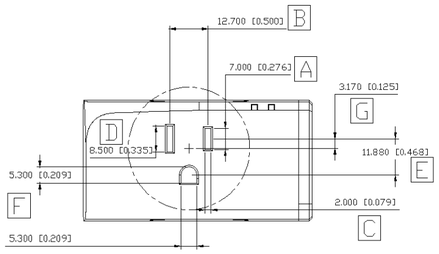
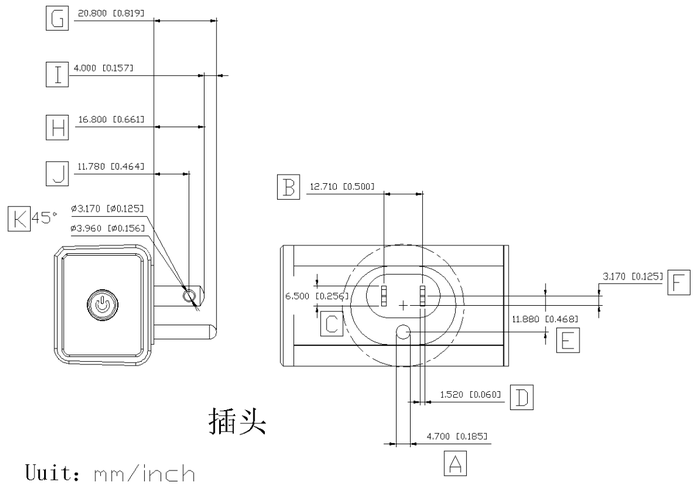
2材质：PC



插座结构

Uuit: mm/inch

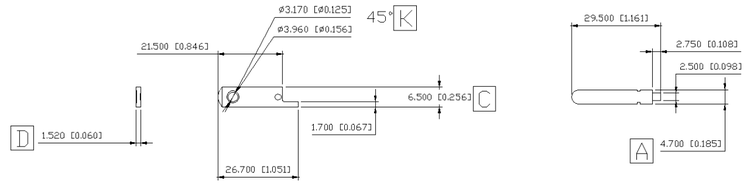
Location	Limited (mm)	Limited (inch)
A	6.73-7.23	0.265-0.285
B	12.7(±0.12)	0.5(±0.005)
C	1.90-2.41	0.075-0.095
D	8.38-8.89	0.33-0.35
E	11.88(±0.12)	0.468(±0.005)
F	5.20-5.38	0.205-0.212
G	3.17(±0.12)	0.125(±0.005)



插头

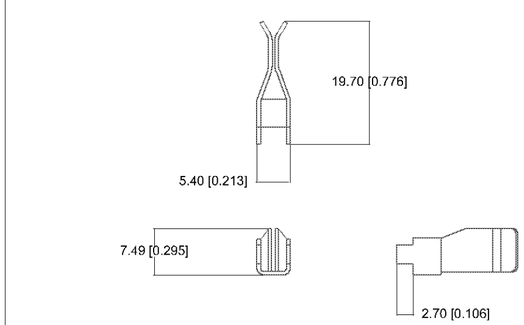
Uuit: mm/inch

Location	Limited (mm)	Limited (inch)
A	4.67-4.82	0.184-0.190
B	12.7(±0.12)	0.5(±0.005)
C	6.09-6.60	0.240-0.260
D	1.52(±0.12)	0.060(±0.005)
E	11.88(±0.12)	0.468(±0.005)
F	3.17(±0.12)	0.125(±0.005)
G	21.41 MAX	0.843 MAX
H	15.87 MIN	0.625 MIN
I	3.17 MIN	0.125 MIN
J	11.780(±0.03)	0.464(±0.0015)
K	3.17(±0.12)	0.125(±0.005)

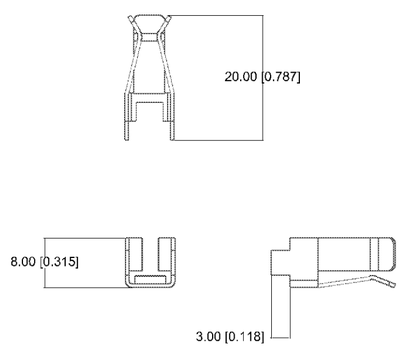


Uuit: mm/inch

Location	Limited (mm)	Limited (inch)
A	4.67-4.82	0.184-0.190
C	6.09-6.60	0.240-0.260
D	1.52(±0.12)	0.060(±0.005)
K	3.17(±0.12)	0.125(±0.005)



X 2



X 1

备注：1.材质： 磷铜
2.单位： MM-inch
3.数量： 2+1
4.公差： ±0.2

客户名称：
CUSTOMER

深圳松诺技术有限公司

ROHS 环保产品

承 认 书

SPECIFICATION FOR APPROVAL

产品名称 PRODUCT TYPE:	**EE10 4+4 立式**
客户机型 CUSTOMER TYPE P/N:	
客户料号 CUSTOMER NO	**00.24.21.0004（外观红色）**
鑫创隆编号 X.C.L P/O	**XCL-EE10-5V0.5A-CR1511-2.7MH**
规格书编号 DOCUMENT NO:	**XCL180151**
版次 REVISON NO:	A2 日期： 2019/3/18
总页数 SHEET PAGE	**4PAGA** **1/4PAGE**

制造方 MANUFACTURER		
拟制	审核	批准
DRAWN BY	CHECKED BY	APPROVED BY

使用方 USER

程 序program	签名盖章 signed and sealed	完全承认 FULL APPROVED	有条件承认 CONDITION APPROVED	不予承认 REJECTED
测 试TESTED				
审核 CHECKED				
批准APPROVED				

本承认书一份,承认后请回传,如下单后未回传视为默认,
已接到该配件的订单，且在生产、发货时按此份标准执行。
The recognition of a book, please return later admitted,
did notreturn after the following one as the default,
Has received orders for the parts, and in the production and
delivery time standards were here.

深圳市鑫创隆电子科技有限公司

Shenzhen Xinchuanglong Electronics Co., Ltd. Grid

ADD: 深圳市宝安区沙井共和第一工业区（同创）B5栋3楼
TEL: (86)(755) 23493496 FAX: (86)(755) 23056315
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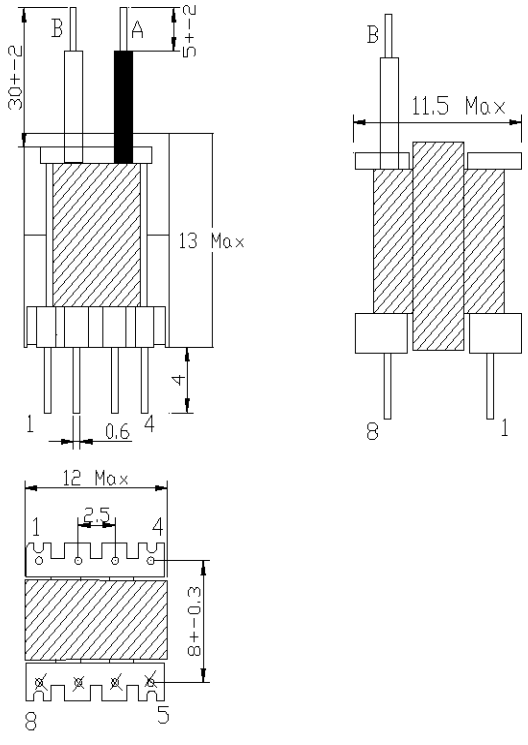
http://qyy2100.cn.alibaba.com

深圳市鑫创隆电子科技有限公司

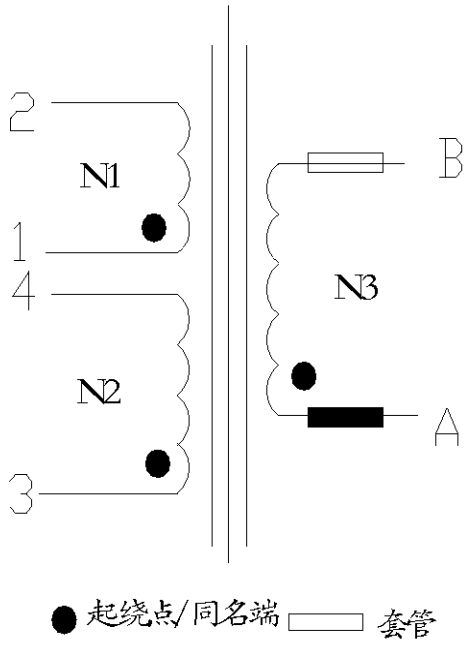
XINCHUANGLONG ELECTRONIC TECHNOLOGY CO., LTD

客户名称 MODEL NO	客户料号MODEL NO	产品编号PRODUCT TYPE	产品型号PRODUCT TYPE
SN	00.24.21.0004	XCL-EE10-5V0.5A CR1511-2.7MH	EE10 4+4 立式

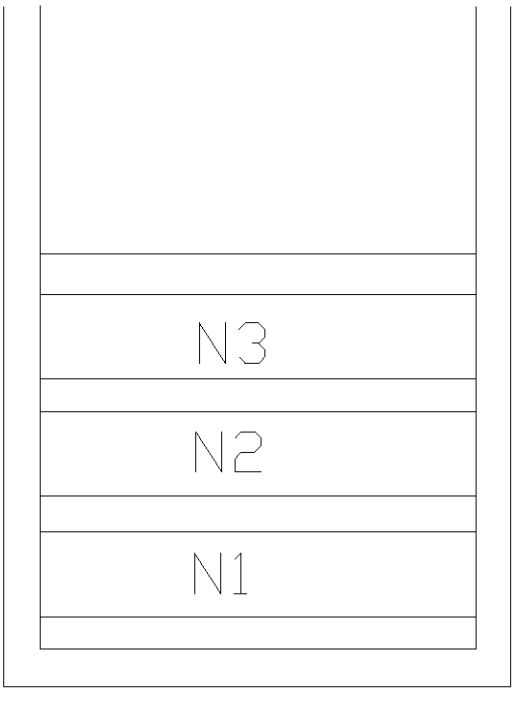
一.外观图DIMENSION：(mm)



二.电气原理图SCHEMATUC：



三.线包结构图WINDING CONSTRUCTIO:



拟制 DRAWN BY	审核CHECKED BY	批准 APPROVED BY	日期DATE	版本EDITION
			2019/3/18	A2

深圳市鑫创隆电子科技有限公司

XINCHUANGLONG ELECTRONIC TECHNOLOGY CO., LTD 共 4 页 第 3 页

客户名称 MODEL NO	客户料号MODEL NO	产品编号PRODUCT TYPE	产品型号PRODUCT TYPE
SN	00.24.21.0004	XCL-EE10-5V0.5A CR1511-2.7MH	EE10 4+4 立式

四.线圈绕制表 WINDING

序号 NO	绕线方式	脚位/PIN	槽位/SLOT		线径股数 WTRE SHARES	圈数 TURNS	套管/CASING		绝缘胶带 LNSULATING TAPE	绕制方法WINDING METHOD
		入 出	入	出			入	出		
N1	顺时针绕	1---2			2UEW Φ0.13mmx1P	178TS			7mm/2TS	密绕 不交叉
N2	顺时针绕	3---4			2UEW Φ0.13mmx1P	18TS			7mm/2TS	居中 密绕 不交叉
N3	逆时针绕	B---A			TEX-E Φ0.35mmx1P	12TS	白23L	黑23L	7mm/2TS	密绕 不交叉

备注：1.EE10立式4+4骨架，缺PIN5，6，7，8；，绕线需平整，胶带整齐；

2.N1、N2、绕线时脚朝右入轴、N3绕线时脚朝左入轴；

3.N3飞线总长度30±2mm（从骨架顶部量）B从8脚顶部进线穿白色套管、A从5脚顶部出线穿黑色套管；焊锡5±

4.磁芯用红色4.5mm胶带包2TS；

5.真空浸油,摆盘针脚朝上烘烤,烘烤出来磁芯是靠着骨架底部平整、磁芯无松动、针脚和表面无油漆；

五.电气性能ELECTRICAL SPECIFICATION:

	项目ITEMS	脚位PIN	标准值CRITERION	测试条件TEST CONDITION
1	电感 L	1---2	2.7mH±10%	30KHz 0.3V
2	漏感LK	1---2	小于130UH 短路次级	30KHz 0.3V
3	耐压HI-POT	P----S	3mA /60S	3000VAC
		P/S---CORE	3mA /60S	1000V
4	绝缘	线圈-磁芯		DC500V
		线圈-线圈		

六.材料清单RAW MATERIAL:

	名称NAME	规格型号SPECIFICATION	用量	材料MATERIAL	供应商supply	UL NO.
1	磁芯CORE	EE11 PC40		PC4020130620	HANING JIXIN ELECTRONIC CO.,LTD.	N/A
2	骨架 BOBBIN	EE10 4+4 立式 空5，6,7，8PIN PIN长4 ●0.6 脚2.5 排8 幅6.8MM		PF2A5-151J	CHANGSHU SOUTH-EAST PLASTIC CO LTD	E136137
3	漆包线 WIRE 2UEW	Φ0.13mm		MW79-C XUEW/155,QA-X/15	SHANTOU SHENGANG ELECTRICAL INDUSTRIAL CO LTD	E239508
4	绝缘线 TIW TEX-E	TIW-BΦ0.35mm		DRTIW-B DX	SHENZHEN DARUN SCIENCE AND TECHNOLOGY CO LTD	VDE40032470
5	胶带 TAPE 玛拉胶	红色胶带7mm 4.5mm		JY312#	SUZHOU MAILADUONA ELECTRIC	E188295
6	套管TUBE	黑白色23L		TFL	FLUO TECH INDUSTRIES CO LID	E175982
7	凡立水 VARNISH	E962		MW 28-C	ZHUHAI CHANGXIN NEW MATERIALS TECHNOLOGY CO LTD	E335405
8	标签 LOGO	SN		POLYESTER FILM 130℃	Color	
					Bridge	
9	包装材料	珍珠棉			Fun	
		纸盘			Shenzhen	
		纸箱			Baolong	

拟制 DRAWN BY	审核CHECKED BY	批准 APPROVED BY	日期DATE	版本EDITION

			2019/3/18	A1

深圳市鑫创隆电子科技有限公司

XINCHUANGLONG ELECTRONIC TECHNOLOGY CO., LTD 共 4页 第 4 页

客户名称 MODEL NO	客户料号MODEL NO	产品编号PRODUCT TYPE	产品型号PRODUCT TYPE
SN	00.24.21.0004	XCL-EE10-5V0.5A CR1511-2.7MH	EE10 4+4 立式

变 更 记 录

REVISED RECIRD

ITEM	日期 DATE	PAGE	变更内容 REVISED CONTENTS	REV.	ISSUE	PREPAREK	APPROVED BY	
1	2018/12/3		首次送样	A				
2	2019/2/28		增加标签内容（详见本承认书第二页）	A1				
3	2019/3/18		取消标签更换外观颜色为红色	A2				

拟制 DRAWN BY	审核CHECKED BY	批准 APPROVED BY	日期DATE	版本EDITION
			2019/3/18	A2

东莞市德合电子有限公司

版本：XC-A02

SPECIFICATION FOR APPROVAL

承 认 书

CUSTOMER (客户编码)： 松诺电子

CUSTOMER P/N (客户料号)： 00.24.04.0006

DESCRIPTION (规格型号)： AL0410-331K T/B

PART NO. (代 号)： 色码电感

QUANTITY (数量)： 10PCS DATE (日期)： 2019/6/10

【SPECIFICATION FOR APPROVAL】

制造确认 MANUFACTURER APPROVE		
MADE 制表	CHECKED 审核	APPROVED 批准
钟培武	黄传根	李水海

客户确认 CUSTOMER APPROVE

Thanks for approval , please sign back a copy to us.
承蒙认可，请签回一份给我们.

东莞市德合电子有限公司
地址：广东省东莞市大岭山镇颜屋村
电话：0769-81879331 传真：0769-81879311
邮箱：ig.zheng@163.com QQ:1172572066
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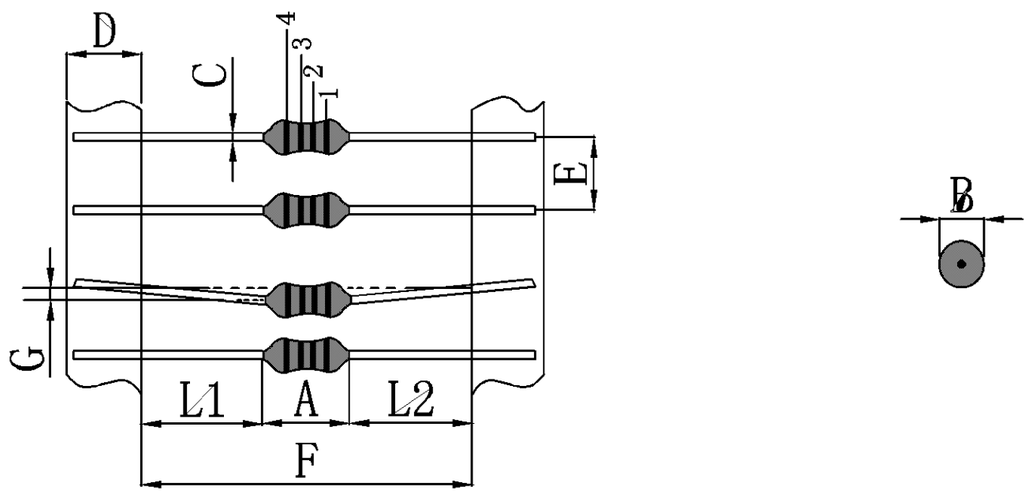
东莞市德合电子有限公司

版本：XC-A02

CUSTOMER 客户	松诺电子	CUSTOMER P/N 客户料号	00.24.04.0006
DESCRIPTION 规格型号	AL0410-331K T/B	DATE 日期	2019/6/10

3.MECHANICA(机械尺寸)(UNIT:mm)



A	10.5 Max
B	4.0 Max
C	0.6±0.1
D	6.0±1.0
E	5.0±0.5
F	52.0±1.5
G	1.5 Max
| L1-L2 |	1.2 Max

1.橙 2.橙 3.棕 4.银

4.ELECTRIC CHARACTERISTIC(电气特性)

MEAS. ITEM 测试项目	SPEC 电性范围	TEST FREQ 测试条件	TEST STRUMENTS 测试仪器	TYP. 参考值
电感量(L)	330uH±10%	1KHZ/0.25V	HK-100	333
直流电阻(DCR)	5Ω Max	at 25℃	HK-100	3.78
额定电流(IDC)	137mA Max	1KHZ/0.25V	TH1772B	

5.SCHEMATIC(原理图)

6.PACKING(包装)

1.编带装，每盒2000PCS

2.每箱48000PCS

7.MATERAL LIST(材料清单)

No 序号	Material name 物料名称	SPEC. 规格描述	Rating Temp. 居里温度	Vendor 供应商	UL File 黄卡认证号
1	CORE 磁芯	C1 DRWW3×6 OR EQUIVALENT	150℃	JC	N/A
2	WIRE WINDING 漆包线	2UEW Ø0.08mm*145Ts 参考圈数	130℃	GYHX	E233255
3	EPOXY RESIN 面漆	DGT-1(green)		FX	N/A
4	EPOXY RESIN 接脚树脂	FK661		QF	N/A
5	PIN 引脚	Ø0.55mm or Ø0.6mm CP线		BC	N/A
6	SOLDER 无铅锡	Sn:99.7% Cu:0.3%		JX	N/A

东莞市德合电子有限公司出货检验报告

版本：XC-A02

CUSTOMER 客户	松诺电子	CUSTOMER P/N 客户料号	00.24.04.0006
DESCRIPTION 规格型号	0410 330UH 1W	DATE 日期	2019/6/10

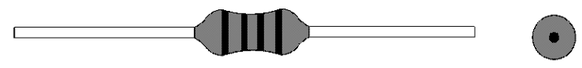
8.TEST DATA FOR PREPRODUCTION SAMPLES(性能试验结果报告)

MEAS.ITEM 测试项目	L (uH)	DCR (Ω)				
SPEC电性范围	330±10%	5.0 Max				
TEST FREQ 测试条件	1KHZ/0.25V	at 25℃				
TEST STRUMENTS 测试仪器	HK-100	HK-100				
1	332	3.79				
2	330	3.83				
3	332	3.78				
4	331	3.71				
5	330	3.77				
6	329	3.75				
7	332	3.76				
8	328	3.76				
9	328	3.75				
10	331	3.7				
$\overline{X}$	330.3	3.76				
R	4	0.13				

TEST CONDITION: TEMP:25℃(REF) R.H.: 80%(REF)

测试室温/湿度: 室温: 25℃(REF) 相对湿度: 80%(REF)

序号	项目	技术要求	结论
1	外观和尺寸	符合产品规范和公差要求	OK
2	引脚拉力	大于等于1.0Kg	OK
3			



	MADE 制表	CHECKED 审核	APPROVED 批准
	钟培武	黄传根	李水海

分宜县新昌电子有限公司
Fenyi County Suntop Electronics Co., LTD

版本：XC-A02

CUSTOMER 客户		CUSTOMER P/N 客户料号	
DESCRIPTION 规格型号	AL0410-331K	DATE 日期	2016/9/1

REVISION(修订记录)

日期	修改内容	立案	确认	承认
2016/9/1	首次发行			
2016/12/1	再次送样(20PCS)			
2017/6/13	再次送样(30PCS)			

TEST RECORD NO. 1

SAMPLES:

Samples of the Operating Control – Smart Wi-Fi Plug, Models S31 and S31 Lite as indicated and constructed as described herein, were submitted by the manufacturer for examination and test.

Model S31 was subjected to specified tests and considered representative for the others due to similar construction.

GENERAL:

Test results relate only to the items tested.

The following tests were conducted.

Test Name	Clause
ADEQUACY OF EARTH CONNECTIONS TEST	Clause 9.3
CHARGED CAPACITORS (CAPACITANCE >0.1uF)	Clause 8.3.2
WEIGHT AND MOMENT DETERMINATION (DIRECT PLUG-IN UNIT)	11.10.3DV
PROTECTION AGAINST HUMID CONDITIONS	Clause 12.2
LEAKAGE CURRENT TEST –(IN-LINE CORD AND FREE-STANDING CONTROLS)	Clauses 12.3.1, 13.3
INSULATION RESISTANCE - (In-Line Cord, Free-Standing And Independently Mounted Controls):	Clause 13.1
ELECTRIC STRENGTH TEST	Clause 13.2
HEATING TEST	Clause 14
ENVIRONMENTAL STRESS OF TEMPERATURE	Clause 16.2
SWITCH MODE POWER SUPPLY Tests (SMPS)-OVERLOAD TEST (UL)	Clause 24.2.1DV.2
OVERVOLTAGE AND UNDERVOLTAGE TEST	Clause 27.3
OVERLOAD TEST	Clause 27.5
SURGE IMMUNITY TEST	Clause H.26.8
ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST	Clause H.26.9
EVALUATION OF COMPLIANCE	Clause H.26.15
ABNORMAL OPERATION	Clause H.27.1.1
ELECTRONIC CIRCUIT FAULTS	Clause H.27.1.4
CRUSH RESISTANCE (UL)	Clause 21.1 of UL746C
RESISTANCE TO IMPACT PHYSICAL ABUSE	Clause 22 of UL746C Clause 9.5 of CSA C22.2 No. 0.17
DISTORTIONS UNDER LOAD AND STRESS RELIEF MOULD STRESS-RELIEF TEST	Clause 29.1 of UL746C Clause 9.4 of CSA C22.2 No. 0.17

CONT'D

Test Name	Clause
SECURITY OF BLADES TEST: (BLADE SECURITY TEST)	UL 498A, Par. 27 (CAN/CSA C22.2 No. 42-10, Clause 8.2)
CONTACT SECURITY TEST:	UL 498A Par. 28
RETENTION OF PLUGS TEST: (RETENTION OF BLADES TEST)	UL 498A, Section 29 (CSA C22.2 NO. 42-10, Clause 8.7)
OVERLOAD TEST:	UL 498A, Par. 30 (CAN/CSA C22.2 No. 42-10, Clause 8.8)
TEMPERATURE TEST:	UL 498A Par. 31
RETENTION OF PLUGS TEST (Repeated)	UL 498A, Section 32 (CSA C22.2 NO. 42-10, Section 8.10)
RESISTANCE TO ARCING TEST:	UL 498A, Section 33 (CAN/CSA C22.2 No. 42-10, Clause 8.17)
CURRENT TAP GROUNDING CONTACT TEST (NON-PERMANENT):	UL 498A Par. 36.1.3
IMPROPER INSERTION TEST	(FOR REFERENCE) UL 498A, Section 35
OBSTRUCTION TEST	(FOR REFERENCE) UL 498A Sec. 38

The following tests were waived:

Test	Rationale for Waived Test	File Reference	Report Date	Test Record No.
Flame Test (Clause 21.2.7A, E60730-1)	(+)	N/A	N/A	N/A

(+) NOTE - The 5V flame test was not conducted on the plastic material based on the following reasons:

a) *The product is similar in construction and method of installation/connection to devices that are covered under CSA C22.2 No. 308 – Cord Reels and Multi-outlet Assemblies and CSA C22.2 No. 42-10 – the standard for General-use receptacles, attachment plugs and similar wiring devices. In these referenced documents, the minimum flammability rating for non-metallic enclosures of insulating material is V-2; therefore, this was the basis of accepting a min V-2 rating for the non-metallic material used in the construction of the product.*

b) *The devices are not intended to be permanently connected; therefore, flame propagation and sustainability is reduced since the primary ignition source can be mitigated by unplugging the device.*

The test methods and results of the above tests have been reviewed and found in accordance with the requirements in Test Record Summary.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable

requirements in the standards noted below and, therefore, such products are 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	Issued/Revision Date
UL60730-1	AUTOMATIC ELECTRICAL CONTROLS - PART 1: GENERAL REQUIREMENTS	Edition 5	2016-08-03
CSA E60730-1, including AMD 1	AUTOMATIC ELECTRICAL CONTROLS - PART 1: GENERAL REQUIREMENTS	Edition 5	2015-12-01, Nov 2017

Evaluation was based on the newer version of the standard, which represents the version of the standard used in previous test records

TEST RECORD NO. 2

GENERAL:

No test was considered necessary to make below corrections, which were all under previous evaluation:

1. Side Cover material corrected from “FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV (E162823), type AC310(+)” to “SABIC INNOVATIVE PLASTICS US L L C (E121562), type 940(f1)”;
2. Material of Receptacle Contacts corrected from “brass with bright nickel-plating” to “copper alloy”;
3. Manufacturer of Pulse Transformer (T1) corrected from “SHENZHEN XINYUANYANG TECHNOLOGY CO LTD” to “SHENZHEN XINCHUANGLONG ELECTRONIC TECHNOLOGY CO LTD”;
4. Y Capacitor (C7) rating corrected from “1nF” to “220pF”;

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standards noted below and, therefore, such products are 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	Issued/Revision Date
UL60730-1	AUTOMATIC ELECTRICAL CONTROLS - PART 1: GENERAL REQUIREMENTS	Edition 5	2016-08-03
CSA E60730-1, including AMD 1	AUTOMATIC ELECTRICAL CONTROLS - PART 1: GENERAL REQUIREMENTS	Edition 5	2015-12-01, Nov 2017

Report by:

CARLA HU
Project Engineer

Reviewed by:

KEYN LI
Senior Project Engineer

CONCLUSION

Samples of the product covered by this Report have been found to comply with the requirements covering the category and the product is 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 certification 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 UL Listing Mark 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 LLC on the product, or the UL symbol on the product and the Listing Mark 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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