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Please note, Follow-Up Procedure Revisions or Report Revisions do not include Authorization Pages, Indices, Section General, and/or Appendices unless revisions were required or requested.

Should you have any questions, after reviewing the material, or need to report any inaccuracies, please reach out to your UL representative or find UL contact details for your local Customer Service Department at https://www.ul.com/about/locations.

Please find attached the related material on Project 4791036297

For your convenience, the below describes the related updates:

| |
|---|
| E520314-vol1-Index |
| E520314-20231228-Description |
| Figure-2-Total |
| Illustration-1-Total |



Times change, Trust Remains™

INDEX



USR – United States Standard, Recognized.

CNR – Canadian National Standard, Recognized.

File E520314
Project 4791036297

December 28, 2023

REPORT

on

COMPONENT - Power Circuit and Motor-mounted Apparatus

Jiangsu Acrel Electrical Manufacturing. Co., Ltd.
Jiangyin, Jiangsu, China

DESCRIPTION

PRODUCT COVERED:

USR, CNR – Current Sensor, Model BA10-AI/I(A).

GENERAL:

These products are intended to measure AC current in the power grid in real time by the principle of electromagnetic induction. These products are based on constant current and linear compensation technology. These products are open type intended to be used within Industrial Control Equipment.

ELECTRICAL RATINGS:

Max. Input Sensing Voltage potential 660/690 Vac.
Frequency: 50/60Hz.

| MODEL | INPUT | | OUTPUT | Maximum Surrounding Air Temperature (°C) |
|---|---|---|---|---|
| | Maximum Primary nominal current(A) | Supply Voltage (VDC) | Secondary nominal output current (A) | |
| BA10-AI/I(A) | AC 0~50 | 12, 24 | 0~20mA | 70 |
| | AC 8~50 | 12, 24 | 4~20mA | 70 |
| | AC 0~25 | 12, 24 | 0~20mA | 70 |

NOMENCLATURE:

| | | | | | | |
|---|---|---|---|---|---|---|
| BA | 10 | - | AI | / | I | (A) |
| I | II | | III | | IV | V |

I. Product series
BA

II. Hole size
10 – φ10

III. Input
AI - Alternating Current

IV. Output
I - Direct Current

V. Output type
(A): Current output

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

Use – For use only in (or with) complete equipment where the acceptability of the combination is determined by UL LLC.

USR – Products designated USR have been investigated using US requirements as noted in the Test Record.

CNR – Products designated CNR have been investigated using Canadian requirements as noted in the Test Record.

Conditions of Acceptability – The following items are to be considered when evaluating the power unit in the end-use product:

1. The terminals have not been evaluated for field wiring.
2. These devices have been evaluated for use in a Pollution Degree 2 environment.
3. A suitable enclosure shall be provided in the end-use application.
4. The uninsulated live parts of primary feeder and secondary circuit clearance spacing shall maintain at least 14.0 mm through air and 21.6 mm over surface.

CONSTRUCTION DETAILS:

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

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

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

Spacing - Spacings have been evaluated in accordance with UL 508, Standard for Industrial Control Equipment, 18th Edition, Revision date July 8, 2021, Table 37.3, CSA C22.2 No. 14-18, Industrial Control Equipment, 13th Edition, Revision date June 2022, Table 6. Spacing through the system was based on the input voltage.

| Location | Required | |
|---|---|---|
| Between any uninsulated live part and an uninsulated live part of opposite polarity, uninsulated grounded part other than the enclosure, or exposed metal part.<br>UL 508, Table 37.3 | 601 - 1000 V | |
| | Through air | Over surface |
| | 14.0 mm | 21.6 mm |
| Between any uninsulated live part and an uninsulated live part of opposite polarity, uninsulated grounded part other than the enclosure, or exposed metal part.<br>CSA C22.2 No.14-18, Table 6 | Group A | |
| | Through air | Over surface |
| | 14.0 mm | 21.6 mm |

MARKINGS:

Markings – Markings may be molded, die-stamped, paint-stenciled, stamped, laser engraved or etched in metal or indelibly stamped on aluminum, pressure-sensitive label secured by adhesive. Unless otherwise specified, pressure sensitive labels which contain any of the required markings, shall be R/C (PGDQ2) or R/C (PGJI2), Printing Material, it shall be rated for a max. operating ambient of 75°C (or better) Series, and shall also be suitable for 0°C (indoor use) operating ambient, material shall be suitable for use on each type of surface to which applied. If R/C (PGJI2), Printing Material was employed. The combination of the ink (ribbon) and the label material shall be used per the manufacturer’s UL specifications. The printing of the label shall be done using compatible printing equipment.

Markings – The devices shall be plainly marked with:
1. Listee´s name, trademark or File no.;
2. Model no.;
3. Electrical ratings that may be provided in the instruction manual or the brochure.

Markings - The following information shall be provided on the product or instruction manual and shipped with the device.
1. Surrounding Air Temperature.
2. Mounting instructions or proper connections for the devices.

FIGURES AND ILLUSTRATIONS:

| FIG. or ILL. No. | Description |
|---|---|
| FIG.1 | Overview of Model BA10-AI/I(A) |
| FIG.2 | Internal parts of Model BA10-AI/I(A) |
| ILL.1 | PWB Layout and Schematic diagram of BA10-AI/I(A) series |

MODEL BA10-AI/I(A) – FIG. 1, FIG. 2

General – The general design, shape and arrangement are as follows, they are representative of BA10-AI/I(A) series except where variations are specifically described.

1. Cover - R/C (QMFZ2), measured overall approx. 66 by 53 by 17 mm high, minimum thickness 1.2 mm, detail information see blow:

| Material Designation | Minimum Required Thickness | Flammability/RTI | File No. | Material Mfg. |
|---|---|---|---|---|
| 945(GG) | 0.8 mm | V-2/130°C | E207780 | SABIC JAPAN L L C |

2. Base - R/C (QMFZ2), measured overall approx. 78.2 by 22.7 by 74 mm high, minimum thickness 1.0 mm, detail information see blow:

| Material Designation | Minimum Required Thickness | Flammability/RTI | File No. | Material Mfg. |
|---|---|---|---|---|
| 945(GG) | 0.8 mm | V-2/130°C | E207780 | SABIC JAPAN L L C |

3. Coil Assembly –

(1) Coil – R/C (OBMW2), magnet wire, rated minimum 130 °C, 0.12 mm diameter and 2000 turns, wrapped with at least two layers of Insulation Tape.

(2) Tape - R/C (OANZ2), Manufactured by Achem Adhesive Product (Jiangsu) Co Ltd (E206648), rated minimum 80 °C.

(3) Insulation Tape - R/C (OANZ2), Manufactured by 3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385), rated minimum 130 °C, wrapped around coil at least 2 layers, meet barrier requirement.

(4) Lead wire - R/C (AVLV2), 24 AWG, rated minimum 80 deg C, 300 Vac.

4. PWB - R/C (ZPMV2/8), rated minimum V-0, and Electrical RTI minimum 130 °C, and meets direct support requirements. Refer to ILL. 1 for PWB Layout and schematic diagram.

5. Bayonet lock - R/C (QMFZ2), measured overall approx. 24 by 14.4 by 3.8 mm high, minimum thickness 1.0 mm, detail information see blow:

| Material Designation | Minimum Required Thickness | Flammability/RTI | File No. | Material Mfg. |
|---|---|---|---|---|
| 945(GG) | 0.8 mm | V-2/130°C | E207780 | SABIC JAPAN L L C |

6. Terminal block - R/C (XCFR2/8), Manufactured by ANYTEK TECHNOLOGY CORP (E202113), type HA-180D, FW=2, 14-24 AWG, Solid/Stranded, Rating 300V, 10A, UG=D, 120°C.

7. Unfilled Polycarbonate - Minimum thickness 0.71 mm, rated 105°C, secured Coil Assembly to Base.

8. Resistor (R2) – 2 kΩ when supply voltage is 12V, 4.7 kΩ when supply voltage is 24V, 1/8 W.

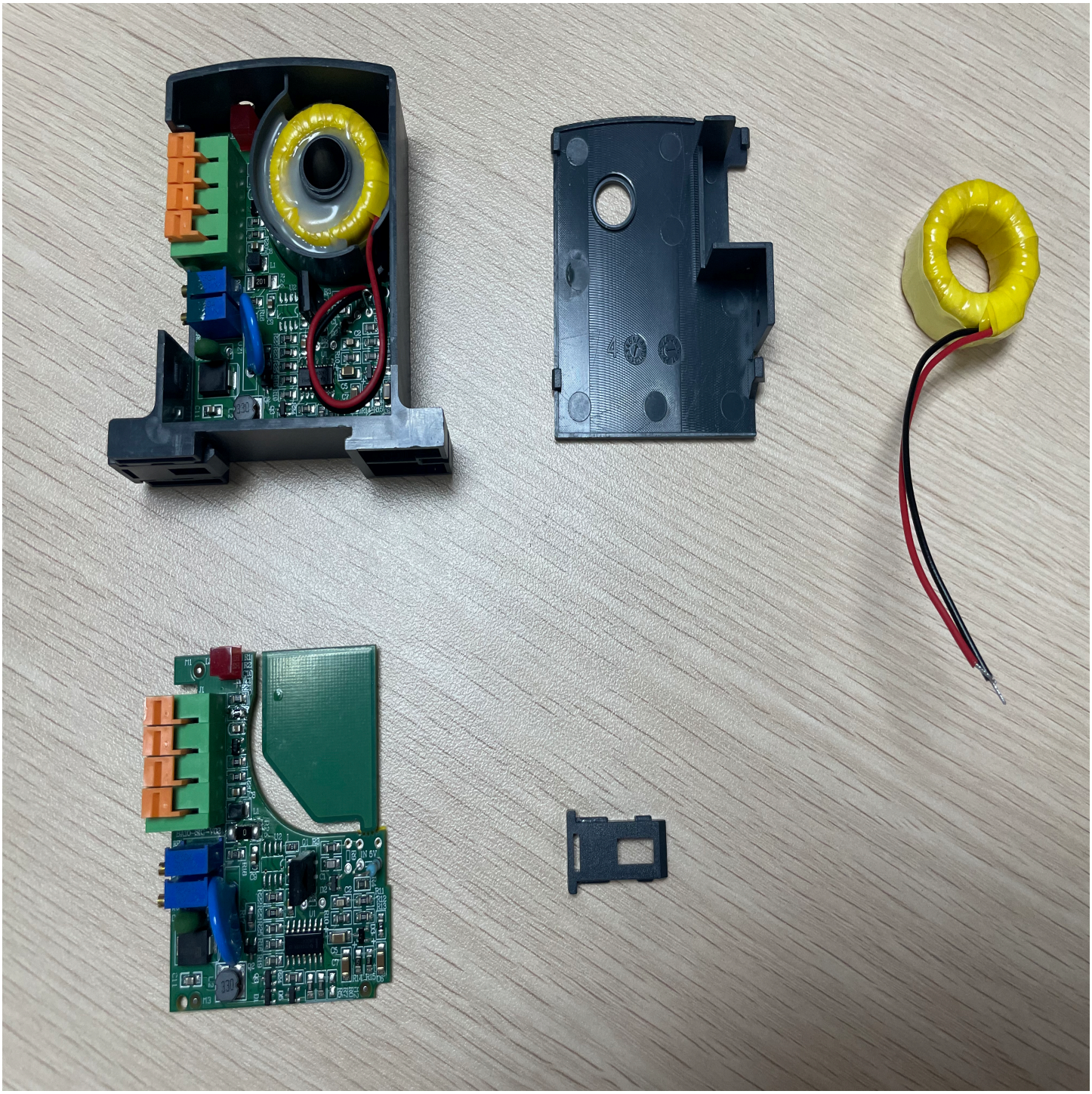
9. Resistor (R26) – 0 Ω when supply voltage is 12V, 200 Ω when supply voltage is 24V, 1/2 W.

10. Resistor (RP1) – 50~200 Ω used to adjust the zero point of Secondary nominal output current corresponding to Primary Nominal Current, 1/2 W.

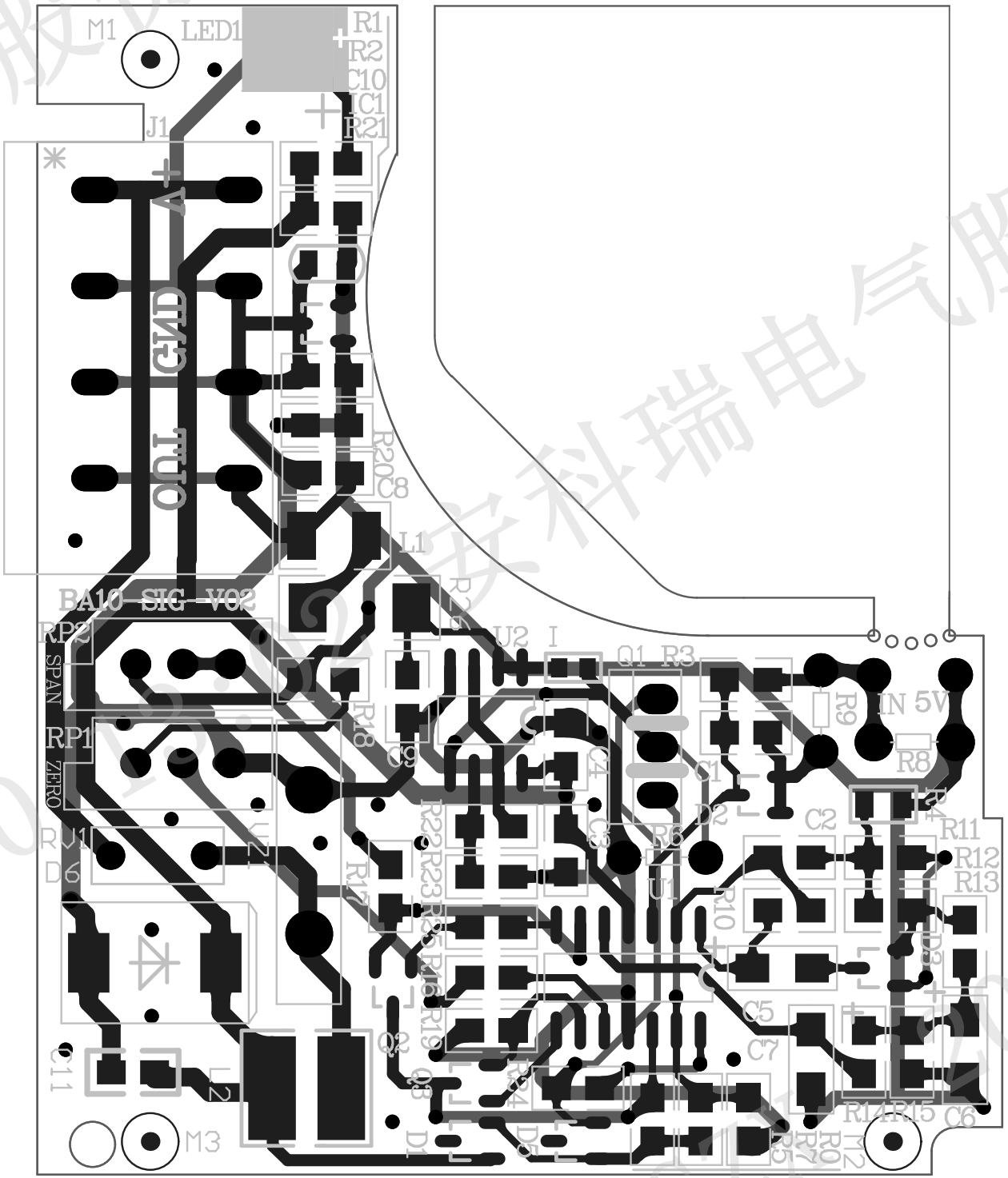
11. Resistor (RP2) - 100~400 Ω used to adjust the full degree of Secondary nominal output current corresponding to Primary Nominal Current, 1/2 W.

Figure-1 Page-1

Figure-2 Page-1



The following Page(s) are related to Illustration-1. The next supplement, if applicable, will be identified with a new Supplement Page Heading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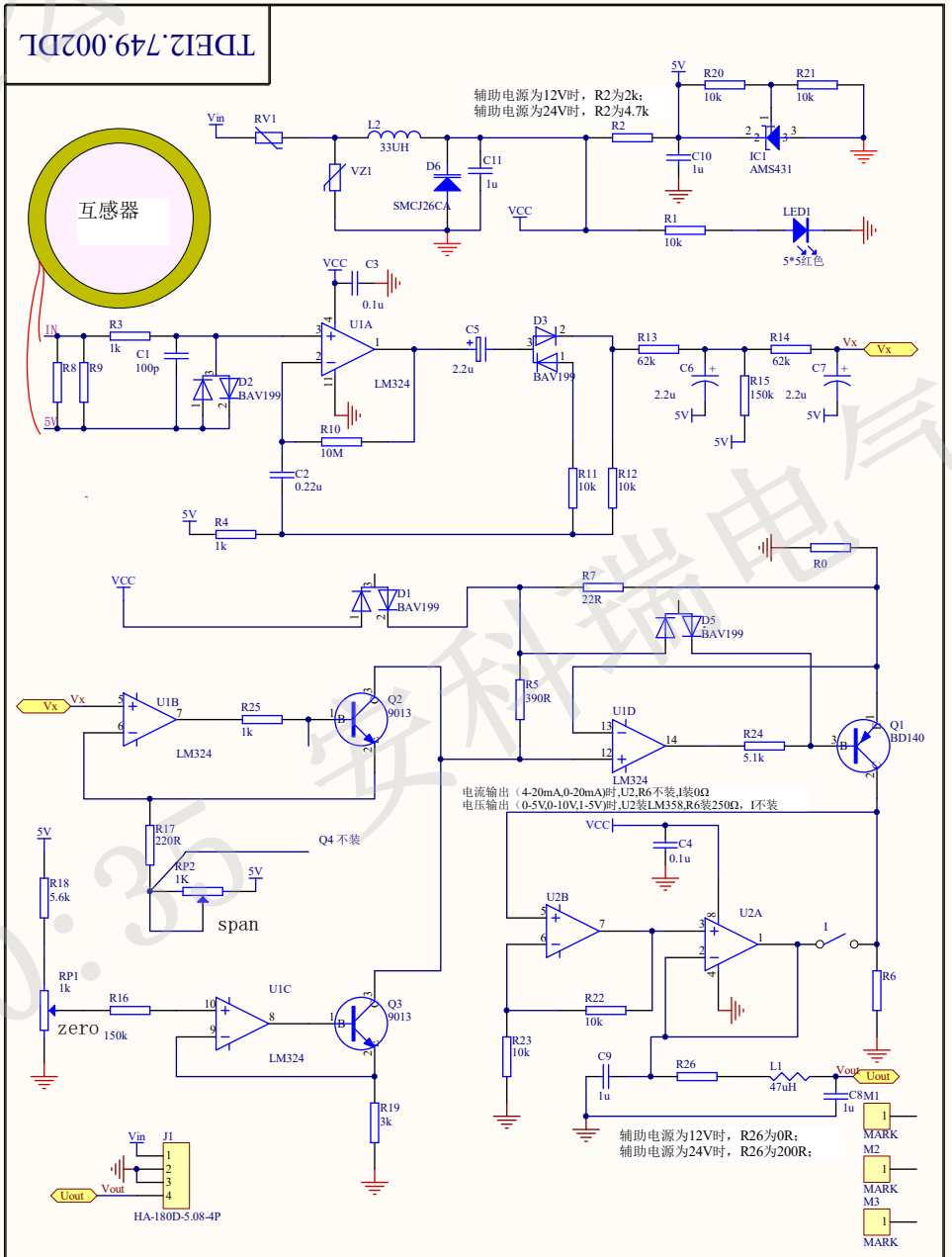
LED1
R1
R2
C10
C1
R21
J1
GND
VDD
BA10_SIG_V02
RP2
SPAN
RP1
ZERO
C11
L2
M3
L1
U2
Q1
R3
IN 5V
R9
R8
C1
C2
D2
R11
R12
R13
C5
C7
R14
R15
C6
R20
C8
R18
C9
C4
C3
R6
U1
R10
Q2
Q3
D6

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| 旧底图总号 | | | | | | | | | | | | | | | | |
| | 更改标记 | 数量 | 更改单号 | 签 名 | 日期 | 更改标记 | 数量 | 更改单号 | 签 名 | 日期 | 更改标记 | 数量 | 更改单号 | 签 名 | 日期 | |
| 底图总号 | 拟 制 | | | | | BA10-AI | | | | | TDEI2.749.002DL | | | | | |
| | 审 核 | | | | | 平均值交流电流传感器 | | | | | | | | | | |
| 签 名 日期 | 标准化 | | | | | 电路图 | | | | | 等级标记 | 第 2 张 | 共 2 张 | | | |
| | 批 准 | | | | | | | | | | A | | | | | |

格式(3) 制图: 描图: 幅面: