

#### 产品特点:

- ✓ 扁平化小体积
- ✓ V 级能效
- ✓ 超低待机功耗<0.4W
- ✓ 300Vac 介电强度
- ✓ 5km 海拔
- ✓ 5G 振动标准
- ✓ 翻盖端子, 双 Y 电容设计
- ✓ 3 年质保

#### Features:

- ✓ Ultra compact
- ✓ V class of Energy Star
- ✓ No load power consumption<0.4W
- ✓ 300VAC input surge
- ✓ Operating altitude up to 5000 meters
- ✓ Withstand 5G vibration test
- ✓ Terminal with protection cover and Double Y capacitor design
- ✓ 3 years warranty

#### 应用领域:

- ✓ 家电行业
- ✓ 资讯行业
- ✓ 工业控制
- ✓ 生产制造
- ✓ 电气设备
- ✓ 仪器仪表

#### Application:

- ✓ Household appliances
- ✓ Information industry
- ✓ Industrial control
- ✓ Production and manufacturing industry
- ✓ Electrical apparatus
- ✓ Instruments and meters

# ESA-100-24

## 产品规格书

## PRODUCT SPECIFICATION

制造安全产品 驱动绿色世界 Power a Safe and Green world

Excellent 卓越 Creative 创造 United 协作



合肥华耀电子工业有限公司

ECU ELECTRONICS INDUSTRIAL CO.,LTD.



微信扫码关注

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基本参数 Basic Parameter

| 项目<br>Item                   | 单位<br>UNIT | 规格<br>Specification | 备注<br>Notes |
|------------------------------|------------|---------------------|-------------|
| 输出电压<br>Output Voltage       | Vdc        | 24                  | 0%~100%负载   |
| 输出电压可调范围<br>Adjustable range | V          | 21.6~26.4           | 0%~100%负载   |
| 额定输出电流<br>Rated current      | A          | 0~4.5               | 24Vdc       |
| 额定功率<br>Rated power          | W          | 108                 | 24Vdc/4.5A  |
| 纹波电压<br>Ripple&noise         | mVp-p      | 150                 | 0%~100%负载   |

注:输出纹波噪声测试条件 DC output ripple & noise test conditions

- 1)使用 12 英寸（300mm）的双绞线将电源连接至负载，同时在负载端并联 0.1uF 和 47uF 电容。  
12”（300mm）of twisted load cables,paralleled 0.1uF ceramic and 47uF electrolytic placed across the terminals at the load.
- 2)示波器须设置在 20M 赫兹带宽，在负载端进行测试。  
Scope probe,20MHz bandwidth-limited,placed across the terminals at the load.

输入特性 Input Characteristics

| 项目<br>Item                            | 单位<br>UNIT | 最小值<br>MIN | 额定值<br>Rated | 最大值<br>Max | 备注<br>Notes                                                                                                                       |
|---------------------------------------|------------|------------|--------------|------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 输入电压<br>Input Voltage                 | Vac        | 90         | 230          | 264        | 参考输出降额曲线<br>Refer to output derating curve.                                                                                       |
| 最大介电强度<br>Maximum dielectric strength | Vac        |            |              | 300        | 5S最大耐受时间<br>5S max                                                                                                                |
| 输入频率<br>Input Frequency               | Hz         |            | 47~63        |            |                                                                                                                                   |
| 输入电流<br>Input Current                 | A          | /          | /            | 1.2<br>2.1 | 230Vac, 满载/230Vac, Full load<br>115Vac, 满载/115Vac, Full Load.                                                                     |
| 输入冲击电流<br>Inrush Current              | A          | /          | /            | 35<br>30   | 230Vac/50Hz, 100%负载, 冷启动<br>230Vac/50Hz, 100% Load. cold start.<br>115Vac/60Hz, 100%负载, 冷启动<br>115Vac/60Hz, 100% Load. cold start |
| 空载损耗<br>No-load loss                  | W          |            |              | 0.4        | 230Vac,空载/No Load.                                                                                                                |
| 输入保险<br>Input Fuse                    |            |            | T4A/250Vac   |            |                                                                                                                                   |

输出特性 Output Characteristics

| 项目<br>Item                                | 单位<br>Unit | 最小值<br>Min | 典型值<br>Typ | 最大值<br>Max | 备注<br>Notes                                                                                |
|-------------------------------------------|------------|------------|------------|------------|--------------------------------------------------------------------------------------------|
| 效率<br>Efficiency                          | %          | /          | 87         | /          | 230Vac/50Hz, 最大负载<br>230Vac/50Hz, Max Load.                                                |
| 负载调整率<br>Load Regulation                  | %          | /          | +/-0.5     | /          | 5%~100% 负载 @230Vac/115Vac<br>5%~100% Load @230Vac/115Vac                                   |
| 输入电压调整率<br>Line Regulation                | %          | /          | +/-0.5     | /          | 90~264Vac输入 @100% 负载<br>90~264Vac Input @100% Load                                         |
| 开机延迟时间<br>Setup Time                      | s          | /          | /          | 2          | 115Vac或230Vac 输入, 满载<br>115Vac&230Vac Input Full Load                                      |
| 上升时间<br>Rise Time                         | ms         | /          | /          | 40         | 输出从10%上升到90%的时间<br>The output voltages shall rise from 10% to 90% of their output voltage. |
| 保持时间<br>Hold time                         | ms         | 30         | /          | /          | 230Vac 输入, 满载<br>230Vac Input,,Full Load                                                   |
|                                           |            | 10         | /          | /          | 115Vac 输入, 满载<br>115Vac Input,,Full Load                                                   |
| 过冲响应<br>Overshoot &undershoot<br>Response | %          |            |            | +/-5       | 开关机时<br>Power on/off                                                                       |
| 负载动态<br>Load dynamic response             | %          | /          | /          | +/-5       | 设定周期20ms,升降电流0.1A/us,在50%~100%负载<br>Settling time 20ms R/s 0.1A/us load 50%~100% Load      |

环境特性 Environment Characteristics

| 项目<br>ITEM           | 单位<br>UNIT | 最小值<br>MIN                                                                                                                                                           | 典型值<br>Rated | 最大值MAX | 备注<br>Notes                                               |
|----------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------|-----------------------------------------------------------|
| 温度<br>Temperature    | ℃          | -20                                                                                                                                                                  | 25           | 70     | 工作温度Operation Temperature;<br>参考负载降额曲线 (attached drawing) |
|                      |            | -40                                                                                                                                                                  | 25           | 85     | 贮藏温度Storage Temperature                                   |
| 相对湿度<br>Humidity     | ℃          | 20%                                                                                                                                                                  | /            | 90%    | 工作湿度Operation Humidity                                    |
|                      |            | 10%                                                                                                                                                                  | /            | 95%    | 贮藏湿度Storage Humidity                                      |
| 振动<br>Vibration      | /          | GB/T2423.10-2008/IEC 60068-2-6, 正弦10-500Hz, 5G, 位移0.35mm, X、Y、Z轴各60分钟;<br>Sine Wave:10-500Hz, 5G, displacement of 0.35mm; 60 min per axis for all X, Y, Z directions |              |        |                                                           |
| 冲击<br>Impact         | /          | GB2423.5/IEC60068-2-27,半正弦波: 15G, 持续11ms, 每个方向3次, 共6次<br>Half Sine Wave:15G for a duration of 11ms, 3 times per direction, 6 times in total                          |              |        |                                                           |
| 海拔高度<br>Altitude     | M          | ≤5000                                                                                                                                                                |              |        |                                                           |
| 冷却方式<br>Cooling Mode |            | 空气自然冷却<br>Air Cooling                                                                                                                                                |              |        |                                                           |
| 防护等级<br>IP level     |            | GB4208-2008 IP20/EN 60529/IEC 529                                                                                                                                    |              |        |                                                           |

保护功能 Protection Function

| 项目<br>Item                       | 技术要求<br>Requirement                             | 注释<br>Notes                                                              |
|----------------------------------|-------------------------------------------------|--------------------------------------------------------------------------|
| 短路保护<br>Short Circuit Protection | 电源无损坏，关闭输出电压<br>No damage shut down O/P voltage | 故障移出后,电源自动恢复。<br>Recovers automatically after fault condition is removed |
| 过载保护<br>Over load Protection     | 110%~150% @ Io                                  | 故障移出后,电源自动恢复。<br>Recovers automatically after fault condition is removed |
| 过压保护<br>Over voltage Protection  | 120%~145% @ Vo                                  | 过压发生后，必须重新启动才能恢复。<br>Reset must be need when over voltage to get right.  |

特殊功能 Signals Function

| 项目<br>Item            | 技术要求<br>Requirement                         |
|-----------------------|---------------------------------------------|
| 面板显示<br>Panel display | 电源开启，LED指示灯亮<br>LED indicator for power on; |

电气安全 Electrical Safety

| 项目<br>Item                   | 测试方法<br>Test Method | 测试条件<br>Test Conditions            |
|------------------------------|---------------------|------------------------------------|
| 绝缘电压<br>Withstand voltage    | 输入-输出 I/P-O/P       | 1500Vac 50Hz 1 分钟/minute 切断电流≤10mA |
|                              | 输入-大地 I/P-FG        | 1500Vac 50Hz 1 分钟/minute 切断电流≤10mA |
|                              | 输出-大地 O/P-FG        | 500Vac 50Hz 1 分钟/minute 切断电流≤10mA  |
| 绝缘阻抗<br>Withstand Resistance | 输入-输出 I/P-O/P       | DC500V 100MΩ分钟/min(at 25℃， 70%RH)  |
|                              | 输入-大地 I/P-FG        | DC500V 100MΩ分钟/min(at 25℃， 70%RH)  |
|                              | 输出-大地 O/P-FG        | DC500V 100MΩ分钟/min(at 25℃， 70%RH)  |
| 泄露电流<br>Leakage Current      | L、N-外壳/L、N-Case     | 3.5mA Max                          |
|                              | L、N-PE/L、N-PE       | 3.5mA Max                          |
| 接地阻抗<br>PE Resistance        | PE-外壳/PE-Case       | < 0.1Ohm                           |
| 污染等级<br>Pollution Level      | EN50178             | 2级                                 |
| 设计标准<br>Design standards     | UL508 工业控制类         |                                    |
|                              | EN60950-1资讯类        |                                    |
|                              | UL1310 Class2类电源    | /                                  |
|                              | EN60335-1家电类        |                                    |
|                              | EN61347-1灯具类        | /                                  |
|                              | IEC60601-1医疗类       | /                                  |

1) 标准A：规格界限内正常性能Criteria A: Normal performance within the specification limits  
2) 标准B：可自行恢复的临时性退化或功能丧失Criteria B: Temporary degradation or loss of function which is self-recoverable  
3) 不对称：共模（线对地）Asymmetrical: Common mode (Line to earth)  
4) 对称：差模（线对线）Symmetrical: Differential mode (Line to line)  
5) ”/”：不符合项Non-conformance

电磁兼容 Electromagnetic Compatibility

| 项目<br>Item                                   | 测试方法<br>Test Method           | 测试条件<br>Test Conditions                                                                                  |
|----------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------|
| 静电ESD<br>Electrostatic Discharge             | IEC 61000-4-2<br>GB17626-2    | Air Discharge: 8kV; Contact Discharge: 4kV. Criteria B                                                   |
| 射频辐射RS<br>Radiated Field                     | IEC 61000-4-3<br>GB17626-3    | 80MHz-1GHz, 3V/M, 80% modulation (1kHz). Criteria A                                                      |
| 脉冲杂讯EFT<br>Electrical Fast Transient / Burst | IEC 61000-4-4<br>GB17626-4    | AC Power Port<br>+ / - 1kV<br>Signal Ports and Telecommunication Ports 0.5kV. Criteria B                 |
| 雷击<br>Surge                                  | IEC 61000-4-5<br>GB17626-5    | Common Mode : 2kV; Differential Mode : 1kV. Criteria B                                                   |
| 射频传导<br>Conducted                            | IEC 61000-4-6<br>GB17626-6    | 150kHz-80MHz, 3Vms, 80% modulation (1kHz). Criteria A                                                    |
| 电源磁场<br>Power Frequency Magnetic Fields      | IEC 61000-4-8<br>GB17626-8    | 1A/Meter. Criteria A                                                                                     |
| 电压瞬断<br>Voltage Dips and Interruptions       | IEC 61000-4-11<br>GB17626-11  | DIPS:5%, 0.5 cycles, Criteria B; 70%, 25 cycles, Criteria C;<br>Interruption: 5%, 250 cycles, Criteria C |
| 低能量脉冲<br>Low Energy Pulse Test (Ring Wave)   | IEC 61000-4-12<br>GB17626-12  | Common Mode : 2kV; Differential Mode : 1kV. Criteria B                                                   |
| 谐波<br>Harmonic Current Emission              | EN61000-3-2:2014<br>GB17625.1 | Class A                                                                                                  |
| 电磁耐受标准<br>Immunity Generic Standards         |                               | EN 55024,GB17618资讯类                                                                                      |
|                                              |                               | EN55014-2家电类                                                                                             |
|                                              | /5)                           | EN60601-1-2医疗类                                                                                           |
|                                              | /5)                           | EN61547灯具类                                                                                               |
|                                              |                               | EN61000-6-1,EN50082-1,GB/T17799-1轻工业环境                                                                   |
| 传导和辐射通用标准<br>CE&RE                           |                               | EN 61000-6-2,EN55082-2,GB/T17799-2工业环境                                                                   |
|                                              |                               | GB9254, CISPR 32, EN 55032 : Class B 资讯类                                                                 |
|                                              | /5)                           | GB4824, CISPR 11, EN 55011 : Class B 医疗类                                                                 |
|                                              | /5)                           | GB17743, EN55015, CISPR15: Class B 灯具类                                                                   |
|                                              |                               | GB4343-1, CISPR14, EN55014-1: Class B 家电类                                                                |
| 电压波动和闪烁<br>Voltage Fluctuation and Flicker   |                               | EN 61000-6-3, FCC Title 47, EN55011: Class B 工控类                                                         |
|                                              |                               | EN61000-3-3:2013 /GB17625.2                                                                              |
| 测试标准<br>Supply for General                   |                               | EN 61204-3                                                                                               |

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- 5) ”/ ”: 不符合项Non-conformance
- 6) 电源应视为系统内元件的一部分, 需结合终端设备进行EMC确认Power should be considered part of the element within the system, to be combined with the terminal device EMC acknowledgment;

可靠性数据 Reliability

| 项目<br>Item                    | 数据<br>Data    | 测试条件<br>Test Conditions                                               |
|-------------------------------|---------------|-----------------------------------------------------------------------|
| 产品老化<br>Burn-in               | 100%          | 230Va（50Hz），满载, 40℃，4小时                                               |
| 平均无故障时间<br>MTBF               | 400,000 Hours | 230Vac ,100% Load,25℃，MIL HDBK 217F<br>230Vac，满载，25℃，MIL HDBK 217F    |
| 质保<br>Warranty period         | 3年            | 40℃，230Vac，80% Load，24小时工作                                            |
| 设计使用寿命<br>Design Service life | /             | 此项依据实际使用条件推算<br>This calculated based on the actual conditions of use |

结构与安装 Mechanical Installation

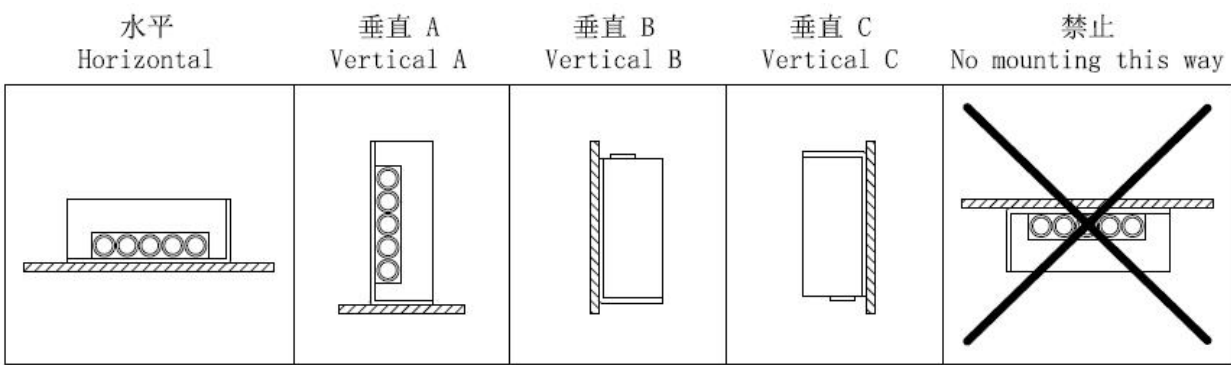
| 项目<br>Item              | 数据<br>Data                         | 备注<br>Note                                        |
|-------------------------|------------------------------------|---------------------------------------------------|
| 尺寸mm（长宽高）<br>Size       | 129 * 97.5* 30                     | 外形尺寸                                              |
| 重量Kg<br>Weight          | 0.30                               |                                                   |
| 安装方式<br>Installation    | 平板式安装<br>mounted on 35mm DIN rails |                                                   |
| 输入端子<br>Input Terminal  | 脚距9.5mm，3位<br>Pitch=9.5mm, 3pin    | 最大扭矩1.2N.M<br>温度范围-40℃~+105℃<br>横截面 AWG 22 ... 12 |
|                         | 1 PIN---AC(L)                      |                                                   |
|                         | 2 PIN---AC(N)                      |                                                   |
|                         | 3 PIN---FG                         |                                                   |
| 输出端子<br>Output Terminal | 脚距9.5mm，4位/Pitch=9.5mm, 4pin       | 最大扭矩1.2N.M<br>温度范围-40℃~+105℃<br>横截面 AWG 22 ... 12 |
|                         | 4 PIN--- -V                        |                                                   |
|                         | 5 PIN--- -V                        |                                                   |
|                         | 6 PIN--- +V                        |                                                   |
|                         | 7 PIN--- +V                        |                                                   |

## Appendix(Product assembly/ Standard Mounting/ Label/ Derating Curve/ Series Connection Diagram)

[illegible]

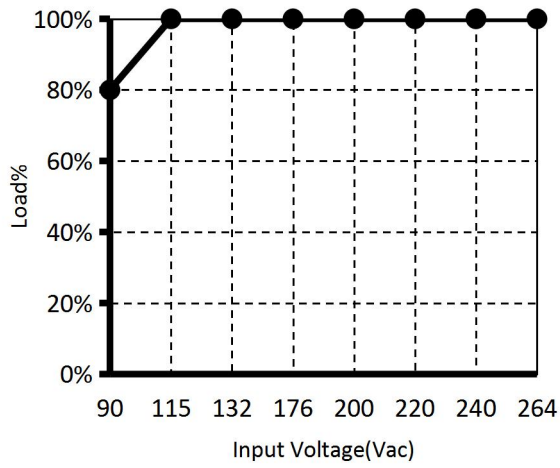
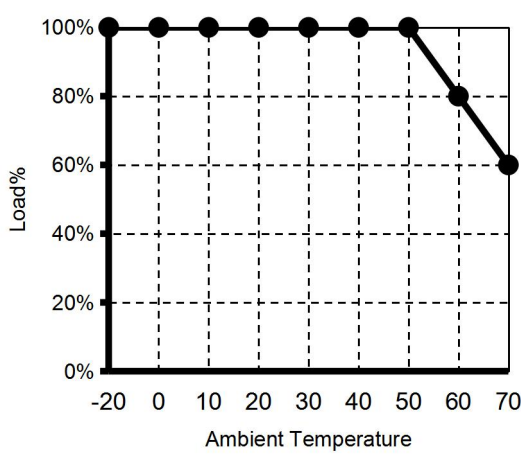
A: Suggested tightening torque: M3.0 screw  $< 0.4 \text{ N} \cdot \text{m}$ ; M4.0 screw  $< 0.6 \text{ N} \cdot \text{m}$ .

2. 放置示意图 Standard Mounting



3. 标签图 Label: 略 Ellipsis

4. 降额曲线 Derating curve:



5. 串联接线图 Series Connection Diagram:

