



**Features**

- . Input voltage 176 ~ 264VAC 50/60Hz or 200~360VDC
- . Output voltage select able from 5Vdc to 48Vdc for 120W series
- . Protections: Short Circuit / Overload / Over Voltage Protection
- . 100% full load burn-in test for 2Hrs to make every unit reliable
- . Efficiency is no less than 80% and 2 years guarantee
- . Output voltage is adjustable by +/-10% of the rated output
- . Cooling by free air convection and LED indicator for power on.

**Safety Standards**

- . IEC62368-1 CB report for worldwide use
- . UL62368-1 + CAN/CSA 62368-1 for USA and Canada
- . EN 62368-1:2014/A11:2017 for European Union
- . AS/NZS 62368.1:2018 for Australia and New Zealand
- . J62368-1 for Japan and GB4943.1 for China market.



**Product Description:**

It is a low cost and reliable 9Vdc 12A 108W single constant voltage output switching power supply solution with 176-264Vac or 200 - 360Vdc input. The product is designed and manufactured strictly according to the international safety standards. The output voltage is adjustable by +/-10% of rated output voltage. This 9Vdc 12A power supply is suitable for various types of railway, smart farming smart logistics, smart transportation, laser galvanometer and so on. The switching power supply utilizes aluminum alloy housing with cellular shape cover which is better for free air convection cooling with dimensions of 199 \* 98\* 40mm and 2 years warranty.

**Technical Specification**

| Typ. Model             | TL-120S-5  | TL-120S-9 | TL-120S-12 | TL-120S-24 | TL-120S-48 |
|------------------------|--|-----------|------------|------------|------------|
| <b>Output</b>          |  |           |            |            |            |
| Output Voltage         | 5VDC   | 9VDC      | 12VDC      | 24VDC      | 48VDC      |
| Rated Current          | 20A Max.   | 12A Max.  | 10A Max.   | 5A Max.    | 2.5A Max.  |
| Current Range          | 0 ~ 20A  | 0 ~ 12A   | 0 ~ 10A    | 0 ~ 5A     | 0 ~ 2.5A   |
| Output Power           | 100W Max.  | 108W Max. | 120W Max.  | 120W Max.  | 120W Max.  |
| Voltage Tolerance      | ±5%  | ±5%       | ±5%        | ±5%        | ±5%        |
| Ripple & Noise         | 100mVp-p   | 100mVp-p  | 150mVp-p   | 200mVp-p   | 250mVp-p   |
| <b>Input</b>           |  |           |            |            |            |
| Input voltage          | 176 - 264Vac or 200- 360Vdc  |           |            |            |            |
| Input Frequency        | 50-60Hz (When the input is AC)                                       |           |            |            |            |
| Input Current          | 1.8Max. @ 100 ~240Vac 50/60Hz input                                  |           |            |            |            |
| Inrush Current         | 60A Max. @ 100 ~240Vac 50/60Hz input                                 |           |            |            |            |
| Efficiency (Typ.)      | 78%  | 80%       | 82%        | 84%        | 85%        |
| Leakage Current        | ≤0.5mA @ full input range  |           |            |            |            |
| <b>Protections</b>     |  |           |            |            |            |
| Over current           | 110~130% rated output power. Auto-Recovery when the fault is removed |           |            |            |            |
| Short Circuit          | No damage. Auto-Recovery when the fault is removed                   |           |            |            |            |
| Over temperature       | Shut down o/p voltage, re-power on to recover                        |           |            |            |            |
| <b>Environmental</b>   |  |           |            |            |            |
| Operation Temperature  | 0°C to +45°C, 20%RH to 90%RH   |           |            |            |            |
| Storage Temp, Humidity | -45~ +85°C, 10%RH to 95%RH   |           |            |            |            |
| Operation Altitude     | ≤2000m @ full load and rated operating temperatures                  |           |            |            |            |
| MTBF                   | ≥50000Hrs @ full load and rated operating temperatures               |           |            |            |            |
| <b>Mechanical</b>      |  |           |            |            |            |
| Dimensions (W x L x H) | 199.0 x 98.0 x 40.0mm (7.83 x 3.86 x 1.58 inch)                      |           |            |            |            |
| Unit Weight            | 360g±20 grams  |           |            |            |            |
| Packing Information    | 28pcs/ Carton, carton dimensions:47*37*20cm, 11.5kgs/ Carton         |           |            |            |            |

## TEST REPORT

**OUTPUT FUNCTION TEST**

| NO | TEST ITEM         | SPECIFICATION   | TEST CONDIDTION                                   | RESULT                            | VERDICT |
|----|-------------------|-----------------|---|-----------------------------------|---------|
| 1  | RIPPLE & NOISE    | 100mVp-p (Max)  | I/P:230VAC / O/P:FULL LOAD / Ta:25°C              | 82mVp-p                           | P       |
| 2  | VOLTAGE TOLERANCE | -5% ~ +5% (Max) | I/P:176VAC~264VAC<br>O/P:FULL~MIN. LOAD / Ta:25°C | -2% ~ +2% of output voltage       | P       |
| 3  | LINE REGULATION   | -1% ~ +1% (Max) | I/P:176VAC ~264VAC<br>O/P:FULL LOAD / Ta:25°C     | -0.08% ~ +0.08% of output voltage | P       |
| 4  | LOAD REGULATION   | -3% ~ +3% (Max) | I/P:230VAC<br>O/P:FULL ~MIN LOAD / Ta:25°C        | -0.92% ~ +0.96% of output voltage | P       |
| 5  | OVER/UNDERSHOOT   | <±5%            | I/P: 230VAC<br>O/P:FULL LOAD / Ta:25°C            | 0.98%                             | P       |
| 6  | SET UP TIME       | 2000 mS (Max)   | I/P:230VAC<br>O/P:FULL LOAD / Ta:25°C             | 1660 mS                           | P       |
| 7  | RISE TIME         | 30 mS (Max)     | I/P: 230VAC<br>O/P:FULL LOAD / Ta:25°C            | 25 mS                             | P       |
| 8  | HOLD UP TIME      | 10 mS (Min)     | I/P: 230VAC<br>O/P:FULL LOAD / Ta:25°C            | 15 mS                             | P       |

**INPUT FUNCTION TEST**

| NO | TEST ITEM          | SPECIFICATION                      | TEST CONDIDTION                                     | RESULT                     | VERDICT |
|----|--------------------|------------------------------------|---|----------------------------|---------|
| 1  | VOLTAGE RANGE      | 176VAC~264VAC                      | I/P:TESTING<br>O/P:FULL LOAD / Ta:25°C              | 165V~264V                  | P       |
| 2  | FREQUENCY RANGE    | 50HZ - 60HZ (Typ)<br>NO DAMAGE OSC | I/P: 176VAC ~ 240VAC<br>O/P:FULL~MIN LOAD / Ta:25°C | TEST: OK                   | P       |
| 3  | EFFICIENCY         | 80% (Typ)                          | I/P:230VAC<br>O/P:FULL LOAD / Ta:25°C               | 80.39%                     | P       |
| 4  | AVERAGE EFFICIENCY | >78%                               | I/P:230VAC & O/P:25%、50%、75%、100%<br>LOAD & Ta:25°C | 78.86% (230VAC)            | P       |
| 5  | AC CURRENT         | 1.8A (Max)                         | I/P:230VAC & O/P:FULL LOAD Ta:25°C                  | 1.70A                      | P       |
| 6  | INRUSH CURRENT     | <60A<br>COLD START                 | I/P: 230VAC / O/P:FULL LOAD<br>Ta:25°C              | 35.11A                     | P       |
| 7  | LEAKAGE CURRENT    | < 0.5mA                            | I/P:230VAC & O/P:Min LOAD<br>Ta:25°C                | L-FG:0.38mA<br>N-FG:0.36mA | P       |

**PROTECTION FUNCTION TEST**

| NO | TEST ITEM               | SPECIFICATION                    | TEST CONDIDTION                       | RESULT   | VERDICT |
|----|-------------------------|----------------------------------|---------------------------------------|--|---------|
| 1  | OVER LOAD PROTECTION    | 110 ~ 130% (Typ)                 | I/P:230VAC & O/P:TESTING<br>Ta:25°C   | 120.33%<br>HICCUP MODE   | P       |
| 2  | OVER VOLTAGE PROTECTION | 115 ~ 135% (Typ)                 | I/P:230VAC<br>O/P:MIN LOAD & Ta:25°C  | Hiccup mode ,recovers<br>automatically after fault<br>condition is removed | P       |
| 3  | SHORT PROTECTION        | SHORT OUTPUT<br>1 HOUR NO DAMAGE | I/P:264VAC<br>O/P:FULL LOAD & Ta:25°C | NO DAMAGE<br>HICCUP MODE   | P       |

**SAFETY TEST & E.M.C TEST**

| NO | TEST ITEM            | SPECIFICATION   | TEST CONDIDTION   | RESULT   | VERDICT |
|----|----------------------|---|---|--|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P: 1.5KVAC/min<br>I/P- FG: 1.5KVAC/min<br>O/P-FG:0.5KVAC/min  | I/P-O/P: 1.8 KVAC/min<br>I/P-FG: 1.8 KVAC/min<br>O/P-FG:0.6 KVAC/min<br>Ta:25°C | I/P-O/P:4.12mA<br>I/P-FG: 4.10mA<br>O/P-FG: 2.85mA<br>NO DAMAGE  | P       |
| 2  | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ<br>I/P-FG: 500VDC>100MΩ<br>O/P-FG:500VDC>100MΩ | I/P-O/P: 500 VDC<br>I/P-FG: 500 VDC<br>O/P-FG: 500 VDC<br>Ta:25°C               | I/P-O/P: 9999MΩ<br>I/P-FG: 9999MΩ<br>O/P-FG:9999 MΩ<br>NO DAMAGE | P       |
| 3  | CONDUCTION           | BS EN/EN55032(CISPR32),<br>FCC PART 15 / CISPR22<br>CAN             | I/P: 230 VAC (50HZ)<br>O/P: FULL/50% LOAD<br>Ta: 25°C                           | PASS<br>Test by certified Lab                                    | P       |
| 4  | RADIATION            | BS EN/EN55032(CISPR32),<br>FCC PART 15 / CISPR22<br>CAN             | I/P: 230 VAC (50HZ)<br>O/P: FULL LOAD<br>Ta: 25°C                               | PASS<br>Test by certified Lab                                    | P       |
| 5  | SURGE                | BS EN/EN61000-4-5<br>LIGHT INDUSTRY<br>L-N: 1KV                     | I/P: 230 VAC/50HZ<br>O/P: FULL LOAD<br>Ta: 25°C                                 | CRITERIA B   | P       |
| 6  | E.S.D                | BS EN/EN61000-4-2<br>LIGHT INDUSTRY<br>AIR: 8KV / Contact: 4KV      | I/P: 230 VAC/50HZ<br>O/P: FULL LOAD<br>Ta: 25°C                                 | CRITERIA B   | P       |

| TEST RESULT | TESTER        | REVIEW         | APPROVAL        |
|-------------|---------------|----------------|-----------------|
| <b>PASS</b> | <b>ZHU LI</b> | <b>WANG LW</b> | <b>ZHANG DL</b> |