



**Features**

- . Input voltage 110 /230VAC 50/60Hz or 200~360VDC
- . Protections: Short Circuit / Overload / Over Voltage Protection
- . Output voltage select able from 9Vdc to 70Vdc for 400W series
- . The output voltage adjustable by +/-10% of rated output
- . Forced air cooling by built-in DC ball bearing fan
- . All using high quality 105°C long life electrolytic capacitors
- . Efficiency is no less than 85% and 2 years guarantee.

**Safety Standards**

- . IEC62368-1 CB report for worldwide use
- . EN 62368-1:2014/A11:2017 for European Union
- . UL62368-1 + CAN/CSA 62368-1 for USA and Canada
- . 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 high reliable 60Vdc 6.6A 400W single output constant voltage switching power supply solution with 110V / 230VAC input and the input range is selectable by switch. The product is designed and manufactured strictly according to the international safety standards with high reliable components. The switching power supply utilizes aluminum alloy housing built-in a on/off controllable DC fan. This 60Vdc 6.6A power supply is suitable for various types of medical computer monitors, oral irrigators, hemodialysis machines, portable medical devices, medical examination instruments, advertising machines, industrial robots, laser galvanometer and so on.

**Technical Specification**

Typ. Model	TL-400S-9	TL-400S-12	TL-400S-24	TL-400S-60	TL-400S-70
<b>Output</b>					
Output Voltage	9VDC	12VDC	24VDC	60VDC	70VDC
Rated Current	44A Max.	33A Max.	16.6A Max.	6.6A Max.	5.7A Max.
Current Range	0 ~ 44A	0 ~ 33A	0 ~ 16.6A	0 ~ 6.6A	0 ~ 5.7A
Output Power	396W Max.	396W Max.	400W Max.	396W Max.	400W Max.
Voltage Tolerance	±5%	±5%	±5%	±5%	±5%
Ripple & Noise	150mVp-p	150mVp-p	200mVp-p	400mVp-p	500mVp-p
<b>Input</b>					
Input voltage	110 / 230 Vac or 200- 360Vdc				
Input Frequency	50-60Hz (When the input is AC)				
Input Current	9A Max. @ 100 ~240Vac 50/60Hz input				
Inrush Current	60A Max. @ 100 ~240Vac 50/60Hz input				
Efficiency (Typ.)	78%	80%	82%	85%	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)	252.0 x 103.0 x 65.0mm (9.92 x 4.06 x 2.56 inch)				
Unit Weight	490g±40 grams				
Packing Information	20pcs/ Carton, carton dimensions:47*37*20cm, 11.2kgs/ Carton				

## TEST REPORT

### OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	RIPPLE & NOISE	400mVp-p (Max)	I/P:230VAC / O/P:FULL LOAD / Ta:25°C	275mVp-p	P
2	VOLTAGE TOLERANCE	-5% ~ +5% (Max)	I/P:176VAC~264VAC O/P:FULL~MIN. LOAD / Ta:25°C	-2% ~ +2% of output voltage	P
3	LINE REGULATION	-1% ~ +1% (Max)	I/P:176VAC ~264VAC O/P:FULL LOAD / Ta:25°C	-0.09% ~ +0.09% of output voltage	P
4	LOAD REGULATION	-3% ~ +3% (Max)	I/P:230VAC O/P:FULL ~MIN LOAD / Ta:25°C	-1.12% ~ +1.13% of output voltage	P
5	OVER/UNDERSHOOT	<±5%	I/P: 230VAC O/P:FULL LOAD / Ta:25°C	0.91%	P
6	SET UP TIME	2000 mS (Max)	I/P:230VAC O/P:FULL LOAD / Ta:25°C	1540 mS	P
7	RISE TIME	50 mS (Max)	I/P: 230VAC O/P:FULL LOAD / Ta:25°C	36 mS	P
8	HOLD UP TIME	15 mS (Min)	I/P: 230VAC O/P:FULL LOAD / Ta:25°C	16 mS	P

### INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	VOLTAGE RANGE	90VAC~132VAC 176VAC~264VAC	I/P:TESTING O/P:FULL LOAD / Ta:25°C	85V ~ 132V 165V~264V	P
2	FREQUENCY RANGE	50HZ - 60HZ (Typ) NO DAMAGE OSC	I/P: 176VAC ~ 240VAC O/P:FULL~MIN LOAD / Ta:25°C	TEST: OK	P
3	EFFICIENCY	>85% (Typ)	I/P:230VAC O/P:FULL LOAD / Ta:25°C	86.91%	P
4	AVERAGE EFFICIENCY	>83%	I/P:230VAC & O/P:25%、50%、75%、100% LOAD & Ta:25°C	84.38% (230VAC)	P
5	AC CURRENT	9.0A (Max)	I/P:230VAC & O/P:FULL LOAD Ta:25°C	4.32A	P
6	INRUSH CURRENT	<60A COLD START	I/P: 230VAC / O/P:FULL LOAD Ta:25°C	44.42A	P
7	LEAKAGE CURRENT	< 0.5mA	I/P:230VAC & O/P:Min LOAD Ta:25°C	L-FG:0.42mA N-FG:0.42mA	P

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	OVER LOAD PROTECTION	110 ~ 140% (Typ)	I/P:230VAC & O/P:TESTING Ta:25°C	125.52% HICCUP MODE	P
2	OVER VOLTAGE PROTECTION	115 ~ 135% (Typ)	I/P:230VAC O/P:MIN LOAD & Ta:25°C	Hiccup mode, recovers automatically after fault condition is removed	P
3	SHORT PROTECTION	SHORT OUTPUT 1 HOUR NO DAMAGE	I/P:264VAC O/P:FULL LOAD & Ta:25°C	NO DAMAGE 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 I/P- FG: 1.5KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P: 1.8 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG:0.6 KVAC/min Ta:25°C	I/P-O/P:4.54mA I/P-FG: 4.53mA O/P-FG: 3.35mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 9999MΩ I/P-FG: 9999MΩ O/P-FG:9999 MΩ NO DAMAGE	P
3	CONDUCTION	BS EN/EN55032(CISPR32), FCC PART 15 / CISPR22 CAN	I/P: 230 VAC (50HZ) O/P: FULL/50% LOAD Ta: 25°C	PASS Test by certified Lab	P
4	RADIATION	BS EN/EN55032(CISPR32), FCC PART 15 / CISPR22 CAN	I/P: 230 VAC (50HZ) O/P: FULL LOAD Ta: 25°C	PASS Test by certified Lab	P
5	SURGE	BS EN/EN61000-4-5 LIGHT INDUSTRY L-N: 1KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA B	P
6	E.S.D	BS EN/EN61000-4-2 LIGHT INDUSTRY AIR: 8KV / Contact: 4KV	I/P: 230 VAC/50HZ O/P: FULL LOAD 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>