

Quality Engineering Test Report

SERIES: PS-65 60W WATTS SIGLE OUTPUT SWITCHING POWER SUPPLY OPEN FRAME TYPE

SAMPLE:	A.PS-65-5 5V / 12A	D. PS-65-24 24V / 3A
	B.PS-65-12 12V / 5.2A	E. PS-65-48 48V / 1.5A
	C.PS-65-15 15V / 4.2A	

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
1	AC INPUT VOLTAGE RANGE	I/P:TESTING SPEC:90~264VAC O/P:FULL LOAD	A:65.85VAC~267VAC	P
2	LINE REGULATION	I/P:85~264VAC SPEC: A: ±1% O/P:FULL LOAD B: ±1% C: ±1% D: ±1% E: ±1%	A: $\frac{-0.12\%}{\%} \sim 0\% \%$ B: $0\% \% \sim 0\% \%$ C: $0\% \% \sim 0\% \%$ D: $0\% \% \sim 0\% \%$ E: $0\% \% \sim \frac{0.01\%}{\%}$	P
3	LOAD REGULATION	I/P:230VAC SPEC: A: ±3% O/P: B: ±2% MIN. TO FULL LOAD C: ±2% D: ±2% E: ±2%	A: $-0.24\% \sim +0.36\%$ B: $-0.05\% \sim +0.05\%$ C: $0\% \% \sim 0.04\%$ D: $-0.02\% \sim 0\% \%$ E: $\frac{-0.01\%}{\%} \sim +0.01\%$	P
4	OUTPUT VOLTAGE TOLERANCE	I/P:85~264VAC SPEC: A: ±3% O/P: B: ±2% MIN. TO FULL LOAD C: ±2% D: ±2% E: ±2%	A: $-0.5\% \sim +0.24\%$ B: $0\% \sim +0.1\%$ C: $0\% \sim +0.04\%$ D: $-0.02\% \sim +0.02\%$ E: $0\% \sim +0.03\%$	P
5	RIPPLE & NOISE	I/P:230VAC SPEC: A:100mV O/P: FULL LOAD B:100mV C:100mV D:100mV E:100mV	A: <u>66mV</u> B: <u>77mV</u> C: <u>21mV</u> D: <u>28mV</u> E: <u>43mV</u>	P
6	AC INPUT CURRENT	I/P:230VAC SPEC: 0.9A O/P:FULL LOAD	A: <u>0.7A</u>	P
7	MAX. INRUSH CURRENT	I/P:230VAC SPEC: 40A O/P:FULL LOAD	A: <u>32.39A</u>	P
8	O/P VOLTAGE ADJ.RANGE	I/P:230VAC SPEC:-5%~+10% O/P:MIN. LOAD A:4.75V~5.5V B:11.4V~13.2V C:14.25V~16.5V D:22.8V~26.4V E:45.6V~52.8V	A:4.28V~6.18V B:9.33V~13.73V C:12.62V~18.85V D:17.23V~27.6V E:38.8V~53.6V	P
9	SET UP TIME	I/P:230VAC SPEC:800ms O/P:FULL LOAD	A: <u>552.86mS</u>	P
10	HOLD UP TIME	I/P:230VAC SPEC:20mS O/P:FULL LOAD	A: <u>93.66mS</u>	P

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11	EFFICIENCY	I/P:230VAC O/P: FULL LOAD SPEC: A:76% B:79% C:79% D:80% E:80%	A: <u>76.5%</u> B: <u>80.24%</u> C: <u>81.83%</u> D: <u>83.25%</u> E: <u>83.95%</u>	P
12	OVER LOAD PROTECTION	I/P:230VAC O/P: TESTING SPEC: A: 73~105W B: 73~105W C: 73~105W D: 73~105W E: 73~105W	A: <u>78.84W</u> B: <u>83.56W</u> C: <u>78.74W</u> D: <u>93.44W</u> E: <u>97.67W</u>	P
13	OVER VOLTAGE PROTECTION	I/P:230VAC O/P:TESTING SPEC:115%~135% A : 5.5V~6.75V B : 13.2V~16.2V C : 16.5V~20.25V D : 26.4V~32.4V E : 52.8V~64.8V	A: <u>6.20V</u> B: <u>14.08V</u> C: <u>19.03V</u> D: <u>28.3V</u> E: <u>53.7V</u>	P
14	GROUND LEAKAGE CURRENT	I/P:240VAC SPEC: L-FG--<0.5mA N-FG--<0.5mA	B: L-FG: <u>0.4 mA</u> N-FG: <u>0.4mA</u>	P
15	INSULATION RESISTANCE	SPEC: O/P-FG 500VDC/50MOhms MIN. I/P-O/P 500VDC/50MOhms MIN. I/P-FG 500VDC/50MOhms MIN.	A: O/P-FG > <u>50MOhms</u> I/P-O/P > <u>50MOhms</u> I/P-FG > <u>50MOhms</u>	P
16	DIELECTRIC / WITHSTAND VOLTAGE	SPEC: I/P- O/P: 3000VAC/ 1 sec (10mA CUT-OFF) I/P - FG: 1500VAC/ 1 sec (10mA CUT-OFF) O/P - FG : 500VAC/1sec (10mA CUT-OFF)	A: I/P-O/P : <u>3.38mA</u> I/P-FG : <u>3.52mA</u> O/P- FG : <u>1.93mA</u>	P
17	BURN-IN TEST	I/P: 230VAC O/P:FULL LOAD TA:25.4°C BURN-IN DURATION : 1.33 hrs	A: NON BREAK	P
18	ENVIRONMENT TEST	1.LOW TEMPERATURE TEST I/P:80 VAC O/P:FULL LOAD AMBIENT TEMPERATURE:-8.5°C 2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST I/P:230VAC O/P:FULL LOAD AMBIENT TEMPERATURE:45.1°C 3.ACCELERATED LIFE TEST I/P:267VAC O/P:FULL LOAD POWER ON :3 min POWER OFF :5 sec AMBIENT TEMPERATURE:85°C AMBIENT HUMIDITY:95%	AFTER <u>2</u> hrs POWER ON <u>OK</u> AFTER <u>14</u> hrs NON BREAK AFTER 3.5 hrs NON BREAK	P

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19	TEMPERATURE RISE TEST Trise OF PARTS	<p>I/P :230VAC AFTER 1.33 hrs BURN-IN O/P :FULL LOAD TA:25.4°C</p> <table border="1"> <thead> <tr> <th>POSITION</th> <th>P/N</th> <th>TEMP</th> <th>Trise</th> </tr> </thead> <tbody> <tr> <td>BD1</td> <td>BRIDGE DIODE</td> <td>55.1°C</td> <td>29.7°C</td> </tr> <tr> <td>Q1</td> <td>MAIN TRANSISTOR</td> <td>78.3°C</td> <td>52.9°C</td> </tr> <tr> <td>T1</td> <td>MAIN TRANSFORMER COIL</td> <td>68.1°C</td> <td>42.7°C</td> </tr> <tr> <td>D4</td> <td>O/P DIODE</td> <td>94.1°C</td> <td>68.7°C</td> </tr> <tr> <td>C5</td> <td>I/P FILTER CAPACITOR</td> <td>45.8°C</td> <td>20.4°C</td> </tr> <tr> <td>C22</td> <td>O/P FILTER CAPACITOR</td> <td>74.1°C</td> <td>48.7°C</td> </tr> <tr> <td>T1</td> <td>MAIN TRANSFORMER CORE</td> <td>75.4°C</td> <td>50°C</td> </tr> <tr> <td>D1</td> <td>CLAMP DIODE</td> <td>92.8°C</td> <td>57.4°C</td> </tr> <tr> <td>LF1</td> <td>LINE FILTER</td> <td>49°C</td> <td>23.6°C</td> </tr> </tbody> </table>	POSITION	P/N	TEMP	Trise	BD1	BRIDGE DIODE	55.1°C	29.7°C	Q1	MAIN TRANSISTOR	78.3°C	52.9°C	T1	MAIN TRANSFORMER COIL	68.1°C	42.7°C	D4	O/P DIODE	94.1°C	68.7°C	C5	I/P FILTER CAPACITOR	45.8°C	20.4°C	C22	O/P FILTER CAPACITOR	74.1°C	48.7°C	T1	MAIN TRANSFORMER CORE	75.4°C	50°C	D1	CLAMP DIODE	92.8°C	57.4°C	LF1	LINE FILTER	49°C	23.6°C		* NOTE1
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20	LIFE CYCLE	<p>SUPPOSE C22 IS THE MOST CRITICAL COMPONENT I/P:230VAC O/P:FULL LOAD Ta:25°C Tc22:73.7°C Life: 23966 hrs I/P:230VAC O/P:FULL LOAD Ta:40°C Tc22:81.9°C Life: 13575 hrs</p>		P																																								
21	CRITICAL COMPONENT RECORD (FOR QC INSPECTION REFERENCE ONLY)	<p>FUSE :4A/250VAC GFE. BRIDGE DIODE :LT KB408G. LINE FILTER :LS TF-484. TRANSFOMER :LS TF-461 POWER SWITCHER :K2545 OUTPUT DIODE :D83-004. OUTPUT CAPACITOR :ELNA 1200uF/16V , 105°C, RJH INPUT CAPACITOR :HITACHI 150uF/400V,85°C P.C.B :PS-65,CEM-1 2 OZSS 127mm x 76.2mm</p>																																										
DATE	SAMPLE	TEST RESULT	TEST	APPROVAL																																								
971220	PS-65	NOTE1:WORKING TEMPERATURE>=40°C, OUTPUT SHOULD DERATING	H.C.LIOU	Max Lin																																								