

# Quality Engineering Test Report

**SERIES: Q-120 120W AC-DC QUAD OUTPUT SWITCHING POWER SUPPLY**

**SAMPLE: A : Q-120B V1: 5V / 11AB : Q-120C V1: 5V / 10AC : Q-120D V1: 5V / 8A**  
**V2: 12V / 4A V2: 15V / 3.5A V2: 12V / 2A**  
**V3: -5V / 1A V3: -5V / 1A V3: 24V / 2A**  
**V4: -12V / 1A V4: -15V / 1A V4: -12V / 1A**

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
1	AC INPUT VOLTAGE RANGE	I/P:TESTING SPEC:176~264VAC O/P:FULL LOAD	A:136.1VAC~267VAC	P
2	LINE REGULATION	I/P:176~264VAC SPEC: O/P:FULL LOAD A: V1: ±0.5% V2: ±1% V3: ±1% V4: ±1% B: V1: ±0.5% V2: ±1% V3: ±1% V4: ±1% C: V1: ±0.5% V2: ±1% V3: ±1% V4: ±1%	A: V1: 0% ~ +0% V2: -0.098% ~ +0.2% V3: -0.35% ~ +0.117% V4: -0.096% ~ +0.144% B: V1: -0.12% ~ 0% V2: -0.04% ~ +0.19% V3: -0.48% ~ +0.23% V4: -0.07% ~ +0.23% C: V1: 0% ~ 0.118% V2: -0.049% ~ +0.098% V3: -0.049% ~ +0.176% V4: -0.048% ~ +0.097%	P
3	LOAD REGULATION	I/P:230VAC SPEC: O/P:MIN. TO FULL LOAD A: V1: ±0.5% V2: ±5% V3: ±5% V4: ±5% B: V1: ±0.5% V2: ±6% V3: ±5% V4: ±6% C: V1: ±0.5% V2: ±5% V3: ±5% V4: ±5%	A: V1: -0.238% ~ +0% V2: +0.67% ~ +1.6% V3: -1.11% ~ +1.48% V4: -1.486% ~ +2.2% B: V1: -0.24% ~ 0% V2: -0.75% ~ +1.54% V3: -0.72% ~ +1.47% V4: -1.41% ~ +3.19% C: V1: -0% ~ 0.118% V2: 0% ~ +1.24% V3: -0.099% ~ +1.48% V4: -0.71% ~ +1.58%	P
4	OUTPUT VOLTAGE TOLERANCE	I/P:176~264VAC SPEC: O/P:20% TO FULL LOAD A: V1: ±2% V2: ±6% V3: ±6% V4: ±6% B: V1: ±2% V2: -5%~+10% V3: ±6% V4: -5%~+10% C: V1: ±2% V2: ±6% V3: ±6% V4: ±6%	A: V1: -0.377% ~ +0.238% V2: -2.9% ~ +4.86% V3: -3.128% ~ +5.63% V4: -1.775% ~ +5.325% B: V1: -0.38% ~ +0.12% V2: -2.85% ~ +4.9% V3: -3.26% ~ +5% V4: -2.42% ~ +4.67% C: V1: -0.13% ~ +0.35% V2: -2.07% ~ +3.21% V3: -1.23% ~ +3.53% V4: -1.65% ~ +4.19%	P
5	RIPPLE&NOISE	I/P:230VAC SPEC: O/P:FULL LOAD A: V1: 80mV V2: 120mV V3: 80mV V4: 120mV B: V1: 80mV V2: 150mV V3: 80mV V4: 150mV C: V1: 80mV V2: 120mV V3: 180mV V4: 120mV	A: V1: 26mV V2: 37mV V3: 16mV V4: 26mV B: V1: 34mV V2: 49mV V3: 25mV V4: 42mV C: V1: 25mV V2: 24mV V3: 50mV V4: 27mV	P

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6	AC INPUT CURRENT	I/P:230VAC O/P:FULL LOAD SPEC:1.25A	A:1.269A	P																																				
7	MAX. INRUSH CURREN	I/P:230VAC O/P: FULL LOAD SPEC:35A	A:28.87A	P																																				
8	O/P VOLTAGE ADJ.RANGE	I/P:230VAC O/P:MIN. LOAD SPEC: -5%~+10%	A: 4.469V~5.792V B: 4.43V~5.75V C: 4.44V~5.79V	P																																				
9	SET UP TIME	I/P:230VAC O/P:FULL LOAD SPEC:200mS	A: 16.75mS	P																																				
10	HOLD UP TIME	I/P:230VAC O/P:FULL LOAD SPEC:20mS	A: 35.43mS	P																																				
11	EFFICIENCY	I/P:230VAC O/P:FULL LOAD SPEC: A:77% B:76% C:80%	A:79.71% B:81% C:83.11%	P																																				
12	OVER LOAD PROTECTION	I/P:230VAC O/P:TESTING SPEC:105%~135%	A:121.6% B:122.4% C:120%	P																																				
13	OVER VOLTAGE PROTECTION	I/P:230VAC O/P:FULL LOAD SPEC:5.75~6.75V	A : 6.06V B : 6.58V C : 6.2V	P																																				
14	GROUND LEAKAGE CURRENT	I/P:240VAC SPEC: L-FG--<3.5mA N-FG--<3.5mA	A: L-FG:1.01mA N-FG:1.07mA	P																																				
15	INSULATION RESISTANCE	SPEC: I/P-O/P: 500VDC/100M Ohms MIN. I/P-FG: 500VDC/100M Ohms MIN. O/P-FG: 500VDC/100M Ohms MIN.	A: O/P-FG >100M Ohms I/P-O/P >100M Ohms I/P-FG >100M Ohms	P																																				
16	DIELECTRIC / WITHSTAND VOLTAGE	SPEC: I/P- O/P: 3KVAC/ 1 min.(10mA CUT-OFF) I/P - FG: 1.5KVAC/ 1 min.(10mA CUT-OFF) O/P - FG: 0.5KVAC/ 1 min.(10mA CUT-OFF)	A: I/P-O/P :5.36mA I/P-FG :4.49mA O/P-FG :5.44mA	P																																				
17	BURN-IN TEST	I/P: 230VAC O/P: FULL LOAD TA:24.7°C BURN-IN DURATION : 2 hrs	C:NON BREAK	P																																				
18	ENVIRONMENT TEST (SAMPLE A:)	HIGH AMBIENT TEMPERATURE FULL LOAD TEST I/P:230VAC O/P:FULL LOAD AMBIENT TEMPERATURE:49.7°C	AFTER 15 hrs NON BREAK	P																																				
19	TEMPERATURE RISE TEST T rise OF PARTS	A: I/P :230VAC O/P :FULL LOAD AFTER 1.25 hr BURN-IN TA:24.7°C	<table border="1"> <thead> <tr> <th>POSITION</th> <th>P/N</th> <th>TEMP</th> <th>T rise</th> </tr> </thead> <tbody> <tr> <td>BD1</td> <td>BRIDGE DIODE</td> <td>70.3°C</td> <td>45.6°C</td> </tr> <tr> <td>Q2</td> <td>MAIN TRANSISTOR</td> <td>63.6°C</td> <td>38.9°C</td> </tr> <tr> <td>T1</td> <td>MAIN TRANSFORMER WIRE</td> <td>69.3°C</td> <td>44.6°C</td> </tr> <tr> <td>D13</td> <td>O/P DIODE</td> <td>87°C</td> <td>62.3°C</td> </tr> <tr> <td>C34</td> <td>O/P FILTER CAPACITOR</td> <td>67.8°C</td> <td>43.1°C</td> </tr> <tr> <td>L1</td> <td>O/P CHOCK</td> <td>84.4°C</td> <td>59.7°C</td> </tr> <tr> <td>C6</td> <td>I/P FILTER CAPACITOR</td> <td>55.8°C</td> <td>31.1°C</td> </tr> <tr> <td>LF1</td> <td>LIME FILTER TRANSFORMER</td> <td>50.6°C</td> <td>25.9°C</td> </tr> </tbody> </table>	POSITION	P/N	TEMP	T rise	BD1	BRIDGE DIODE	70.3°C	45.6°C	Q2	MAIN TRANSISTOR	63.6°C	38.9°C	T1	MAIN TRANSFORMER WIRE	69.3°C	44.6°C	D13	O/P DIODE	87°C	62.3°C	C34	O/P FILTER CAPACITOR	67.8°C	43.1°C	L1	O/P CHOCK	84.4°C	59.7°C	C6	I/P FILTER CAPACITOR	55.8°C	31.1°C	LF1	LIME FILTER TRANSFORMER	50.6°C	25.9°C	P
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20	LIFE CYCLE	A: SUPPOSE C34 IS THE MOST CRITICAL COMPONENT I/P:230VAC O/P:FULL LOAD Ta:25°C Tc34:68.1°C Life: 78136hrs I/P:230VAC O/P:FULL LOAD Ta:50°C Tc34:92.6°C Life: 14299hrs		P
21	CRITICAL COMPONENT RECORD ( FOR QC INSPECTION REFERENCE ONLY )	A: FUSE :4A/250V BRIDGE DIODE :KBJ408G LINE FILTER :TF096-R1 EE-25 TRANSFOMER TF272 ETD-34 POWER SWITCHER :2SK2625 TO-3P OUTPUT DIODE :CTB34 TO-3P OUTPUT CAPACITOR :ELNA 2200uF/16V RJH 105°C INPUT CAPACITOR :NISTUKO 330uF/200V PN-J 85°C P.C.B :Q-120B-R3 CEM-3 2 OZ SS		
DATE	SAMPLE	TEST RESULT	TEST	APPROVAL
980428	Q-120	PASS	H.C.LIOU	Max Lin
20010711	Q-120D	PASS	VINCENT	Max Lin
20020605	PRODUCTION SAMPLE A201A16 Q-120B	PASS	VINCENT	Max Lin