

Quality Engineering Test Report

SERIES: ESC-120 120W SINGLE OUTPUT CHARGER

**SAMPLE: A. ESC-120-13.5
13.5V / 8A**

**B. ESC-120-27
27V /4A**

**C. ESC-120-54
54V / 2A**

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
1	AC INPUT VOLTAGE RANGE	I/P:TESTING SPEC:176~264VAC O/P:FULL LOAD	A:117VAC~267VAC	P
2	LINE REGULATION	I/P:176~264VAC SPEC: O/P:FULL LOAD A:±0.5% B:±0.5% C:±0.5%	A: -0.09%~+0.04% B: -0.11%~+0.07% C: -0.09%~+0.07%	P
3	LOAD REGULATION	I/P:230VAC SPEC: O/P:MIN. TO FULL LOAD A:±2% B:±1% C:±0.5%	A: -0.23%~+0.18% B: -0.07%~+0.04% C: -0.02%~+0.08%	P
4	OUTPUT VOLTAGE TOLERANCE	I/P:176~264VAC SPEC: O/P:MIN. TO FULL LOAD A:±2% B:±1% C:±1%	A: +0.6%~+1.11% B: -0.19%~+0.02% C: -0.05%~+0.13%	P
5	RIPPLE&NOISE	I/P:230VAC SPEC: O/P:FULL LOAD A:120mVp-p B:150mVp-p C:400mVp-p	A: 61mV B: 37mV C: 105mV	P
6	AC INPUT CURRENT	I/P:230VAC SPEC:1.5A O/P:FULL LOAD	A:1.0A	P
7	MAX. INRUSH CURREN	I/P:230VAC SPEC:35A O/P: FULL LOAD	A:28.6A	P
8	O/P VOLTAGE ADJ.RANGE	I/P:230VAC SPEC: O/P:MIN. LOAD A:12~15V B:24~30V C:48~56V	A: 11.32~16.06V B: 23.84~32.72V C: 44.42~59.31V	P
9	SET UP TIME	I/P:230VAC SPEC:200ms O/P:FULL LOAD	A:21mS	P
10	HOLD UP TIME	I/P:230VAC SPEC:15mS O/P:FULL LOAD	A:42mS	P
11	EFFICIENCY	I/P:230VAC SPEC: O/P:FULL LOAD A:81% B:83% C:84%	A:81.1% B:83.5% C:84.68%	P
12	OVER LOAD PROTECTION	I/P:230VAC SPEC:105%~135% O/P:TESTING CURRENT LIMITING AUTO RECOVERY	A:133.7% B:132.5% C:135.0%	P
13	OVER VOLTAGE PROTECTION	I/P:230VAC SPEC:115%~135% O/P:FULL LOAD	A:127.7% B:128.6% C:124.8%	P
14	OVER TEMPERATURE PROTECTION & FAN ON/OFF TEST	I/P:230VAC SPEC: O/P:FULL LOAD RTH5>=80°C SHUT DOWN	A:85.6°C	P
15	GROUND LEAKAGE CURRENT	I/P:240VAC SPEC: L-FG---<3.5mA N-FG---<3.5mA	L-FG:0.94mA N-FG:0.89mA	P

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16	INSULATION RESISTANCE	SPEC: O/P-FG 500VDC/100M Ohms MIN. I/P-O/P 500VDC/100M Ohms MIN. I/P-FG 500VDC/100M Ohms MIN.	A: O/P-FG >100M Ohms I/P-O/P >100M Ohms I/P-FG >100M Ohms	P																																				
17	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 :0.003mA I/P-FG :0.002mA O/P-FG :0.002mA	P																																				
18	INDICATOR	LED: GREEN STAND BY YELLOW NORMAL LOAD RED FULL LOAD	A: G:0~13.6% LOAD Y:13.6%~90.62%LOAD R:90.62%~100% LOAD	P																																				
19	BATTERY CHANGE & DISCHARGE	I/P: 230VAC O/P:NO LOAD BATTERY UP:18±0.5V BATTERY LOW :10±0.5V	A: BATTERY UP:18.4V BATTERY LOW :10.3V	P																																				
20	BURN-IN TEST	I/P: 230VAC O/P:FULL LOAD TA:25.6°C BURN-IN DURATION : 1 hrs	A: NON BREAK	P																																				
21	ENVIRONMENT TEST (SAMPLE C:)	1.LOW TEMPERATURE TEST I/P:170 VAC O/P:FULL LOAD AMBIENT TEMPERATURE:-10°C	A:AFTER 1 hrs POWER ON OK	P																																				
		2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST I/P:230VAC O/P:FULL LOAD AMBIENT TEMPERATURE:31°C	A:AFTER 13.5 hrs NON BREAK																																					
		3.ACCELERATED LIFE TEST I/P:270VAC O/P:FULL LOAD POWER ON :3 min POWER OFF :5 sec AMBIENT TEMPERATURE:75°C AMBIENT HUMIDITY:95%	A:AFTER 5 hrs NON BREAK																																					
22	TEMPERATURE RISE TEST T rise OF PARTS	A: I/P :230VAC AFTER 1 hr BURN-IN O/P :FULL LOAD TA:25.6°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>65.8°C</td> <td>40.2°C</td> </tr> <tr> <td>Q1</td> <td>MAIN TRANSISTOR</td> <td>69.2°C</td> <td>43.6°C</td> </tr> <tr> <td>T1</td> <td>MAIN TRANSFORMER COIL</td> <td>74.4°C</td> <td>48.8°C</td> </tr> <tr> <td>D13</td> <td>O/P DIODE</td> <td>81.2°C</td> <td>55.6°C</td> </tr> <tr> <td>C34</td> <td>O/P FILTER CAPACITOR</td> <td>61.0°C</td> <td>35.4°C</td> </tr> <tr> <td>L1</td> <td>O/P CHOKE</td> <td>90.0°C</td> <td>64.4°C</td> </tr> <tr> <td>T1</td> <td>MAIN TRANSFORMER</td> <td>69.3°C</td> <td>43.7°C</td> </tr> <tr> <td>RTH</td> <td>THERMO</td> <td>63.6°C</td> <td>38.0°C</td> </tr> </tbody> </table>	POSITION	P/N	TEMP	T rise	BD1	BRIDGE DIODE	65.8°C	40.2°C	Q1	MAIN TRANSISTOR	69.2°C	43.6°C	T1	MAIN TRANSFORMER COIL	74.4°C	48.8°C	D13	O/P DIODE	81.2°C	55.6°C	C34	O/P FILTER CAPACITOR	61.0°C	35.4°C	L1	O/P CHOKE	90.0°C	64.4°C	T1	MAIN TRANSFORMER	69.3°C	43.7°C	RTH	THERMO	63.6°C	38.0°C	P
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23	LIFE CYCLE	C: SUPPOSE C34 IS THE MOST CRITICAL COMPONENT I/P:230VAC O/P:FULL LOAD Ta:25°C Tc34:60.4°C Life: 53297 hrs I/P:230VAC O/P:FULL LOAD Ta:30°C Tc34:73.8°C Life: 21053 hrs		P																																				
24	CRITICAL COMPONENT RECORD (FOR QC INSPECTION REFERENCE ONLY)	C: FUSE :4AL/250VAC BRIDGE DIODE :LT PBU606 LINE FILTER :LF TF-096D-R1 EE-25 TRANSFOMER :MT TF-370-R2 EER-35 POWER SWITCHER :NT2625N TO-3P OUTPUT DIODE :ESAD9202 TO-3P OUTPUT CAPACITOR :(V) 2200uF/35V ,105°C VENT INPUT CAPACITOR :RUBYCON 330uF/200V 85°C USP P.C.B :ESC-120R-R1 FR-4 2 OZ DS																																						
DATE	SAMPLE	TEST RESULT	TEST	APPROVAL																																				
980630	ESC-120	PASS	H.C.LIOU	Max Lin																																				