



Test Report: ES-SU10K

10000VA On line UPS

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

■ E.M.C. TEST

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE TOLERANCE	V: -1% ~ +1%	I/P: Line mode bat mode O/P: 220VAC for Line mode 220VAC for bat mode 230VAC for Line mode 230VAC for bat mode 240VAC for Line mode 240VAC for bat mode FULL~ MIN. LOAD Ta:25°C	output 230V: Line mode: No load: 230.2V Full load: 229.8V Bat mode: No load: 229.9V Full load: 228.1V Output 220V: Line mode: No load: 219.6V Full load: 218.8V Bat mode: No load: 219.6V Full load: 218.1V Output 240V: Line mode: No load: 240.1V Full load: 238.8V Bat mode: No load: 240.0V Full load: 238.9V
2	FREQUENCY (BAT MODE)	50Hz±0.1Hz for 50HZ 60Hz±0.1Hz for 60HZ	I/P: bat mode O/P: 230VAC 50HZ/60HZ for FULL LOAD Ta:25°C	50.0HZ @50Hz setting 60.0HZ @60Hz setting
3	FREQUENCY (ONLINE MODE SYNC RANGE FOR NORMAL OPERATION)	50Hz±4Hz for 50HZ 60Hz±4Hz for 60HZ	I/P: 230VAC 50±4HZ 240VAC 60±4HZ O/P: Min load Ta:25°C	50.0HZ@50Hz setting 60.0HZ@60Hz setting The output frequency is synchronized to the input line.
4	FREQUENCY (ON LINE MODE FOR FREQUENCY CONVERTER OPERATION)	50Hz±0.1Hz for 50HZ 60Hz±0.1Hz for 60HZ	I/P: 230VAC 46~54HZ 240VAC 56~64HZ O/P: 230VAC50HZ/60HZfor FULL LOAD Ta:25°C	50.0 Hz @50Hz setting 60.0 Hz @60Hz setting

5	THD	1% @ full linear load 4% @ Non linear load	I/P: 230VAC 50HZ O/P: 230VAC 50HZ for FULL LOAD	Oline Mode: 0.486 % @ full linear load 1.706% @ Non linear load Bat Mode: 0.450% @ full linear load 1.828% @ Non linear load
6	LOAD CAPABILITY	105% <Load ≤ 125% transfer to bypass after 10 min (+/- 4s); 125% < Load ≤ 150% Warning, transfer to bypass mode after 60s (+/- 4s); 150% <Load immediately	I/P: 230VAC 50HZ O/P: Ta:25°C	600.35s @110.8% load 60.63s @135.1% load 0.51s @153.0% load
7	EFFICIENCY	94% online model 92% bat model	I/P: 230VAC 50HZ 240VAC 60HZ O/P: Full load Ta:25°C	online model: 94.1%@230VAC 50HZ 94.0%@240VAC 60HZ bat model: 92.6%@230VAC 50HZ 92.2%@240VAC 60HZ
8	TRANSFER TIME	0S online model 0S bat model	I/P: 230VAC 50HZ 240VAC 60HZ O/P: Full load Ta:25°C	ac to bat: 0ms@230VAC 50HZ 0ms@240VAC 60HZ bat to ac: 0ms@230VAC 50HZ 0ms@240VAC 60HZ

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	110VAC~300VAC	I/P: TESTING O/P: FULL / 60% LOAD Ta:25°C	176V~300V/ FULL LOAD 110V~176V/ 60% LOAD
				TEST : PASS
2	INPUT FREQUENCY RANGE	46HZ ~54HZ@seting 50HZ 56HZ~64 HZ@seting 60HZ 40HZ~70HZ@seting 发电机 NO DAMAGE	I/P:110VAC ~300VAC O/P:FULL~MIN LOAD Ta:25°C	TEST : PASS
3	POWER FACTOR	≥0.99	I/P: 208VAV 220VAC 230 VAC 240VAC O/P:FULL LOAD Ta:25°C	0.996@208VAV 0.996@220VAC 0.997@230 VAC 0.998@240VAC

4	THDI	≤4%	I/P: 208VAV 220VAC 230 VAC 240VAC O/P:FULL LOAD Ta:25°C	3%@208VAV 3%@220VAC 3%@230 VAC 3%@240VAC
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■ E.M.C. TEST

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	BS EN/EN61000-3-12 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	BS EN/IEC 62040-32 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	BS EN/IEC 62040-32 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	BS EN/EN61000-4-2 INDUSTRY AIR : 4KV / Contact : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	BS EN/EN61000-4-4 INDUSTRY INPUT : 1KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	BS EN/EN61000-4-5 INDUSTRY Line-Line : 1KV Line-Line-Chassis : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																																				
1	TEMPERATURE RISE TEST	MODEL : ES-SU10K 1.HIGH AMBIENT BURN-IN : 2 HRS I/P : 198VAC/60HZ O/P : FULL LOAD 240V BATTERY Ta= 40°C 2.HIGH AMBIENT BURN-IN : 2 HRS I/P : 264VAC/50HZ O/P : FULL LOAD 240V BATTERY Ta= 40°C <table><tr><th>NO</th><th>Position</th><th>198VAC/60HZ</th><th>264VAC/50HZ</th></tr><tr><td>1</td><td>C5</td><td>49.8°C</td><td>51.7°C</td></tr><tr><td>2</td><td>C17</td><td>74.4°C</td><td>67.5°C</td></tr><tr><td>3</td><td>TX12</td><td>78.3°C</td><td>67.1°C</td></tr><tr><td>4</td><td>L5</td><td>102.7°C</td><td>85.3°C</td></tr><tr><td>5</td><td>RY4</td><td>93.1°C</td><td>80.7°C</td></tr><tr><td>6</td><td>L1</td><td>117.9°C</td><td>94.0°C</td></tr><tr><td>7</td><td>C13</td><td>68.4°C</td><td>63.8°C</td></tr><tr><td>8</td><td>C101</td><td>61.2°C</td><td>58.9°C</td></tr><tr><td>9</td><td>L3</td><td>111.7°C</td><td>84.6°C</td></tr><tr><td>10</td><td>L4</td><td>72.7°C</td><td>62.1°C</td></tr><tr><td>11</td><td>TX3</td><td>66.0°C</td><td>64.1°C</td></tr><tr><td>12</td><td>TX11</td><td>62.9°C</td><td>61.4°C</td></tr><tr><td>13</td><td>RY10</td><td>50.0°C</td><td>48.0°C</td></tr><tr><td>14</td><td>RY8</td><td>48.8°C</td><td>47.3°C</td></tr><tr><td>15</td><td>TX8</td><td>47.1°C</td><td>46.0°C</td></tr><tr><td>16</td><td>C41</td><td>50.0°C</td><td>52.5°C</td></tr><tr><td>17</td><td>L7</td><td>70.2°C</td><td>80.3°C</td></tr><tr><td>18</td><td>CT1</td><td>56.0°C</td><td>59.5°C</td></tr><tr><td>19</td><td>L9</td><td>73.1°C</td><td>81.7°C</td></tr><tr><td>20</td><td>TX3</td><td>65.6°C</td><td>69.5°C</td></tr><tr><td>21</td><td>L6</td><td>75.8°C</td><td>78.6°C</td></tr><tr><td>22</td><td>TX7</td><td>52.7°C</td><td>55.5°C</td></tr><tr><td>23</td><td>U3</td><td>55.7°C</td><td>57.1°C</td></tr><tr><td>24</td><td>U10</td><td>59.2°C</td><td>57.1°C</td></tr></table>			NO	Position	198VAC/60HZ	264VAC/50HZ	1	C5	49.8°C	51.7°C	2	C17	74.4°C	67.5°C	3	TX12	78.3°C	67.1°C	4	L5	102.7°C	85.3°C	5	RY4	93.1°C	80.7°C	6	L1	117.9°C	94.0°C	7	C13	68.4°C	63.8°C	8	C101	61.2°C	58.9°C	9	L3	111.7°C	84.6°C	10	L4	72.7°C	62.1°C	11	TX3	66.0°C	64.1°C	12	TX11	62.9°C	61.4°C	13	RY10	50.0°C	48.0°C	14	RY8	48.8°C	47.3°C	15	TX8	47.1°C	46.0°C	16	C41	50.0°C	52.5°C	17	L7	70.2°C	80.3°C	18	CT1	56.0°C	59.5°C	19	L9	73.1°C	81.7°C	20	TX3	65.6°C	69.5°C	21	L6	75.8°C	78.6°C	22	TX7	52.7°C	55.5°C	23	U3	55.7°C	57.1°C	24	U10	59.2°C	57.1°C
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100% LOAD Ta= 0 °C	TEST : OK																																																																																																				
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40°C/95 %R.H NO DAMAGE	I/P : 300VAC O/P : FULL LOAD Ta= 40 °C HUMIDITY= 95 %R.H	TEST : OK																																																																																																				

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	YANGX	JINKJ	CHENHM

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