



Test Report: MSP-1600-12

1600W AC/DC High Reliable Multi-Industries Enclosed Type Power Supply

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

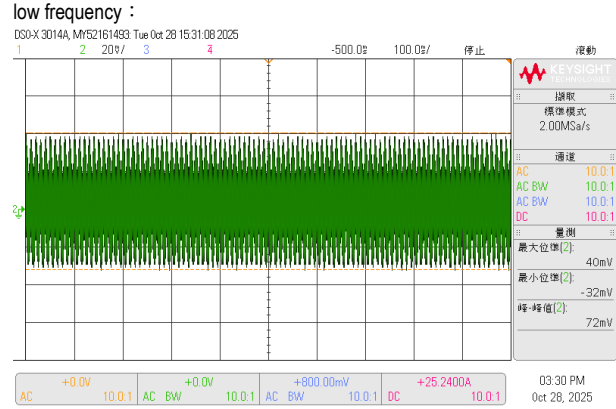
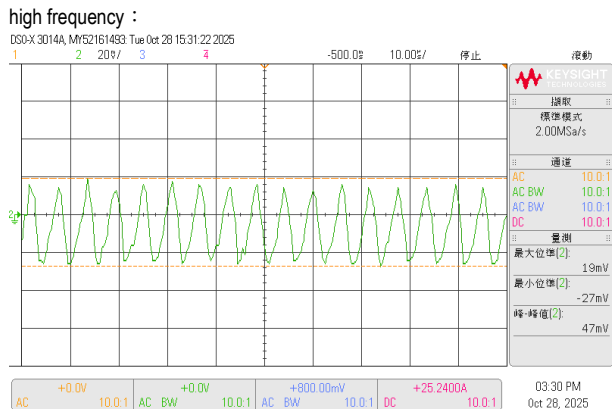
■ RELIABILITY TEST

ENVIRONMENT TEST

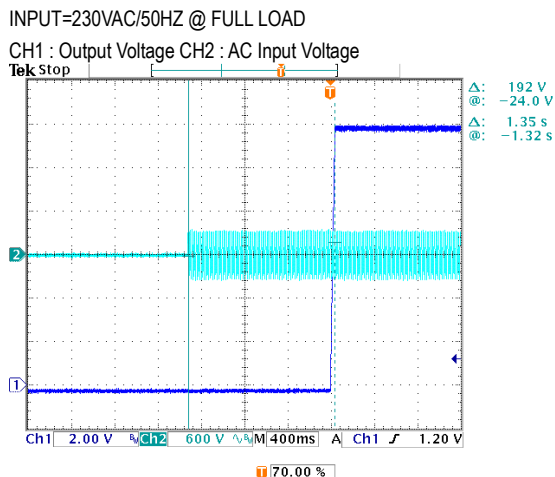
DESIGN VERIFY TEST

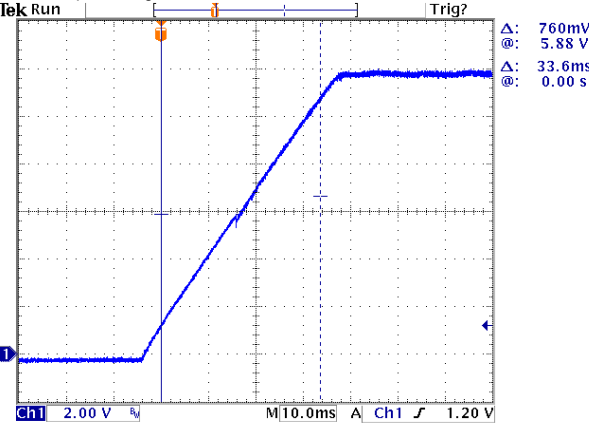
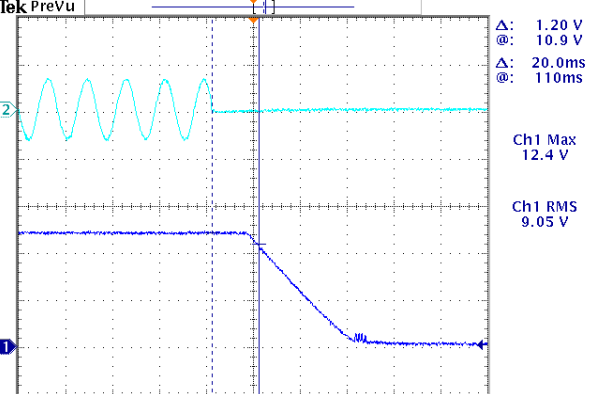
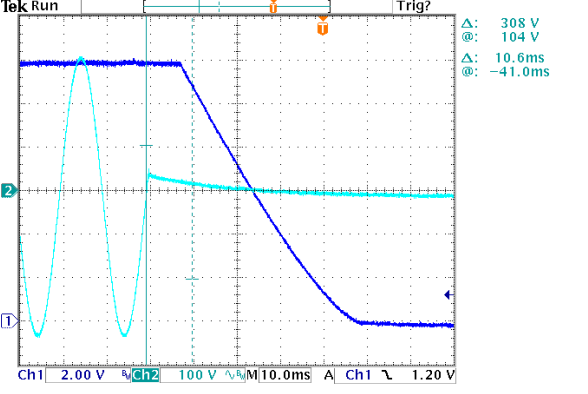
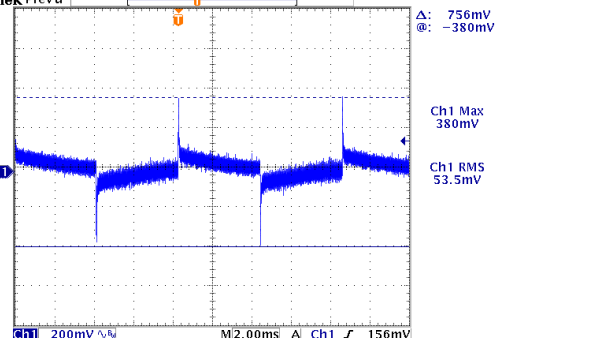
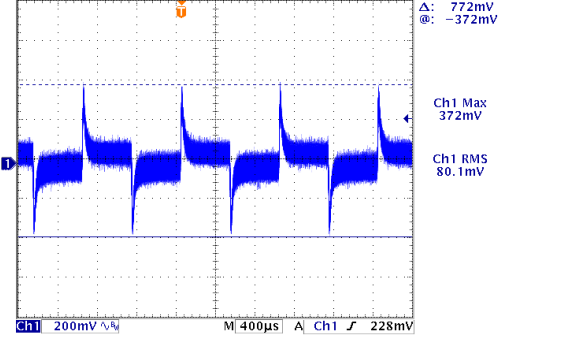
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 11.5 V~ 14V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	11.14V~14.351V/230VAC 11.14V~14.351V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 1%~ -1%	I/P: 180VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: 0.6%~ -0.6%
3	LINE REGULATION (Max)	V1: 0.5%~ -0.5%	I/P: 180VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0.17%~ -0.17%
4	LOAD REGULATION(Max)	V1: 0.5%~ -0.5%	I/P: 230VAC O/P:FULL -MIN LOAD Ta:25°C	V1: 0.4%~ -0.4%
5	OVER/UNDERSHOOT TEST	< ±10%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	<10%
6	RIPPLE & NOISE(Max)	V1: 150 mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 72 mVp-p

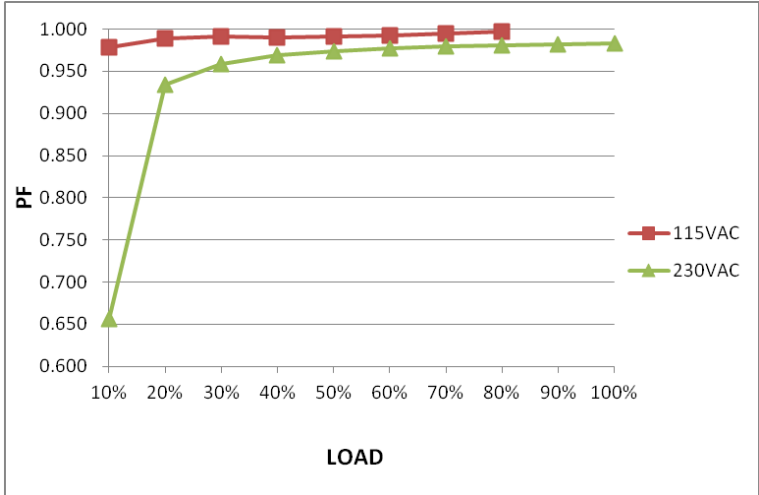


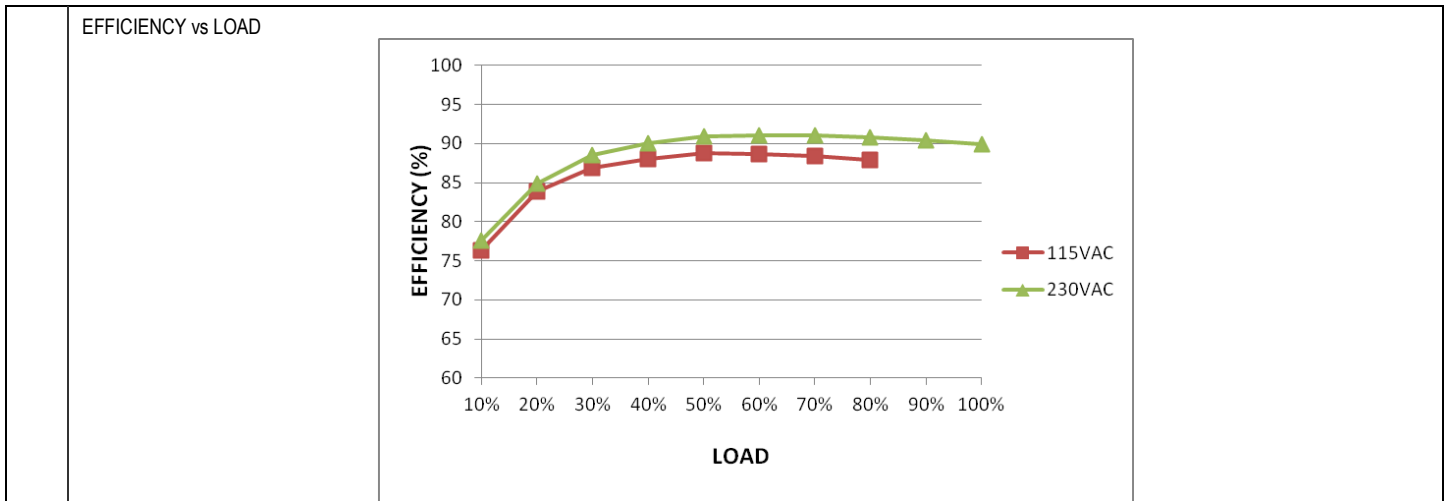
7	SET UP TIME(Max)	230VAC/1500ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 1352 ms
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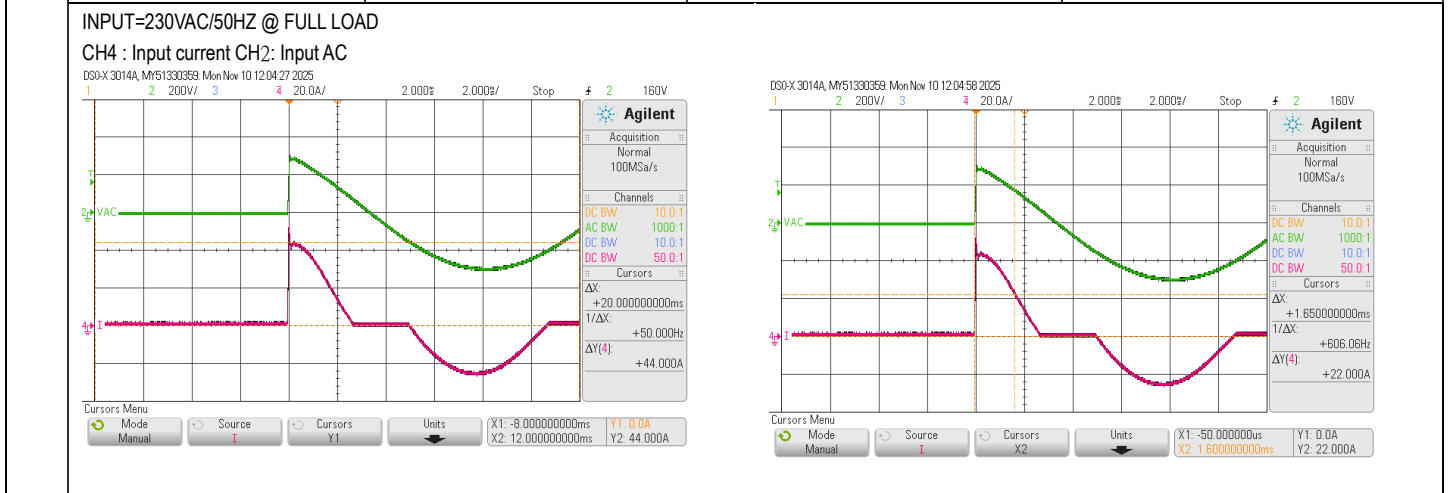
<p>8</p> <p>RISE TIME (Max)</p>	<p>230VAC/60ms</p>	<p>I/P : 230 VAC O/P : FULL LOAD Ta : 25°C</p>	<p>230VAC/ 33.6ms</p>
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p>  <p>Δ: 760mV @: 5.88 V Δ: 33.6ms @: 0.00 s</p> <p>Ch1 2.00 V M10.0ms A Ch1 1.20 V</p> <p>30.00 %</p>			
<p>9</p> <p>HOLD UP TIME (Typ.)</p>	<p>230VAC 70%/ 16ms 230VAC 100%/10ms</p>	<p>I/P : 230 VAC O/P : 70% LOAD O/P : 100% LOAD Ta : 25°C</p>	<p>20ms (70% load) 12.8ms (100% load)</p>
<p>INPUT=230VAC/50HZ @ 70% LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p>  <p>Δ: 1.20 V @: 10.9 V Δ: 20.0ms @: 110ms</p> <p>Ch1 Max 12.4 V Ch1 RMS 9.05 V</p> <p>Ch1 5.00 V Ch2 500 V M20.0ms A Ch1 200mV</p> <p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p>  <p>Δ: 308 V @: 104 V Δ: 10.6ms @: -41.0ms</p> <p>Ch1 2.00 V Ch2 100 V M10.0ms A Ch1 1.20 V</p> <p>70.00 %</p>			
<p>10</p> <p>DYNAMIC LOAD</p>	<p>V1: 1200 mVp-p</p>	<p>I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C</p>	<p>756mVp-p 772mVp-p</p>
<p>FULL /50% LOAD 50%DUTY / 120HZ</p>  <p>Δ: 756mV @: -380mV</p> <p>Ch1 Max 380mV Ch1 RMS 53.5mV</p> <p>Ch1 200mV M2.00ms A Ch1 156mV</p> <p>FULL /50% LOAD 50%DUTY / 1KHZ</p>  <p>Δ: 772mV @: -372mV</p> <p>Ch1 Max 372mV Ch1 RMS 80.1mV</p> <p>Ch1 200mV M400µs A Ch1 228mV</p>			

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																	
1	INPUT VOLTAGE RANGE	85VAC~264VAC 250VDC~ 400VDC	(1) I/P:TESTING O/P:FULL LOAD (2) I/P:DC TESTING(L:+ N:-) O/P: FULL / 50% LOAD (3) I/P:DC TESTING(L:- N:+) O/P: FULL / 50% LOAD (PLEASE CHECK DERATING CURVE) Ta:25°C	(1) 78V~264V (2) 148.1Vdc~403Vdc/FULL LOAD 103.7Vdc~403Vdc/50% LOAD (3) 148.6Vdc~403Vdc/FULL LOAD 103.9Vdc~403Vdc/50% LOAD																																	
			I/P: LOW-LINE-3V=82 V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST: OK																																	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 85 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK																																	
3	INPUT CURRENT (Typ.)	230V/ 8 A 115V/ 14 A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD (PLEASE CHECK DERATING CURVE) Ta : 25°C	I=7.5A/ 230VAC I=12.27A/ 115VAC(80% LOAD)																																	
4	LEAKAGE CURRENT	< 500uA / 264 VAC / Earth < 100uA / 264 VAC/ Touch	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	Earth L-FG : 417uA N-FG : 417uA Touch V+ - FG : 56.4 uA V- -FG : 56.4 uA																																	
5	POWER FACTOR (Typ.)	0.97 / 230VAC	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF=0.977/230VAC																																	
<p>P.F vs LOAD</p>  <table border="1"> <caption>P.F vs LOAD Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>115VAC PF</th> <th>230VAC PF</th> </tr> </thead> <tbody> <tr><td>10%</td><td>0.98</td><td>0.65</td></tr> <tr><td>20%</td><td>0.98</td><td>0.93</td></tr> <tr><td>30%</td><td>0.98</td><td>0.96</td></tr> <tr><td>40%</td><td>0.98</td><td>0.97</td></tr> <tr><td>50%</td><td>0.98</td><td>0.975</td></tr> <tr><td>60%</td><td>0.98</td><td>0.975</td></tr> <tr><td>70%</td><td>0.98</td><td>0.975</td></tr> <tr><td>80%</td><td>0.98</td><td>0.975</td></tr> <tr><td>90%</td><td>0.98</td><td>0.975</td></tr> <tr><td>100%</td><td>0.98</td><td>0.975</td></tr> </tbody> </table>					LOAD (%)	115VAC PF	230VAC PF	10%	0.98	0.65	20%	0.98	0.93	30%	0.98	0.96	40%	0.98	0.97	50%	0.98	0.975	60%	0.98	0.975	70%	0.98	0.975	80%	0.98	0.975	90%	0.98	0.975	100%	0.98	0.975
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6	EFFICIENCY(Typ.)	88.5%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	88.7 %																																	



7	INRUSH CURRENT(Typ.)	230V/60A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=44A/ 230VAC T50= 1650 us/230V
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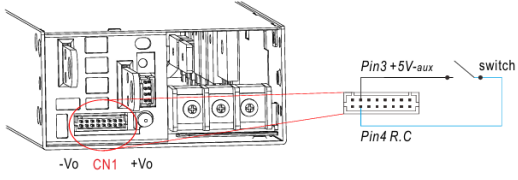


PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~ 115% PROTECTION TYPE : Constant current limiting, unit will shut down o/p voltage after 5 sec. re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 180VAC I/P: 85VAC O/P: TESTING Ta:25°C	107.6%/ 264VAC 107.5%/ 230VAC 107.5%/180VAC 61.3%/ 85VAC PROTECTION TYPE : Constant current limiting, unit will shut down o/p voltage after 5 sec. re-power on to recover
2	OVER VOLTAGE PROTECTION	15.75 V~ 18.75 V PROTECTION TYPE : Shut down o/p voltage, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 85VAC O/P: MIN LOAD Ta:25°C	17.4V/ 264VAC 17.4V/ 230VAC 17.4V/ 85VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	NO DAMAGE PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 85VAC O/P: FULL LOAD	O.T.P. Active PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down

4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE PROTECTION TYPE : Constant current limiting, unit will shut down o/p voltage after 5 sec. re-power on to recover	I/P: 264VAC I/P: 85VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE PROTECTION TYPE : Constant current limiting, unit will shut down o/p voltage after 5 sec. re-power on to recover
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CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																					
1	AUXILIARY POWER (AUX)	12V±10%@0.8A ripple:250mVp-p (O/P FULL LOAD)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	O/P FULL LOAD 11.58V 0.8 A ; ripple 130mvp-p																					
2	REMOTE ON/OFF CONTROL	※ The power supply can be turned ON/OFF individually or along with other units by using the "Remote Control" function.  I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result : <table border="1" data-bbox="470 1120 1077 1220"> <thead> <tr> <th>Between Remote ON-OFF and +5V-AUX</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td>SW SHORT</td> <td>ON</td> </tr> <tr> <td>SW OPEN</td> <td>OFF</td> </tr> </tbody> </table>	Between Remote ON-OFF and +5V-AUX	Power Supply Status	SW SHORT	ON	SW OPEN	OFF	※ The power supply can be turned ON/OFF individually or along with other units by using the "Remote Control" function.	<table border="1" data-bbox="1045 873 1492 974"> <thead> <tr> <th>PSU Vo Status</th> <th>Between +5V-aux(Pin 3) and R.C(Pin 4)</th> </tr> </thead> <tbody> <tr> <td>Power ON</td> <td>Switch Short</td> </tr> <tr> <td>Power OFF</td> <td>Switch Open</td> </tr> </tbody> </table>	PSU Vo Status	Between +5V-aux(Pin 3) and R.C(Pin 4)	Power ON	Switch Short	Power OFF	Switch Open									
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3	REMOTE SENSE	S+ / S- Compensate voltage drop on the load wiring up to 0.5V.	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	0.5V																					
4	ALARM SIGNAL	1. DC OK SIGNAL High (3.5 ~ 5.5V) : When the $V_{out} \leq 77\% \pm 5\%$. Low (-0.5 ~ 0.5V) : When $V_{out} \geq 80\% \pm 5\%$. The maximum sourcing current is 10mA and only for output. (Note.2) I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result : <table border="1" data-bbox="518 1579 1093 1691"> <thead> <tr> <th>Vout</th> <th>DC OK SIGNAL</th> </tr> </thead> <tbody> <tr> <td>$V_{out} \leq 72\%$</td> <td>5V</td> </tr> <tr> <td>$V_{out} \geq 85\%$</td> <td>-0.09V</td> </tr> </tbody> </table> 2. T-ALARM <table border="1" data-bbox="518 1713 1093 1803"> <thead> <tr> <th>P.S.U STATUS</th> <th>Vo</th> <th>T-ALARM</th> </tr> </thead> <tbody> <tr> <td>NORMAL</td> <td>100%±2%</td> <td>-0.5 ~0.5V</td> </tr> <tr> <td>OTP OR FAN LOCK</td> <td>0V</td> <td>3.5~5.5V</td> </tr> </tbody> </table> I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result : <table border="1" data-bbox="518 1915 1093 2027"> <thead> <tr> <th>P.SU STATUS</th> <th>T-ALARM</th> </tr> </thead> <tbody> <tr> <td>NORMAL</td> <td>-0.09V</td> </tr> <tr> <td>OTP OR FAN LOCK</td> <td>4.937V</td> </tr> </tbody> </table>	Vout	DC OK SIGNAL	$V_{out} \leq 72\%$	5V	$V_{out} \geq 85\%$	-0.09V	P.S.U STATUS	Vo	T-ALARM	NORMAL	100%±2%	-0.5 ~0.5V	OTP OR FAN LOCK	0V	3.5~5.5V	P.SU STATUS	T-ALARM	NORMAL	-0.09V	OTP OR FAN LOCK	4.937V		
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<p>5</p>	<p>OUTPUT VOLTAGE PROGRAMMABLE(PV)</p>	<div style="display: flex; justify-content: space-around;"> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> </div> <p style="margin-top: 20px;">I/P: 230 VAC O/P:FULL LOAD Ta:25°C Test Result :</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="border: none;"></th> <th style="border: none;">PV</th> <th style="border: none;"><0.4V</th> <th style="border: none;">1V</th> <th style="border: none;">2V</th> <th style="border: none;">3V</th> <th style="border: none;">4V</th> <th style="border: none;">4.7V</th> </tr> </thead> <tbody> <tr> <td style="border: none;">MODEL</td> <td style="border: none;"></td> <td style="border: none;"><0.4V</td> <td style="border: none;">1V</td> <td style="border: none;">2V</td> <td style="border: none;">3V</td> <td style="border: none;">4V</td> <td style="border: none;">4.7V</td> </tr> <tr> <td style="border: none;">SPEC</td> <td style="border: none;"></td> <td style="border: none;">12V±5%</td> <td style="border: none;">1.8V±5%</td> <td style="border: none;">5.04V±5%</td> <td style="border: none;">8.28V±5%</td> <td style="border: none;">11.52V±5%</td> <td style="border: none;">13.8V±5%</td> </tr> <tr> <td style="border: none;">Vout</td> <td style="border: none;"></td> <td style="border: none;">12.098V</td> <td style="border: none;">1.678</td> <td style="border: none;">5.03</td> <td style="border: none;">8.18</td> <td style="border: none;">11.31</td> <td style="border: none;">13.38</td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 10px;"> ◎ The rated current should change with the Output Voltage Programming accordingly. ◎ For Remote Sense / Local Sense, please refer to "Voltage Drop Compensation" section. </p>				PV	<0.4V	1V	2V	3V	4V	4.7V	MODEL		<0.4V	1V	2V	3V	4V	4.7V	SPEC		12V±5%	1.8V±5%	5.04V±5%	8.28V±5%	11.52V±5%	13.8V±5%	Vout		12.098V	1.678	5.03	8.18	11.31	13.38
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<p>6</p>	<p>FAN NOISE (Typ.)</p>	<p>10% load @39 dB 70% load @43 dB</p> <p>Built-in intelligent fan speed control detect by PSU'S internal temperature</p>	<p>I/P : 230 VAC O/P : TESTING Ta : 25°C</p>	<p>10% load:38.03 dB 70% load: 42.22dB</p>																																

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q901 Rated 40A/650V	I/P:High-Line +3V =267V AC ON/OFF VDS: O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz	VDS: (1)417V (2)441V (3)449V (4)457V (5)461V (6)433V (7)437V

			(7)0%→400% Load. Ta:25°C	
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q52 Rated 52 A/600 V	I/P:High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. Ta:25°C	VDS: (1)439V (2)455V (3)455V (4)451V (5)459V (6)435V (7)419V
3	Diode Peak Voltage	Q101 Rated 120 A/75 V	I/P:High-Line +3V =267 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD Ta:25°C	Q101: VDS: (1)50.6V (2)56.8V (3)57V (4)52.2V (5)51.8V (6)58.8V (7)58.6V (8)50.7V
4	Input Capacitor Voltage	C5 Rated: 680μ/400V SURGE VOLTAGE:450V	I/P:High-Line +3V =267 V O/P: (1)Full Load Ta:25°C	(1)395V
5	Control IC Voltage Test	PWM IC U901 Rated 6.5 V~24 V PFC IC U51 Rated 4.5V~15V O/P IC U142 Rated 4.5V~15V	I/P:High-Line +3V =267 V AC ON/OFF O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. Ta:25°C	U901 U51 U142 (1) 13.4 V 12.93V 12.5 V (2) 13.25 V 12.93V 12.5 V (3) 13.25 V 12.9 V 12.5 V (4) 13.2 V 12.9V 12.5 V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4.2KVAC/min I/P-FG : 2.1KVAC/min O/P-FG:1.5KVAC/min	I/P-O/P: 4.62 KVAC/min I/P-FG: 2.52 KVAC/min O/P-FG:1.8 KVAC/min Ta:25°C	I/P-O/P:8.05mA I/P-FG:6.31mA O/P-FG:7.7m A NO DAMAGE
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: 7.28GΩ I/P-FG: 5.7GΩ O/P-FG: 9.2GΩ NO DAMAGE

3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	17mΩ
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E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:100% LOAD Ta:25°C	PASS
2	CONDUCTION	EN55032(CISPR32) CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	EN55032(CISPR32) CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	EN61000-4-2 INDUSTRY AIR : 15KV / Contact : 8KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	EN61000-4-4 INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-4-5 INDUSTRY L-N : 2KV L,N-PE : 4KV	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 : MSP-1600-12 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25°C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50°C		

		NO	Position	ROOM AMBIENT Ta= 25°C	HIGH AMBIENT Ta= 50°C
		1	LF2	33.7°C	53.8°C
		2	BD1	59.0°C	73.4°C
		3	RY1	37.7°C	56.7°C
		4	L1	63.8°C	74.0°C
		5	T52	48.5°C	63.1°C
		6	Q901	73.3°C	84.2°C
		7	Q904	70.0°C	81.2°C
		8	Q51	73.0°C	84.0°C
		9	Q52	71.2°C	84.1°C
		10	D50	84.8°C	97.9°C
		11	T1-1	87.8°C	88.7°C
		12	T1-2	87.2°C	88.2°C
		13	T1-coil	84.4°C	84.1°C
		14	Q101	124.8°C	127.8°C
		15	Q103	110.7°C	114.4°C
		16	Q104	112.0°C	114.0°C
		17	T301	75.8°C	85.6°C
		18	L900	74.2°C	83.6°C
		19	RG301	110.0°C	107.7°C
		20	C305	98.8°C	98.5°C
		21	U201	41.0°C	57.9°C
		22	C321	89.7°C	91.8°C
		23	C355	86.5°C	89.9°C
		24	U82	88.0°C	94.6°C
		25	D321	85.5°C	97.0°C
		26	D81	86.6°C	98.7°C
		27	U671	37.1°C	56.1°C
		28	C5	60.3°C	70.7°C
		29	L100	84.7°C	93.4°C
		30	C102	46.7°C	61.2°C
		31	C104	51.1°C	63.6°C
		32	RTH21	65.1°C	75.0°C
		33	RTH9	70.1°C	79.9°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)		I/P : 230 VAC O/P : 109% LOAD Ta : 25°C	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR		I/P : 230VAC/180VAC O/P : 100 % LOAD Ta= -40°C	TEST : OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE		I/P : 272 VAC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C(0-50°C)		I/P : 230 VAC O/P : FULL LOAD	± 0.003 %/°C(0-50°C)

6	STORAGE TEMPERATURE TEST	-40~85°C	1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : STATIC
7	THERMAL SHOCK TEST	-40~50°C	1. Thermal shock Temperature : -45°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input/Output condition : 15cycle : 230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle : 230V/ FULL LOAD Burn In Test
8	VIBRATION TEST	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes	(1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 3G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C
9	CAPACITOR LIFE CYCLE	SUPPOSE C104 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME	(1) 524643HRS (2) 220585HRS (3) 268216HRS (4) 305228HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 653.8K hrs min. Telcordia SR-332 (Bellcore) ; 65.3K hrs min. MIL-HDBK-217F (25°C)	
11	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 50,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	DANIEL GAO	SANFORD SU	ERIS WU

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