



Test Report: HEP-2300-380

2300W Switching Power Supply for Harsh Environment

■ 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

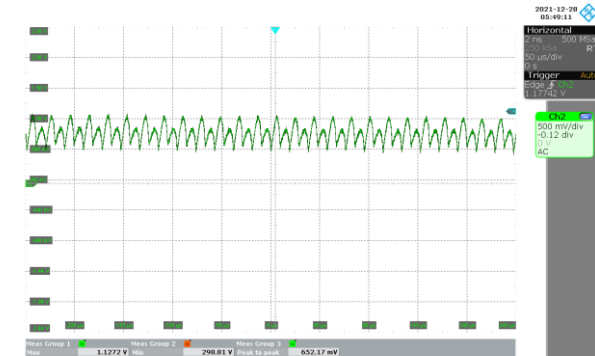
ENVIRONMENT TEST

DESIGN VERIFY TEST

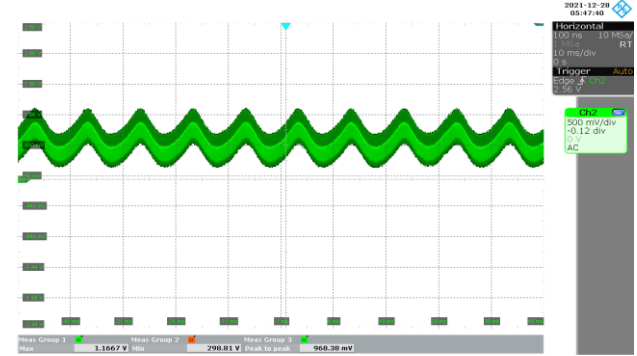
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 260V ~ 400V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	251.46V ~409.08V/230VAC 251.44V~409.07V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1 : -1%~ +1%	I/P : 90VAC /305VAC O/P:FULL/ MIN. LOAD Ta : 25°C	V1 : -0.084%~0.074%
3	LINE REGULATION (Max)	V1 : -0.5%~ +0.5%	I/P : 220VAC~ 305VAC O/P : FULL LOAD Ta : 25°C	V1 : -0.021%~0.024%
4	LOAD REGULATION(Max)	V1 : -0.5%~ +0.5%	I/P : 230VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : -0.018%~0.016%
5	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	0.07%
6	RIPPLE & NOISE(Max)	V1 : 4000mVp-p	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 968mVp-p

high frequency :



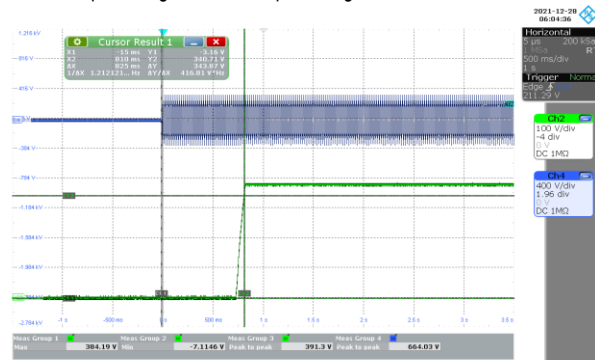
low frequency :

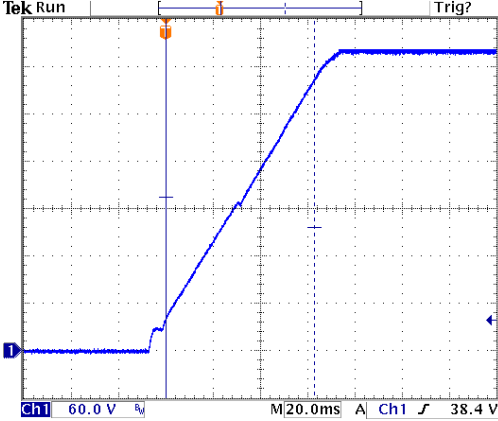
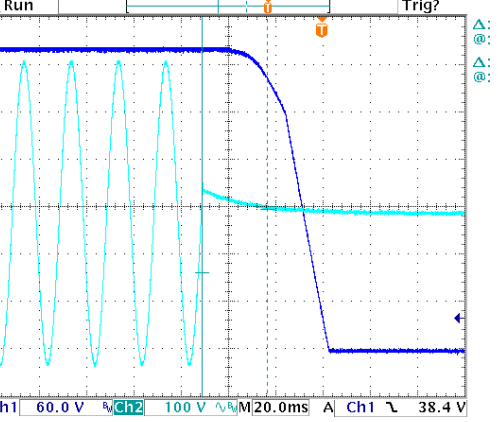
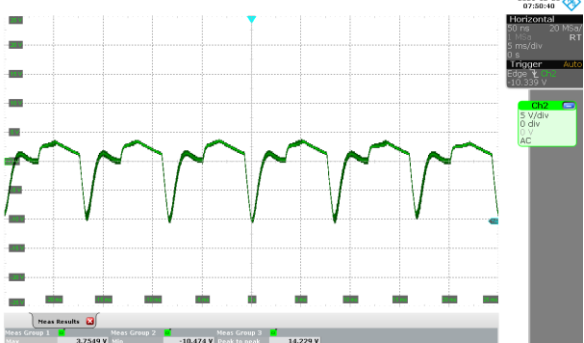
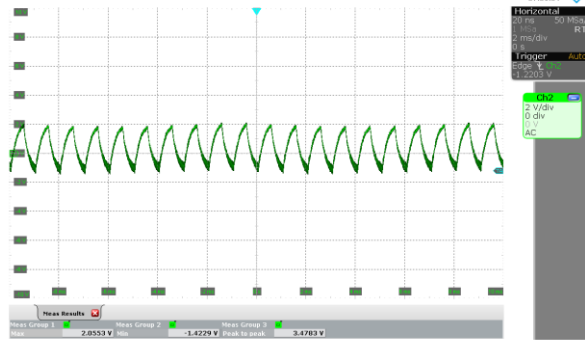


7	SET UP TIME(Max)	230VAC/1800ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/825ms
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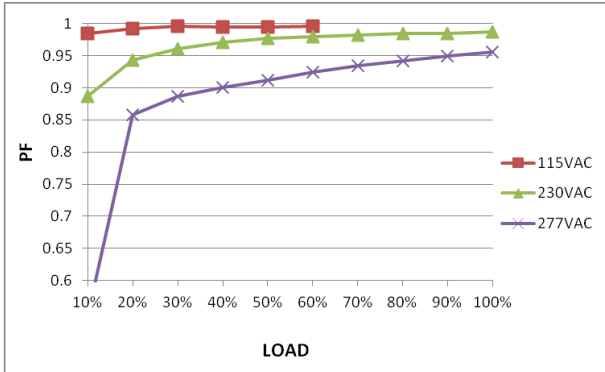
INPUT=230VAC/50HZ @ FULL LOAD

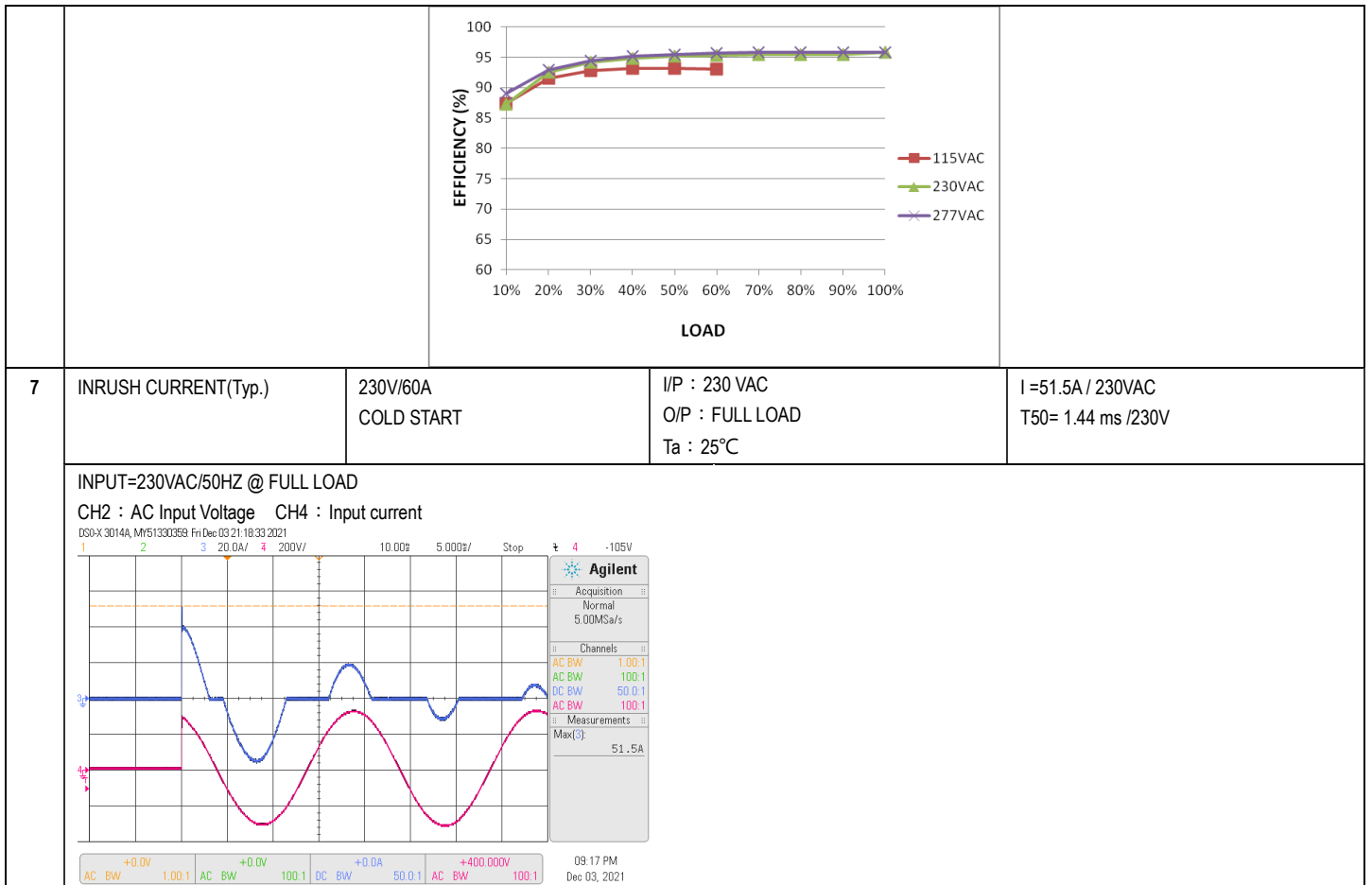
CH1 : Output Voltage CH2 : AC Input Voltage



8	RISE TIME (Max)	230VAC/100ms I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 62.8 ms
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p>  <p>Δ: 38.4 V @: 194 V Δ: 62.8ms @: 0.00 s</p> <p>Ch1 60.0 V M20.0ms A Ch1 38.4 V</p>			
9	HOLD UP TIME (Typ.)	230VAC/12ms @FULL LOAD I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 27.6 ms@ FULL LOAD
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p>  <p>Δ: 134 V @: -140 V Δ: 27.6ms @: -51.2ms</p> <p>Ch1 60.0 V Ch2 100 V M20.0ms A Ch1 38.4 V</p>			
10	DYNAMIC LOAD	V1: 38Vp-p I/P : 230VAC O/P : (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta : 25°C	14.22Vp-p 3.47Vp-p
<p>FULL /50% LOAD 50%DUTY / 120HZ</p>  <p>FULL /50% LOAD 50%DUTY / 1KHZ</p> 			

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																												
1	INPUT VOLTAGE RANGE	90VAC~305VAC	I/P : TESTING O/P : Derating Load Ta : 25°C	85V~305V																																												
			I/P : LOW-LINE-3V=87 V HIGH-LINE+10V=315 V O/P : FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON : 30 Sec OFF : 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST : PASS																																												
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P : 90 VAC ~305 VAC O/P : FULL~MIN LOAD Ta : 25°C	TEST : OK																																												
3	INPUT CURRENT (Typ.)	277/ 9.3A 230V/ 11A 115V/ 13.3A	I/P : 277 VAC O/P : FULL LOAD I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 60% LOAD Ta : 25°C	I=9.13A/ 277VAC I=10.662A/ 230VAC I=12.884A/ 115VAC																																												
4	LEAKAGE CURRENT	<1.8mA(peak)/240V <2 mA(peak)/277V	I/P : 264 VAC I/P : 305 VAC O/P : Min LOAD Ta : 25°C	L-FG : 1.28 mA / 264V N-FG : 1.28 mA/264V L-FG : 1.52 mA/305V N-FG : 1.52 mA/305V																																												
5	POWER FACTOR (Typ.)	0.93/277VAC 0.95/230VAC 0.99/115VAC	I/P : 277AC O/P : FULL LOAD I/P : 230 VAC O/P : FULL LOAD I/P : 115 VAC O/P : 60% LOAD Ta : 25°C	PF=0.960/277VAC PF=0.982/230VAC PF=0.995/115VAC																																												
P.F vs LOAD <div style="text-align: center;">  <table border="1"> <caption>Power Factor vs Load Data</caption> <thead> <tr> <th>Load (%)</th> <th>115VAC PF</th> <th>230VAC PF</th> <th>277VAC PF</th> </tr> </thead> <tbody> <tr><td>10%</td><td>0.99</td><td>0.88</td><td>0.60</td></tr> <tr><td>20%</td><td>0.99</td><td>0.94</td><td>0.85</td></tr> <tr><td>30%</td><td>0.99</td><td>0.96</td><td>0.88</td></tr> <tr><td>40%</td><td>0.99</td><td>0.97</td><td>0.90</td></tr> <tr><td>50%</td><td>0.99</td><td>0.975</td><td>0.91</td></tr> <tr><td>60%</td><td>0.99</td><td>0.975</td><td>0.92</td></tr> <tr><td>70%</td><td>0.99</td><td>0.975</td><td>0.93</td></tr> <tr><td>80%</td><td>0.99</td><td>0.975</td><td>0.94</td></tr> <tr><td>90%</td><td>0.99</td><td>0.975</td><td>0.945</td></tr> <tr><td>100%</td><td>0.99</td><td>0.975</td><td>0.95</td></tr> </tbody> </table> </div>					Load (%)	115VAC PF	230VAC PF	277VAC PF	10%	0.99	0.88	0.60	20%	0.99	0.94	0.85	30%	0.99	0.96	0.88	40%	0.99	0.97	0.90	50%	0.99	0.975	0.91	60%	0.99	0.975	0.92	70%	0.99	0.975	0.93	80%	0.99	0.975	0.94	90%	0.99	0.975	0.945	100%	0.99	0.975	0.95
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6	EFFICIENCY(Typ.)	95.5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	95.65%																																												
EFFICIENCY vs LOAD																																																

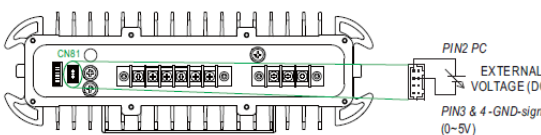
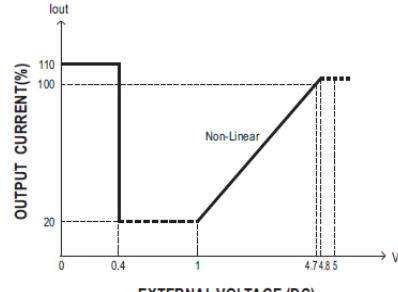


PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~115% PROTECTION TYPE : Constant current limiting,unit will shutdown after 5 sec,re-power on to recover.	I/P : 305VAC I/P : 90V O/P : TESTING Ta : 25°C	110%/ 305VAC 52.7% /90VAC
2	OVER VOLTAGE PROTECTION	420V ~ 480V Protection type : Shut down O/P voltage,re-power on to recover.	I/P : 305VAC I/P : 90VAC O/P : MIN LOAD Ta : 25°C	430V/ 305VAC 430V/ 90VAC
3	OVER TEMPERATURE PROTECTION	Protection type : Shut down O/P voltage,, recovers automatically after temperature goes down	I/P : 305VAC O/P : FULL LOAD I/P : 90VAC O/P : 50% LOAD	O.T.P.Active 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 shutdown after 5 sec,re-power on to recover.	I/P : 305VAC I/P : 90VAC O/P : FULL LOAD Ta : 25°C	NO DAMAGE

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT															
1	AUXILIARY POWER (AUX)	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C Test Result : <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>AUX</th> <th>TOLERANCE</th> <th>RIPPLE</th> <th>TEST RESULT</th> </tr> </thead> <tbody> <tr> <td>12V / 0.5A</td> <td>10.8~13.2 V</td> <td>150mVp-p</td> <td>11.94V/55mv</td> </tr> </tbody> </table>	AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.5A	10.8~13.2 V	150mVp-p	11.94V/55mv									
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12V / 0.5A	10.8~13.2 V	150mVp-p	11.94V/55mv																
2	REMOTE CONTROL ON/OFF	3.Remote ON-OFF Control The power supply can be turned ON/OFF individually or along with other units in parallel by using the "Remote ON-OFF" function. <div style="text-align: center;"> </div> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Remote ON-OFF</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td>Short circuit</td> <td>ON</td> </tr> <tr> <td>Open circuit</td> <td>OFF</td> </tr> </tbody> </table> I/P : 230 VAC O/P : FULL LOAD Ta : 25°C Test Result : <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Between 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>	Remote ON-OFF	Power Supply Status	Short circuit	ON	Open circuit	OFF	Between ON/OFF and +5V-AUX	Power Supply Status	SW SHORT	ON	SW OPEN	OFF					
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3	OUTPUT VOLTAGE PROGRAMMABLE(PV)	1.Output Voltage Programming (or, PV / remote voltage programming / remote adjust / margin programming / dynamic voltage trim) ※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed by applying EXTERNAL VOLTAGE. <div style="text-align: center;"> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>© The 100% output voltage is 115/216/334V.</p> </div> <div style="text-align: center;"> <p>© The rated current should change with the Output Voltage Programming accordingly.</p> </div> </div> I/P : 230 VAC O/P : FULL LOAD Ta : 25°C TEST RESULT : <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>MODEL</th> <th>PV</th> <th><0.4V</th> <th>1V</th> <th>5V</th> </tr> </thead> <tbody> <tr> <td>SPEC</td> <td></td> <td>380±5%</td> <td>167±5%</td> <td>400±5%</td> </tr> <tr> <td>Vout</td> <td></td> <td>380.7V</td> <td>165.8V</td> <td>406.8V</td> </tr> </tbody> </table>	MODEL	PV	<0.4V	1V	5V	SPEC		380±5%	167±5%	400±5%	Vout		380.7V	165.8V	406.8V		
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SPEC		380±5%	167±5%	400±5%															
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<p>4 OUTPUT CURRENT PROGRAMMABLE (PC)</p>	<p>2. Output Current Programming (or, PC / remote current programming / dynamic current trim) ※ The output current can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.</p>   <p>I/P : 230 VAC O/P : TESTING Ta : 25°C</p> <table border="1" data-bbox="462 806 1117 907"> <tr> <td>ADJ V</td> <td><0.4V</td> <td>1V</td> <td>5V</td> </tr> <tr> <td>SPEC</td> <td>6.66A±5%</td> <td>1.38A±10%</td> <td>6.9A±10%</td> </tr> <tr> <td>TEST</td> <td>6.62A</td> <td>1.35A</td> <td>6.625A</td> </tr> </table> <p>⊙ The 100% output current is rated current. ⊙ Maximum operation current <100% is recommended.</p>			ADJ V	<0.4V	1V	5V	SPEC	6.66A±5%	1.38A±10%	6.9A±10%	TEST	6.62A	1.35A	6.625A
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<p>5 DC-OK SIGNAL</p>	<p>The TTL signal out, PSU turn on = 4.5 ~ 5.5V PSU turn off = -0.5V ~ 0.5V Please refer to the Function Manual</p>	<p>I/P : 230VAC O/P : FULL LOAD Ta : 25°C</p>	<p>PSU turn on = 5.127 V PSU turn off = -0.005 V</p>												
<p>6 LED Indicators</p>	<p>※ LED Status Indicators</p> <table border="1" data-bbox="391 1097 1181 1209"> <thead> <tr> <th>LED</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>● Green</td> <td>The power supply functions normally.</td> </tr> <tr> <td>● Red</td> <td>Abnormal status (Over temperature protection, Overload protection)</td> </tr> <tr> <td>● Red (Flashing)</td> <td>The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus/CANBus/ModBus interface.)</td> </tr> </tbody> </table> <p>PASS</p>			LED	Description	● Green	The power supply functions normally.	● Red	Abnormal status (Over temperature protection, Overload protection)	● Red (Flashing)	The LED will flash with the red light when the internal temperature reaches 95°C; under this condition, the unit still operates normally without entering OTP. (In the meantime, an alarm signal will be sent out through the PMBus/CANBus/ModBus interface.)				
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COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q903 Rated 76A/600V VGS : ± 30V	AC ON/OFF I/P : High-Line +3V =308V 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 (7)0%→400% Load. (8)CV-1V(CHARGE MODE) I/P : Low-Line -3V = 217V O/P : (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/	VDS : (1) 508.4V (2) 488.72V (3) 504.53V (4) 492.67V (5) 484.77V (6) 504.53V (7) 484.77V (8) 484.72V VDS : (1) 500.5V (2) 496.62V (3) 500.58V (4) 496.62V

			<p>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) CV-1V(CHARGE MODE) Ta : 25°C</p>	<p>(5) 500.08V (6) 508.48V (7) 445.24V (8) 488.72V</p>
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q66 Rated 40A/650V VGS : ± 30V	<p>I/P : High-Line +3V =308V 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.</p> <p>I/P : Low-Line -3V = 217V 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</p>	<p>VDS :</p> <p>(1) 579.63V (2) 551.96V (3) 563.82V (4) 563.82V (5) 559.87V (6) 567.77V (7) 555.91V</p> <p>VDS:</p> <p>(1) 567.77V (2) 512.43V (3) 563.82V (4) 567.77V (5) 571.72V (6) 579.63V (7) 433.38V</p>
3	P.F.C DIODE	D14 Rated 10A/650V	<p>I/P : High-Line +3V =308V AC ON/OFF O/P : (1) Full Load (2) Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>I/P : Low-Line -3V = 217V AC ON/OFF O/P : (1) Full Load (2) Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz Ta : 25°C</p>	<p>(1) 508.48V (2) 504.53V (3) 512.43V (4) 528.25V</p> <p>(1) 520.34V (2) 512.2V (3) 516.39V (4) 528.25V</p>
4	Diode Peak Voltage	D201 Rated 11.8A/1200V	<p>AC ON/OFF I/P : High-Line +3V =308V</p>	<p>D201 : D207 : VDS : VDS : (1) 1001V (1) 1006 V</p>

		D207 Rated 11.8A/1200V	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 (9)CV-1V(CHARGE MODE) Ta : 25°C	(2) 974V (3) 1001V (4) 1001V (5) 998V (6) 998V (7) 982V (8) 990.4V (9) 998.4V (2) 990.4V (3) 998.4V (4) 998.4 (5) 1006V (6) 1006V (7) 1006V (8) 998.4V (9) 1006V
5	Input Capacitor Voltage	C5 Rated : 220u/450V -40~105°C Surge Voltage 495V	I/P : High-Line +3V =308V O/P : (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta : 25°C	(1) 449V (2) 442.69V (3) 449V (4) 445.87V
6	Control IC Voltage Test	PWM IC U900 Rated 8.9 V ~ 15.5V PFC IC U301 Rated 23V ~ 27 V O/P IC U203 Rated -0.3V ~37 V MCU IC U701 Rated 2.0V ~3.6V AUX IC U601 Rated 10.5V~25V	AC ON/OFF I/P : High-Line +3V =308V O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin (LOW LINE) Ta : 25°C	U900 : (1) 13.2V (2) 12.9V (3) 13.2V (4) 13.0V (5) 13.0V U301 : (1) 13.6V (2) 13.0V (3) 13.4V (4) 12.7V (5) 12.8V U203 : (1) 12.4V (2) 12.5V (3) 12.4V (4) 12.2V (5) 12.2V U701 : (1) 3.37V (2) 3.39V (3) 3.59V (4) 3.37V (5) 3.39V U601 : (1) 14.4V (2) 14.3V (3) 14.4V (4) 14.0V (5) 14.4V

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P : 6KVDC/min I/P-FG : 4KVDC/min O/P-FG : 4KVDC/min	I/P-O/P : 6.6KVDC/min I/P-FG : 4.8KVDC /min O/P-FG : 4.8KVDC /min Ta : 25°C	PASS 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 : 4.3GΩ I/P-FG : >30GΩ O/P-FG : 3.31GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta : 25°C	26 mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A	I/P : 230VAC/50HZ O/P : FULL 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
3	RADIATION	EN55032 (CISPR32) CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS
4	E.S.D	EN61000-4-2 Level 3, 8KV air Level 2, 4KV contact	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
5	E.F.T	EN61000-4-4 Level 3	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	IEC61000-6-2 INDUSTRY 2KV/Line-Line 4KV/Line-Earth	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
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1	TEMPERATURE RISE TEST	MODEL : HEP-2300-115																																																																																																																																				
		<p>1. ROOM AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta= 25.5 °C</p> <p>2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 51.2 °C</p>																																																																																																																																				
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			36	Q65	71.6°C	99.5°C
			37	D14	83.4°C	112.1°C
			38	Q901	69.9°C	100.6°C
			39	Q904	69.5°C	101.2°C
			40	Q202	75.2°C	104.2°C
			41	Q204	67.7°C	95.9°C
			42	Q206	73.8°C	101.2°C
			43	Q209	74.0°C	103.0°C
			44	Q214	71.2°C	98.4°C
			45	U201	69.0°C	97.0°C
			46	RT31	63.1°C	91.6°C
			47	RT5	66.6°C	94.7°C
			48	U601	76.4°C	104.9°C
			49	C611	65.4°C	93.8°C
			50	T601	67.6°C	95.9°C
			51	D651	67.0°C	94.5°C
			52	C652	65.2°C	92.9°C
			53	C675	61.0°C	88.1°C
			54	R613	74.3°C	103.0°C
			55	U751	61.5°C	88.6°C
			56	RG75	58.0°C	84.8°C
			57	L751	59.5°C	86.7°C
			58	RG65	62.8°C	90.1°C
			59	TC	57.6°C	85.3°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 108.5%LOAD Ta : 25°C		TEST : OK	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/220VAC O/P : 100 %LOAD Ta= -45 °C		TEST : OK	
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50°C/95 %R.H NO DAMAGE	I/P : 315 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	20~500Hz, 10G 12min./1cycle, 72min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 20~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 10G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C
9	CAPACITOR LIFE CYCLE	SUPPOSE C111 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) 201245HRS (2) 26590HRS (3) 96451HRS (4) 267975HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 478K hrs min. Telcordia SR-332 (Bellcore) ; 44.8K 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 : 55,000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	DANIEL GAO	SANFORD SU	VINCENT TSENG

2020.10.1 TAG-QA-009