



# Test Report: NSP -3200-48

---

3200W Power Supply with Single Output

## ■ 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

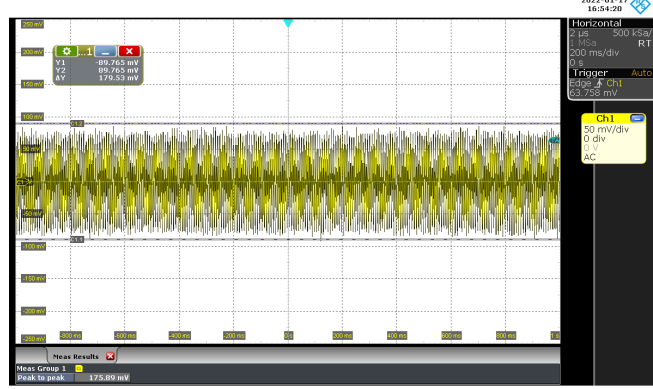
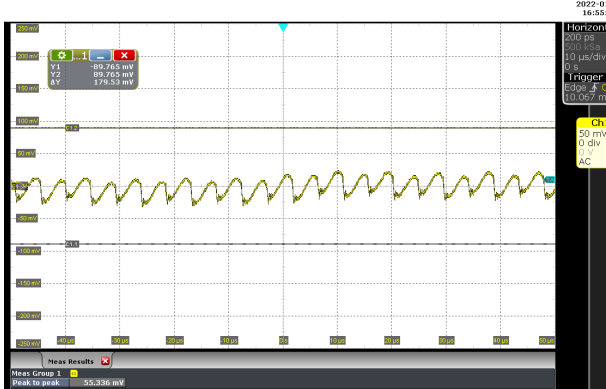
## DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 47.5 V~ 58.8V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	45.55V~ 61.78V/230VAC 45.55V~ 61.78V/115VAC
2	OUTPUT VOLTAGE(Max) TOLERANCE	V1: 1%~ -1%	I/P: 180VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: 0.14%~-0.14%
3	LINE REGULATION (Max)	V1: 0.5%~-0.5%	I/P: 180VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0%~-0.042%
4	LOAD REGULATION(Max)	V1: 0.5%~-0.5%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.083%~ -0.124%
5	OVER/UNDERSHOOT TEST	< ±10%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	< 10%
6	RIPPLE & NOISE(Max)	V1: 480 mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 179.5mVp-p

high frequency :

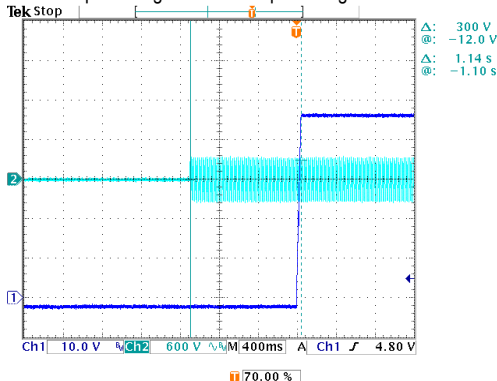
low frequency :

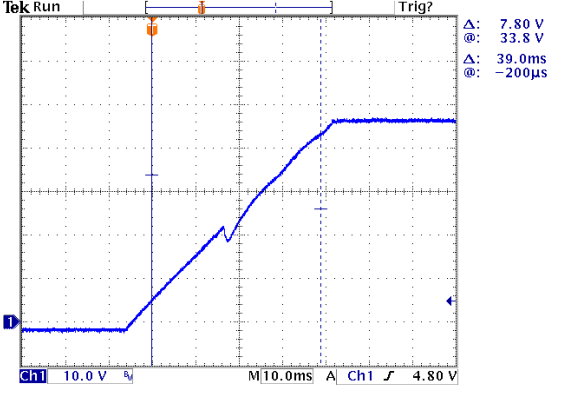
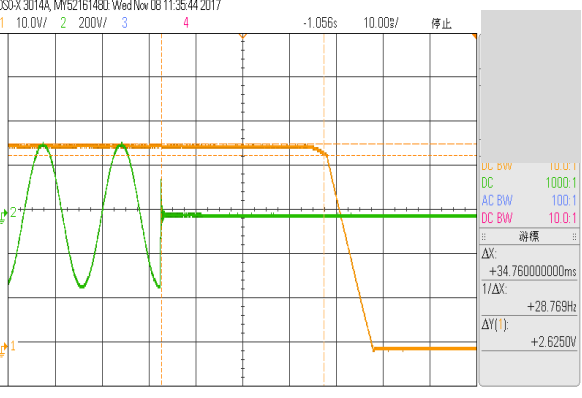
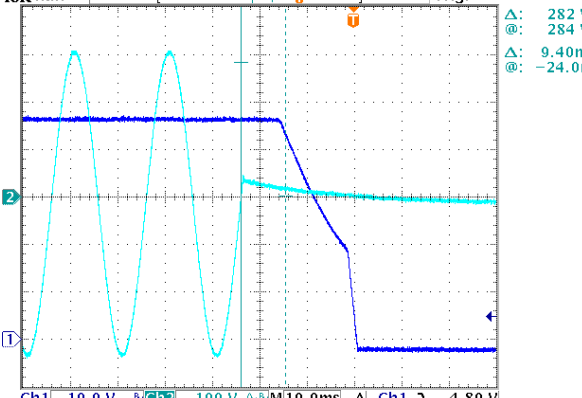
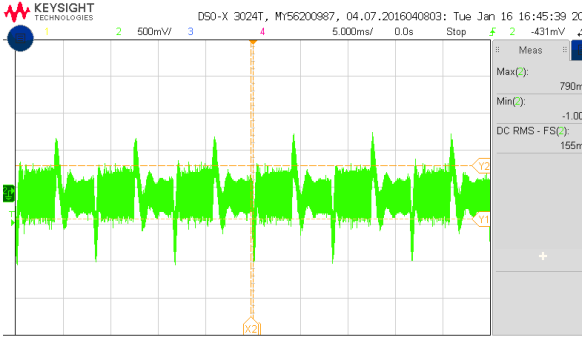
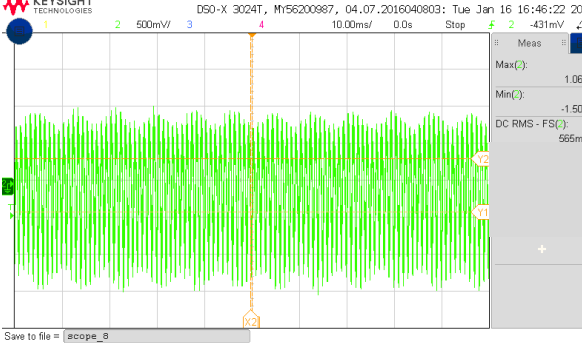


7	SET UP TIME(Max)	230VAC/1500ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 1136ms
---	------------------	---------------	---	----------------

INPUT=230VAC/50HZ @ FULL LOAD

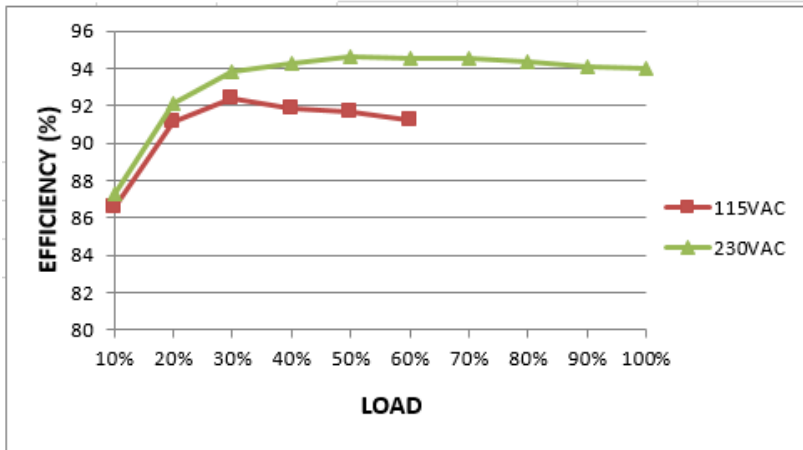
CH1 : Output Voltage CH2 : AC Input Voltage



8	RISE TIME (Max)	230VAC/60ms  I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 39ms
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1 : Output Voltage</p>  <p>Δ: 7.80 V @: 33.8 V Δ: 39.0ms @: -200µs</p>			
9	HOLD UP TIME (Typ.)	230VAC 70%/ 16ms 230VAC 100%/8ms  I/P : 230 VAC O/P : 70% LOAD O/P : 100% LOAD Ta : 25°C	34.76ms (70% load) 9.4ms (100% load)
<p>INPUT=230VAC/50HZ @70% LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input V</p>  <p>DC BW 10.01 DC 1000.1 AC BW 100.1 DC BW 10.01</p> <p>ΔX: +34.76000000ms 1/ΔX: +28.769Hz ΔY[1]: +2.6250V</p> <p>INPUT=230VAC/50HZ @100% LOAD</p> <p>CH1 : Output Voltage CH2 : AC Input Voltage</p>  <p>Δ: 282 V @: 284 V Δ: 9.40ms @: -24.0ms</p>			
10	DYNAMIC LOAD	V1: 4800 mVp-p  I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	155Vp-p 565mVp-p
<p>FULL /50% LOAD 50%DUTY / 120HZ</p>  <p>Max(C): 790mV Min(C): -1.00V DC RMS - FS(C): 155mV</p> <p>FULL /50% LOAD 50%DUTY / 1KHZ</p>  <p>Max(C): 1.06V Min(C): -1.50V DC RMS - FS(C): 565mV</p>			

## INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																	
1	INPUT VOLTAGE RANGE	90VAC~264VAC 127VDC~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) 162Vac~264Vac/FULL LOAD 84Vac~264Vac/50%LOAD (2)246Vdc~400Vdc/FULL LOAD 112Vdc~400Vdc/50% LOAD (3) 246Vdc~400Vdc/FULL LOAD 111Vdc~400Vdc/50% LOAD																																	
			I/P: LOW-LINE-3V=87 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:180 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK																																	
3	INPUT CURRENT (Typ.)	230V/ 17 A	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 15.19A/ 230VAC																																	
4	LEAKAGE CURRENT	<2 mA / 230 VAC	I/P : 230 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.7 mA N-FG : 0.7 mA																																	
5	POWER FACTOR (Typ.)	0.97 / 230VAC	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.992/230VAC																																	
<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>0.97</td><td>0.92</td></tr> <tr><td>20%</td><td>0.97</td><td>0.96</td></tr> <tr><td>30%</td><td>0.98</td><td>0.97</td></tr> <tr><td>40%</td><td>0.99</td><td>0.97</td></tr> <tr><td>50%</td><td>0.99</td><td>0.98</td></tr> <tr><td>60%</td><td>0.99</td><td>0.98</td></tr> <tr><td>70%</td><td>0.99</td><td>0.99</td></tr> <tr><td>80%</td><td>0.99</td><td>0.99</td></tr> <tr><td>90%</td><td>0.99</td><td>0.99</td></tr> <tr><td>100%</td><td>0.99</td><td>0.99</td></tr> </tbody> </table>					LOAD (%)	115VAC PF	230VAC PF	10%	0.97	0.92	20%	0.97	0.96	30%	0.98	0.97	40%	0.99	0.97	50%	0.99	0.98	60%	0.99	0.98	70%	0.99	0.99	80%	0.99	0.99	90%	0.99	0.99	100%	0.99	0.99
LOAD (%)	115VAC PF	230VAC PF																																			
10%	0.97	0.92																																			
20%	0.97	0.96																																			
30%	0.98	0.97																																			
40%	0.99	0.97																																			
50%	0.99	0.98																																			
60%	0.99	0.98																																			
70%	0.99	0.99																																			
80%	0.99	0.99																																			
90%	0.99	0.99																																			
100%	0.99	0.99																																			
6	EFFICIENCY(Typ.)	94.5% / (75% LOAD)	I/P:230 VAC O/P:75% LOAD Ta:25°C	94.81%																																	
EFFICIENCY vs LOAD																																					



7	INRUSH CURRENT(Typ.)	230V/55 A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=46A/ 230VAC T50=1562 us/230V
---	----------------------	-------------------------	---	-----------------------------------

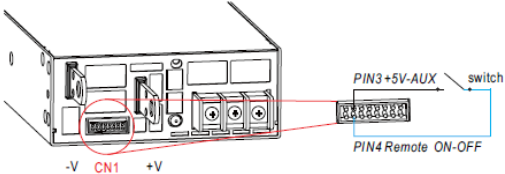
INPUT=230VAC/50HZ @ FULL LOAD  
CH4 : Input current CH2: input voltage

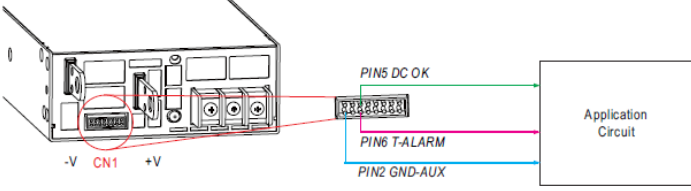
## PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105 %~ 115 %  PROTECTION TYPE : Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 180VAC O/P:TESTING Ta:25°C	110%/ 264VAC 110%/ 230VAC 110%/180VAC Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover
2	OVER VOLTAGE PROTECTION	63V~ 75 V  PROTECTION TYPE : Shut down o/p voltage, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P:MIN LOAD Ta:25°C	68.2V/ 264VAC 68.2V/ 230VAC 68.11V/ 90VAC 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: 180VAC 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	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD	NO DAMAGE  PROTECTION TYPE :

	PROTECTION TYPE : Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover	Ta:25°C	Constant current limiting, shut down O/P voltage 5 sec. after O/P voltage is down low, re-power on to recover
--	--	---------	---

## CONTROL FUNCTION TEST

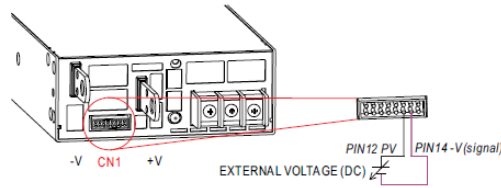
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT												
1	AUXILIARY POWER (AUX)	<p>Auxiliary voltage output, 10.6~13.2V, referenced to GND-AUX (pin2). The maximum load current is 0.8A. This output has the built-in "Oring diodes" and is not controlled by "Remote ON-OFF".</p> <p>I/P: 230 VAC O/P:FULL LOAD Ta:25°C</p> <p>Test Result :</p> <table border="1"> <thead> <tr> <th>AUX</th> <th>TOLERANCE</th> <th>RIPPLE</th> <th>TEST RESULT</th> </tr> </thead> <tbody> <tr> <td>12V / 0.8A</td> <td>10.8~13.2 V</td> <td>450mVp-p</td> <td>12V 0.8A 254 mVp-p</td> </tr> </tbody> </table>	AUX	TOLERANCE	RIPPLE	TEST RESULT	12V / 0.8A	10.8~13.2 V	450mVp-p	12V 0.8A 254 mVp-p						
AUX	TOLERANCE	RIPPLE	TEST RESULT													
12V / 0.8A	10.8~13.2 V	450mVp-p	12V 0.8A 254 mVp-p													
2	REMOTE ON/OFF CONTROL	<p><b>3. Remote ON-OFF Control</b> ※ The power supply can be turned ON/OFF individually or along with other units by using the "Remote ON-OFF" function.</p>  <table border="1"> <thead> <tr> <th>Between Remote ON-OFF and +5V-AUX</th> <th>Power Supply Status</th> </tr> </thead> <tbody> <tr> <td>Switch Short</td> <td>ON</td> </tr> <tr> <td>Switch Open</td> <td>OFF</td> </tr> </tbody> </table> <p>I/P: 230 VAC O/P:FULL LOAD Ta:25°C</p> <p>Test Result :</p> <table border="1"> <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>	Between Remote ON-OFF and +5V-AUX	Power Supply Status	Switch Short	ON	Switch Open	OFF	Between ON/OFF and +5V-AUX	Power Supply Status	SW SHORT	ON	SW OPEN	OFF		
Between Remote ON-OFF and +5V-AUX	Power Supply Status															
Switch Short	ON															
Switch Open	OFF															
Between ON/OFF and +5V-AUX	Power Supply Status															
SW SHORT	ON															
SW OPEN	OFF															
3	REMOTE SENSE	<p>S+ / S- 0.3V~0.5V Compensate voltage drop on the load wiring up to 0.5V.</p>	<p>I/P: 230 VAC O/P:FULL LOAD Ta:25°C</p>	0.3V~0.5V												

4	ALARM SIGNAL	<p>※ There are 2 alarm signals, DC OK and T-ALARM, in TTL signal form, on CN1. These signals are isolated from output. The maximum sink current is 10mA.</p>  <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <table border="1" style="font-size: small;"> <tr><th>DC OK Fail signal</th><th>Power Supply Status</th></tr> <tr><td>*High* &gt; 3.5~5.5V</td><td>Vout ≒ 77%±5%</td></tr> <tr><td>*Low* &lt; -0.5~-0.5V</td><td>Vout ≒ 80%±5%</td></tr> </table> <table border="1" style="font-size: small;"> <tr><th>T-ALARM</th><th>Power Supply Status</th></tr> <tr><td>*High* &gt; 3.5~5.5V</td><td>OFF (OTP or Fan Fail)</td></tr> <tr><td>*Low* &lt; -0.5~-0.5V</td><td>ON (Normal Work)</td></tr> </table> </div> <p>1. DC OK SIGNAL  I/P: 230 VAC  O/P: FULL LOAD  Ta: 25°C  Test Result :</p> <table border="1" style="margin-left: 20px; font-size: x-small;"> <thead> <tr><th>Vout</th><th>DC OK SIGNAL</th></tr> </thead> <tbody> <tr><td>Vout ≤ 72%</td><td>4.92V</td></tr> <tr><td>Vout ≥ 85%</td><td>0.0087v</td></tr> </tbody> </table> <p>2. T-ALARM  High (3.5 ~ 5.5V) : When the internal temperature exceeds the limit of temperature alarm, or when Fan fails.  Low (-0.5 ~ 0.5V) : When the internal temperature is normal, and when Fan works normally.  The maximum sourcing current is 10mA and only for output(Note.2)</p> <p>I/P: 230 VAC  O/P: FULL LOAD  Ta: 25°C  Test Result :</p> <table border="1" style="margin-left: 20px; font-size: x-small;"> <thead> <tr><th>P.SU STATUS</th><th>Vo</th><th>T-ALARM SPEC</th><th>T-ALARM TEST</th></tr> </thead> <tbody> <tr><td>NORMAL</td><td>100%±2%</td><td>-0.5 ~0.5V</td><td>-0.0975V</td></tr> <tr><td>OTP</td><td>0V</td><td>3.5~5.5V</td><td>5.003V</td></tr> <tr><td>FAN LOCK</td><td>0V</td><td>3.5~5.5V</td><td>5.003V</td></tr> </tbody> </table>	DC OK Fail signal	Power Supply Status	*High* > 3.5~5.5V	Vout ≒ 77%±5%	*Low* < -0.5~-0.5V	Vout ≒ 80%±5%	T-ALARM	Power Supply Status	*High* > 3.5~5.5V	OFF (OTP or Fan Fail)	*Low* < -0.5~-0.5V	ON (Normal Work)	Vout	DC OK SIGNAL	Vout ≤ 72%	4.92V	Vout ≥ 85%	0.0087v	P.SU STATUS	Vo	T-ALARM SPEC	T-ALARM TEST	NORMAL	100%±2%	-0.5 ~0.5V	-0.0975V	OTP	0V	3.5~5.5V	5.003V	FAN LOCK	0V	3.5~5.5V	5.003V
DC OK Fail signal	Power Supply Status																																			
*High* > 3.5~5.5V	Vout ≒ 77%±5%																																			
*Low* < -0.5~-0.5V	Vout ≒ 80%±5%																																			
T-ALARM	Power Supply Status																																			
*High* > 3.5~5.5V	OFF (OTP or Fan Fail)																																			
*Low* < -0.5~-0.5V	ON (Normal Work)																																			
Vout	DC OK SIGNAL																																			
Vout ≤ 72%	4.92V																																			
Vout ≥ 85%	0.0087v																																			
P.SU STATUS	Vo	T-ALARM SPEC	T-ALARM TEST																																	
NORMAL	100%±2%	-0.5 ~0.5V	-0.0975V																																	
OTP	0V	3.5~5.5V	5.003V																																	
FAN LOCK	0V	3.5~5.5V	5.003V																																	

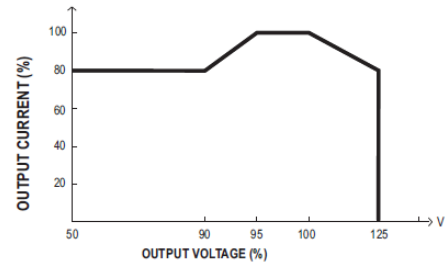
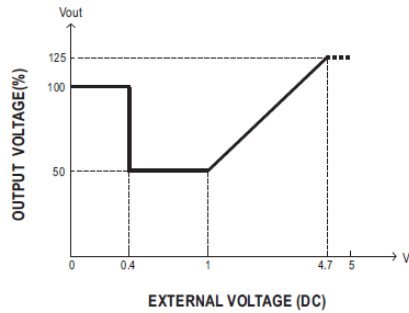
5	<p>OUTPUT VOLTAGE PROGRAMMABLE(PV)</p>
---	--

**2. 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 to 50~125% of the nominal voltage by applying EXTERNAL VOLTAGE.



◎ For Remote Sense / Local Sense, please refer to "Voltage Drop Compensation" section.



◎ The rated current should change with the Output Voltage Programming accordingly.  
 ◎ For Remote Sense / Local Sense, please refer to "Voltage Drop Compensation" section.

I/P: 230 VAC  
 O/P: FULL LOAD  
 Ta: 25°C

TEST RESULT :

MODEL \ PV	<0.4V	1V	3.479V	4.7V	5V
SPEC	48V±5%	24V±5%	48V±5%	60V±5%	60V±5%
Vout	48.167V	23.89V	48.29V	60.5 V	61.76V

## COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	<p>Q1 Rated 52A/600V</p> <p>Q3 Rated 52A/600V</p>	<p>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                      (7) 0%→400% Load.                      PV=1V                      (8) 80% LOAD(53.6A)                      (9) 50% LOAD(33.5A)                      (10) 10% LOAD(6.7A)                      Ta: 25°C</p>	<p>Q1: 267VAC:                      (1) 481V                      (2) 469V                      (3) 432V                      (4) 428V                      (5) 428V                      (6) 444V                      (7) 469V                      (8) 485V                      (9) 485V                      (10) 473V</p> <p>Q3: 267VAC:                      (1) 504V                      (2) 488V                      (3) 504V                      (4) 504V                      (5) 504V                      (6) 508V                      (7) 488V                      (8) 496V                      (9) 496V                      (10) 484V</p>



2	P.F.C Transistor ( D to S) or (C to E) Peak Voltage	Q 900 Rated 52A/600V  Q 902 Rated 52A/600V	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 (7)0%→400% Load. Ta:25°C	Q 900 267VAC::: (1)509V (2)436V (3)440V (4)440V (5)448V (6)440V (7)440V	Q 902 267VAC: (1)439V (2)448V (3)493V (4)493V (5)493V (6)485V (7)473V
3	P.F.C DIODE	D8 Rated : 16A/600V	I/P:High-Line +3V = (267V) 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	(1) 452V (2) 444V (3) 448V (4) 444V	
4	Diode Peak Voltage	Q101 Rated 87A/150V  Q104 Rated 87A/150V  Q107 Rated 87A/150V  Q110 Rated 87A/150V	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 (7)0%→400% Load. (8).NO LOAD (9) burst mode Ta:25°C	Q101: VDS: (1)116.2V (2)31V (3)107.4V (4)107.4V (5)106.6V (6)106.6V (7)122.6V (8)108.2V (9)108.2V  Q107: VDS: (1)119.4V (2)26.2V (3)108.2V (4)108.2V (5)108.2V (6)109V (7)125.9V (8)108.2V (9)109V	Q104: VDS: (1)114.6V (2)22.2V (3)109V (4)109V (5)114.6V (6)109V (7)119.7V (8)109.8V (9)109V  Q110: VDS: (1)117.8V (2)23V (3)110.6V (4)110.6V (5)110.6V (6)110.6V (7)113.8V (8)110.6V (9)110.6V
5	Input Capacitor Voltage	C5 Rated: : 330μ/ 450V 105°C	I/P:High-Line +3V =267V) 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)436V (2)428V (3)440V (4)432V	
6	Control IC Voltage Test	PWM IC U201 Rated 3V~18V	I/P:High-Line +3V = (267V) AC ON/OFF	U201	U900

		PFC IC U900 Rated 4.5V~20V	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	(1) 13.72V (1) 11.95V (2) 13.48V (2) 11.71V (3) 12.92V (3) 11.71V (4) 13V (4)11.63V (5) 10.83V (5) 11.15V
7	TOP SWITCHING STAND BY POWER	U 71 Rated 20A/800V	I/P:High-Line +3V = (267V) AC ON/OFF O/P: (1)Full Load (2)Remote On/Off Ta:25°C	(1) 589V (2) 585V

## SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC/min I/P-FG :2KVAC/min O/P-FG:1.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG:1.8 KVAC/min Ta:25°C	I/P-O/P: 11.88 mA I/P-FG: 10.63 mA O/P-FG:13.3 mA 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: 22.6 GΩ I/P-FG: 20 GΩ O/P-FG: 10GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	25mΩ

## 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	EN55022 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	EN55022 CLASS A	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 : 8KV / Contact : 4KV	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	IEC61000-6-2 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 : NSP-3200-24 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD 2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 230VAC O/P : FULL LOAD																																																																														
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 25°C</th> <th>HIGH AMBIENT Ta= 50°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>BD1</td><td>55.8°C</td><td>83.9°C</td></tr> <tr><td>2</td><td>Q3</td><td>63.1°C</td><td>100.8°C</td></tr> <tr><td>3</td><td>D7</td><td>62.9°C</td><td>96.0°C</td></tr> <tr><td>4</td><td>Q902</td><td>57.9°C</td><td>92.4°C</td></tr> <tr><td>5</td><td>Q109</td><td>56.2°C</td><td>93.1°C</td></tr> <tr><td>6</td><td>Q104</td><td>52.6°C</td><td>87.3°C</td></tr> <tr><td>7</td><td>C5</td><td>45.3°C</td><td>77.7°C</td></tr> <tr><td>8</td><td>T1-2</td><td>44.2°C</td><td>78.3°C</td></tr> <tr><td>9</td><td>T1-1</td><td>57.8°C</td><td>90.8°C</td></tr> <tr><td>10</td><td>T2-2</td><td>59.4°C</td><td>93.4°C</td></tr> <tr><td>11</td><td>T2-1</td><td>64.4°C</td><td>99.1°C</td></tr> <tr><td>12</td><td>L3</td><td>62.4°C</td><td>97.6°C</td></tr> <tr><td>13</td><td>T301</td><td>51.7°C</td><td>83.3°C</td></tr> <tr><td>14</td><td>U71</td><td>58.4°C</td><td>91.2°C</td></tr> <tr><td>15</td><td>C121</td><td>36.3°C</td><td>68.9°C</td></tr> <tr><td>16</td><td>RT90</td><td>52.7°C</td><td>86.6°C</td></tr> <tr><td>17</td><td>RT52</td><td>25.0°C</td><td>53.6°C</td></tr> <tr><td>18</td><td>U110</td><td>37.9°C</td><td>71.6°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 25°C	HIGH AMBIENT Ta= 50°C	1	BD1	55.8°C	83.9°C	2	Q3	63.1°C	100.8°C	3	D7	62.9°C	96.0°C	4	Q902	57.9°C	92.4°C	5	Q109	56.2°C	93.1°C	6	Q104	52.6°C	87.3°C	7	C5	45.3°C	77.7°C	8	T1-2	44.2°C	78.3°C	9	T1-1	57.8°C	90.8°C	10	T2-2	59.4°C	93.4°C	11	T2-1	64.4°C	99.1°C	12	L3	62.4°C	97.6°C	13	T301	51.7°C	83.3°C	14	U71	58.4°C	91.2°C	15	C121	36.3°C	68.9°C	16	RT90	52.7°C	86.6°C	17	RT52	25.0°C	53.6°C	18	U110	37.9°C	71.6°C
NO	Position	ROOM AMBIENT Ta= 25°C	HIGH AMBIENT Ta= 50°C																																																																													
1	BD1	55.8°C	83.9°C																																																																													
2	Q3	63.1°C	100.8°C																																																																													
3	D7	62.9°C	96.0°C																																																																													
4	Q902	57.9°C	92.4°C																																																																													
5	Q109	56.2°C	93.1°C																																																																													
6	Q104	52.6°C	87.3°C																																																																													
7	C5	45.3°C	77.7°C																																																																													
8	T1-2	44.2°C	78.3°C																																																																													
9	T1-1	57.8°C	90.8°C																																																																													
10	T2-2	59.4°C	93.4°C																																																																													
11	T2-1	64.4°C	99.1°C																																																																													
12	L3	62.4°C	97.6°C																																																																													
13	T301	51.7°C	83.3°C																																																																													
14	U71	58.4°C	91.2°C																																																																													
15	C121	36.3°C	68.9°C																																																																													
16	RT90	52.7°C	86.6°C																																																																													
17	RT52	25.0°C	53.6°C																																																																													
18	U110	37.9°C	71.6°C																																																																													
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 230 VAC O/P : 110 % 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= -25°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	± 0.002 %/°C (0~50°C)																																																																												
6	STORAGE TEMPERATURE TEST	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		OK																																																																												



7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -25°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	OK
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C	TEST : OK
9	CAPACITOR LIFE CYCLE	SUPPOSE C121 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) 413789HRS (2) 43196HRS (3) 159061HRS (4) 427594HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 637.4K hrs min. Telcordia SR-332 (Bellcore) ; 63.7K 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	VINCENT TSENG

2020.10.1 TAG-QA-009