



# Test Report: NCP-3200-380

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3200W 2-in-1 Rack-mounted Switching Power Supply & Battery Charger

## ■ 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

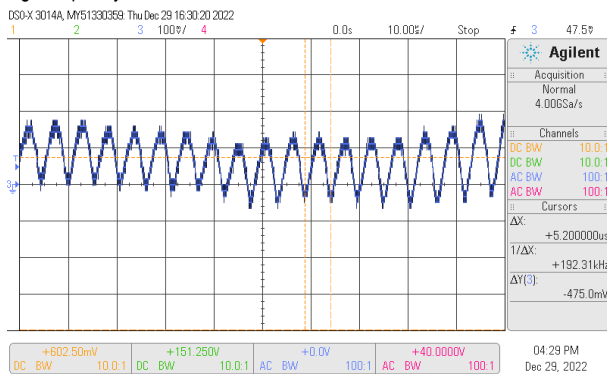
ENVIRONMENT TEST

DESIGN VERIFY TEST

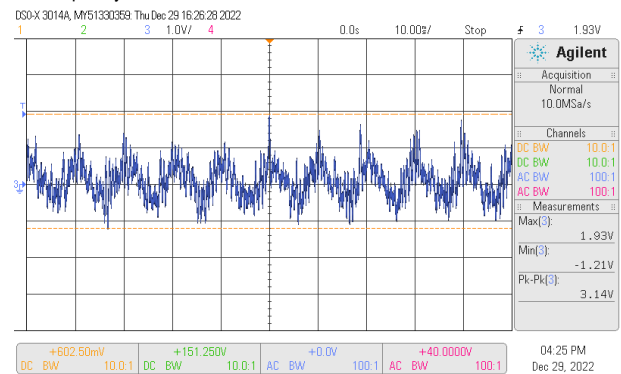
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 260 V~400 V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	250.7V~408.3V/230VAC 250.8V~408.3V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: 1 %~ -1 %	I/P: 90VAC /264VAC O/P:FULL/ MIN. LOAD Ta:25°C	V1: 0.37 %~-0.07 %
3	LINE REGULATION	V1: 0.5 %~ -0.5 %	I/P: 180VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0.05%~-0.05 %
4	LOAD REGULATION	V1: 0.5 %~ -0.5 %	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.17%~-0.02%
5	OVER/UNDERSHOOT TEST	<± 10%	I/P: 230VAC O/P:FULL LOAD Ta:25°C	<10%
6	RIPPLE & NOISE (Max )	V1: 4000 mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 3140 mVp-p

high frequency :



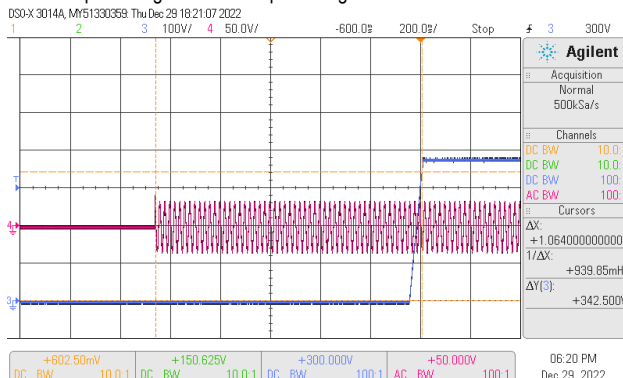
low frequency :

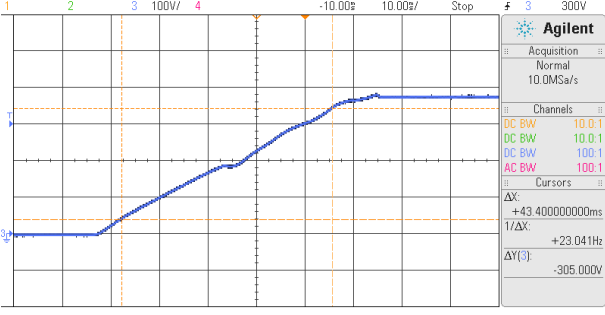
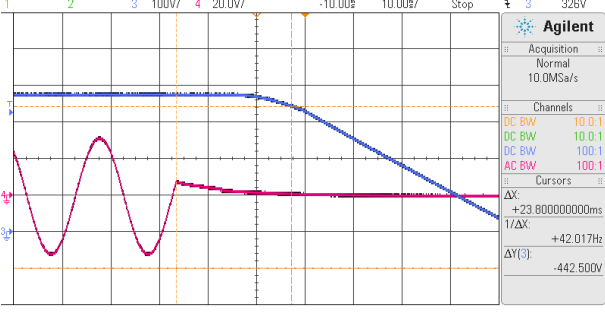
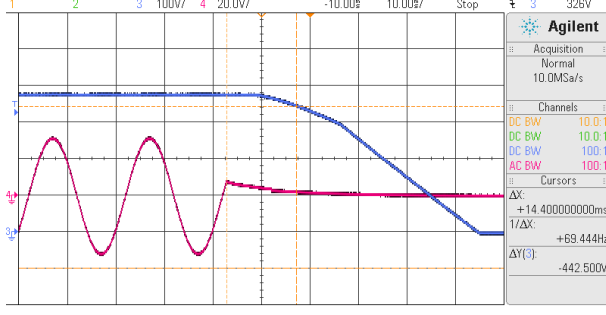
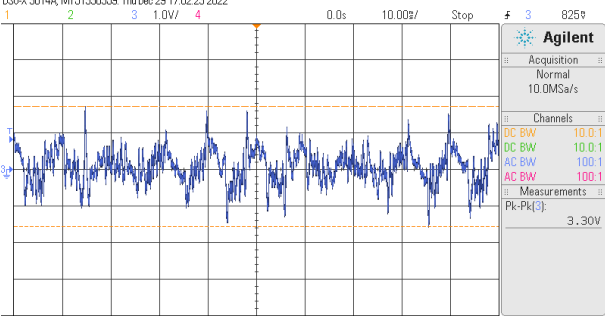
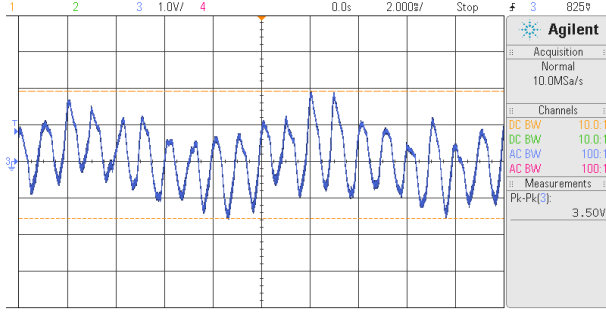


7	SET UP TIME(Max)	230VAC/1500ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 1006 ms
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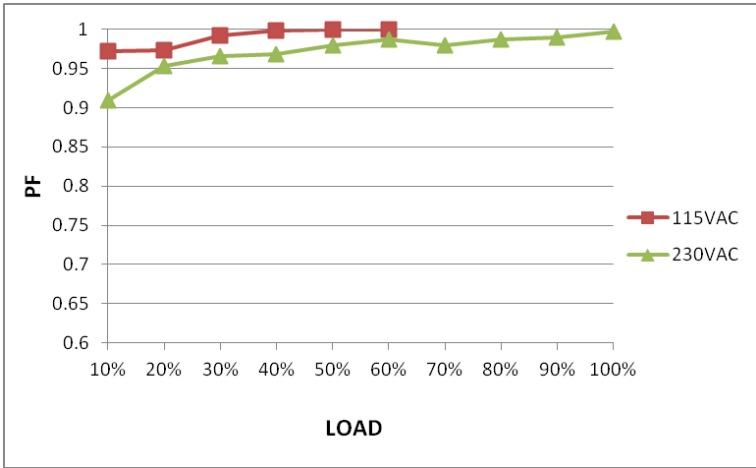
INPUT=230VAC/50HZ @ FULL LOAD

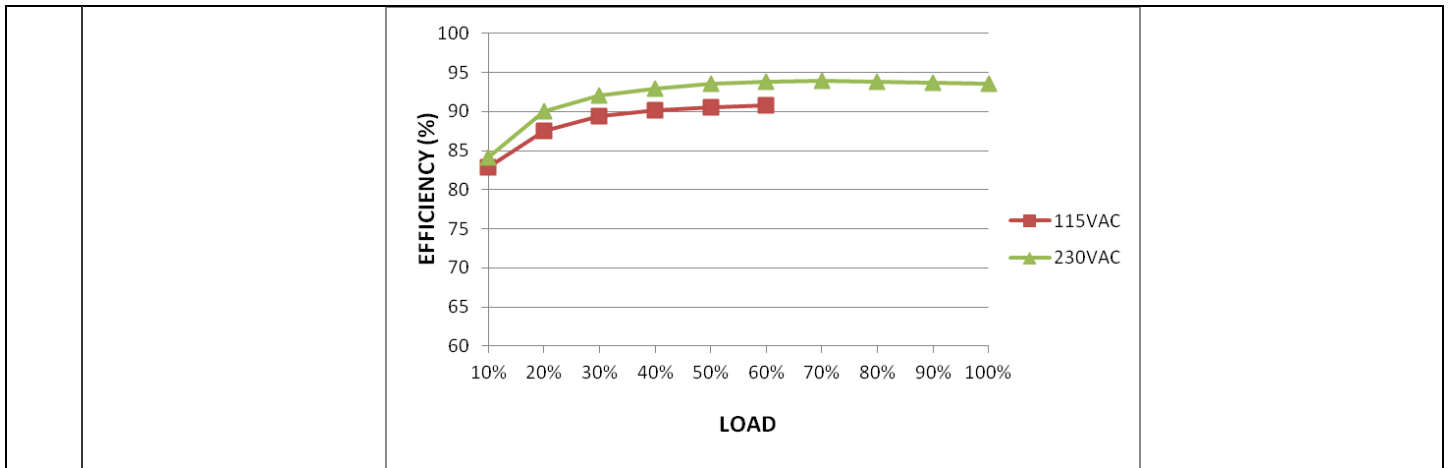
CH1 : Output Voltage CH2 : AC Input Voltage



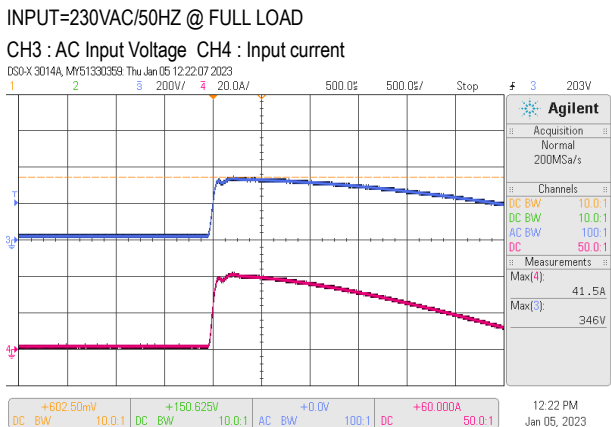
8	RISE TIME (Max)	230VAC/60ms	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 43.4 ms
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH3 : Output Voltage</p> 				
9	HOLD UP TIME (Typ.)	230VAC/16ms 230VAC/8ms	I/P : 230 VAC I/P : 230 VAC O/P : 70% & Full Load Ta : 25°C	230VAC/ 23.8 ms 70% Load 230VAC/ 14.4ms Full Load
<p>INPUT=230VAC/50HZ @ 70% LOAD</p> <p>CH3 : Output Voltage CH4 : AC Input Voltage</p>  <p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH3 : Output Voltage CH4 : AC Input Voltage</p> 				
10	DYNAMIC LOAD	V1: 38 Vp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	330mVp-p  350mVp-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~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) 168Vac~264Vac/FULL LOAD 85Vac~264Vac/50%LOAD (2) 238.5Vdc~403Vdc/FULL 119Vdc~403Vdc/50% (3) 239.8Vdc~403Vdc/FULL 120.3Vdc~403Vdc/50%																																
			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: PASS																																
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:90 VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: PASS																																
3	INPUT CURRENT (Typ.)	230V/ 17A	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I =14.86A/ 230VAC																																
4	LEAKAGE CURRENT	<2 mA / 230 VAC	I/P : 240 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.933 mA N-FG : 0.996 mA																																
6	POWER FACTOR (Typ.)	0.97/ 230VAC	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF=0.997 /230VAC																																
	<p>P.F vs LOAD</p>  <table border="1"> <caption>Approximate data from P.F vs LOAD graph</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>0.91</td></tr> <tr><td>20%</td><td>0.97</td><td>0.95</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>0.99</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>0.98</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	0.91	20%	0.97	0.95	30%	0.98	0.96	40%	0.98	0.97	50%	0.99	0.98	60%	0.99	0.98	70%	0.99	0.98	80%	0.99	0.99	90%	0.99	0.99	100%	0.99
LOAD (%)	115VAC PF	230VAC PF																																		
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80%	0.99	0.99																																		
90%	0.99	0.99																																		
100%	0.99	0.99																																		
7	EFFICIENCY(Typ.)	94%	I/P: 230 VAC O/P: 75% LOAD Ta:25°C	94.29%																																
	EFFICIENCY vs LOAD																																			



8	INRUSH CURRENT(Typ.)	230V/55A COLD START	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I=41.5A/ 230VAC T50= 2.36 ms/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, shut down O/P voltage after 5 sec. After O/P voltage falls, re-power on to recover	I/P: 264VAC I/P: 230VAC I/P: 90VAC O/P: TESTING Ta:25°C	112.6%/ 264VAC 112.6%/ 230VAC 53.6%/90VAC PROTECTION TYPE : Constant current limiting, shut down O/P voltage after 5 sec. After O/P voltage falls, re-power on to recover
2	OVER VOLTAGE PROTECTION	420V~480V  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	453.6V/ 264VAC 453.9V/ 230VAC 453.6V/ 90VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	Protection type :  PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD	O.T.P. Active  PROTECTION TYPE : Shut down o/p voltage, recovers automatically after temperature goes down

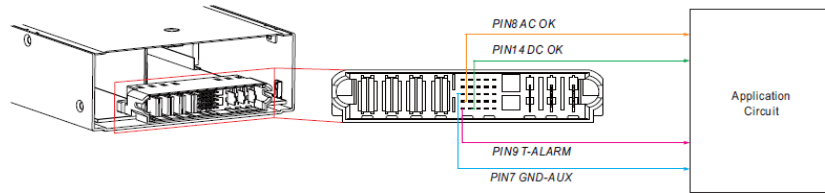
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264VAC I/P: 90VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE  PROTECTION TYPE : Constant current limiting, shut down O/P voltage after 5 sec. After O/P voltage falls, re-power on to recover
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### CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT												
1	AUXILIARY POWER (AUX)	<p>Auxiliary voltage output, 10.8~13.2V, referenced to GND-AUX (pin7). 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>Auxiliary voltage output, 4.5~5.5V, reference to GND_AUX(pin7).The maximum load current is 0.3A. The output has the built-in "Oring diodes" and is not controlled by the <i>Remote ON/OFF</i> control.</p> <p>I/P: 230 VAC O/P:FULL LOAD Ta:25°C</p> <p>Test Result :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>AUX</th> <th>TOLERANCE</th> <th>SPEC. 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>11.418 / 306mV</td> </tr> <tr> <td>5V/0.3A</td> <td>4.5~5.5V</td> <td>150 mVp-p</td> <td>4.71V/0.3A 117 mVp-p</td> </tr> </tbody> </table>	AUX	TOLERANCE	SPEC. RIPPLE	TEST RESULT	12V / 0.8A	10.8~13.2 V	450mVp-p	11.418 / 306mV	5V/0.3A	4.5~5.5V	150 mVp-p	4.71V/0.3A 117 mVp-p		
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5V/0.3A	4.5~5.5V	150 mVp-p	4.71V/0.3A 117 mVp-p													
2	REMOTE ON/OFF CONTROL	<p>The power supply can be turned ON/OFF individually or along with other units by using the "Remote ON-OFF" function.</p> <div style="text-align: center;"> </div> <table border="1" style="margin-left: auto; margin-right: auto;"> <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" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Between 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>	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	Switch Short	ON	Switch 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															
Switch Short	ON															
Switch Open	OFF															

3 ALARM SIGNAL

※ There are 3 alarm signals, DC-OK, AC-OK and T-ALARM, in TTL signal form, on CN1. These signals are isolated from output. The maximum sink current is 10mA.



DC-OK signal	Power Supply Mode Status	Charger Mode Status
*High* > 3.5~5.5V	Vout ≅ 77%±5%	Vout ≅ 66%±5%
*Low* < -0.5~0.5V	Vout ≅ 80%±5%	Vout ≅ 67%±5%

AC-OK signal	Power Supply and Charger Mode Status
*High* > 3.5~5.5V	Input voltage ≅ 87Vrms
*Low* < -0.5~0.5V	Input voltage ≅ 75Vrms

T-ALARM signal	Power Supply and Charger Mode Status
*High* > 3.5~5.5V	OFF(OTP or Fan Fail)
*Low* < -0.5~0.5V	ON(Normal Work)

1. DC OK SIGNAL

For power supply mode

High (3.5 ~ 5.5V) : When the Vout ≤ 77% ± 5%.

Low (-0.5 ~ 0.5V) : When the Vout ≥ 80% ± 5%.

The maximum sourcing current is 10mA and only for output.

I/P: 230 VAC

O/P: FULL LOAD

Ta: 25°C

Test Result :

Vout	DC OK SIGNAL
Vout ≤ 72%	4.9 V
Vout ≥ 85%	0.00v

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

I/P: 230 VAC

O/P: Full Load

Ta: 25°C

Test Result :

P.SU STATUS	Vo	T-ALARM SPEC	T-ALARM TEST
NORMAL	100%±2%	<-0.5 ~ 0.5V	0.00V
OTP	0V	>3.5~5.5V	4.9V
FAN LOCK	0V	>3.5~5.5V	4.9V

3. AC OK

The maximum sourcing current is 10mA and only for output.

Low (-0.5 ~ 0.5V) : When the input voltage is ≤ 75Vrms.

High (3.5 ~ 5.5V) : When the input voltage is ≥ 87Vrms .

I/P : Test Voltage

O/P: Full Load

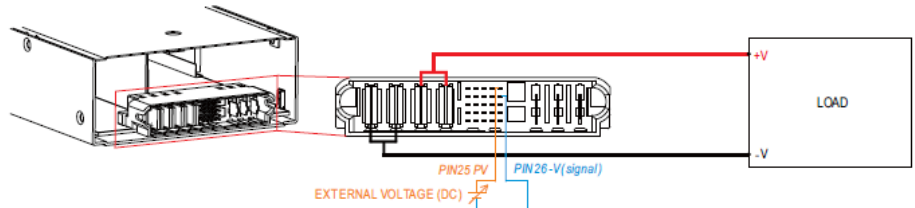
Ta : 25°C

Test Result :

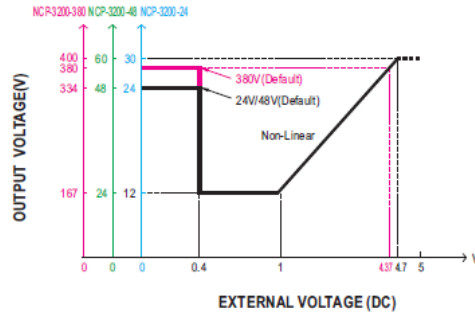
AC	AC OK SIGNAL
AC ≥ 87Vrms	4.9V
AC ≤ 75Vrms	0.00V

4 OUTPUT VOLTAGE PROGRAMMABLE(PV)

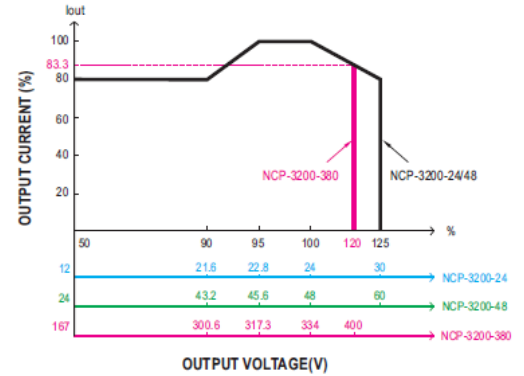
※ In addition to the adjustment via the built-in potentiometer, the output voltage can be trimmed to 50~125%(24/48V models) or 50~120%(380V model) of the nominal voltage by applying EXTERNAL VOLTAGE.



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



◎ For power supply mode  
 ◎ The 100% output voltage is 24/48/334V.



◎ The rated current should change with the Output Voltage Programming accordingly.  
 ◎ The 100% output current is 133/67/9.6A.  
 ◎ For Remote Sense / Local Sense, please refer to "Voltage Drop Compensation" section.

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

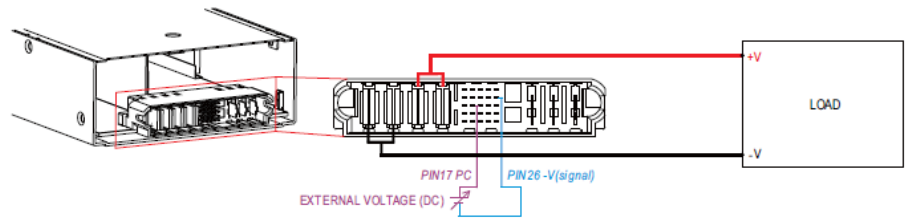
TEST RESULT :

MODEL \ PV	PV				
	0.3V	1V	4.37V	4.7V	5V
SPEC	380V±5%	167V±5%	380V±5%	400V±5%	400V±5%
Vout	379.8V	165.8V	379.50V	401.50V	407.60V

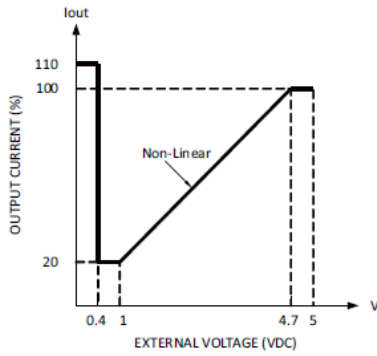


5 OUTPUT CURRENT PROGRAMMABLE (PC)

※ The constant current level can be trimmed to 20~100% of the rated current by applying EXTERNAL VOLTAGE.  
 ※ If setting output current to a much lower level, as output status turns to constant current mode, it might cause higher current ripple under such condition.



- ⊙ For Remote Sense / Local Sense, please refer to "Voltage Drop Compensation" section.
- ⊙ Output will shut down after O/P voltage is below < 80% of Vset for 5 sec, re-power on to recover.



- ⊙ The 100% output current is 133/67/9.6A.
- ⊙ Notice the output power do not over rated power (max.)

I/P: 230 VAC  
 O/P: TESTING  
 Ta: 25°C

PC V	0.3V	1V	4.7V	5V
SPEC	110%±10%	20%±10%	100%±10%	100%±10%
TEST	111.46%	19.38%	102.08%	104.17%

6 CURRENT SHARING

Power supply that can be connected in parallel is 40 units  
 CURRENT SHARING TOLERANCE <±10%  
 I/P : 230 VAC  
 O/P : 90%/45% LOAD  
 Ta : 25°C  
 TEST RESULT :

NO	45% LOAD	90% LOAD	NO	45% LOAD	90% LOAD	NO	45% LOAD	90% LOAD	NO	45% LOAD	90% LOAD
0	3.69	7.59	10	3.59	7.59	20	3.69	7.50	30	3.69	7.50
1	3.69	7.50	11	3.69	7.59	21	3.69	7.59	31	3.69	7.50
2	3.80	7.59	12	3.69	7.39	22	3.80	7.50	32	3.69	7.59
3	3.36	7.50	13	3.69	7.50	23	3.69	7.50	33	3.69	7.59
4	3.69	7.50	14	3.69	7.59	24	3.59	7.59	34	3.59	7.50
5	3.69	7.59	15	3.80	7.59	25	3.69	7.50	35	3.69	7.59
6	3.69	7.50	16	3.80	7.59	26	3.59	7.50	36	3.69	7.50
7	3.80	7.50	17	3.80	7.50	27	3.59	7.50	37	3.59	7.50
8	3.69	7.59	18	3.69	7.50	28	3.69	7.50	38	3.69	7.50
9	3.59	7.50	19	3.69	7.50	29	3.69	7.59	39	3.69	7.50

Unit: A

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q3 Rated : 52A/600 V	AC ON/OFF  I/P:High-Line +3V =267V 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	VDS: (1) 491.95V (2) 504.29V (3) 492.28V (4) 493.25V (5) 492.9V (6) 492.7V (7) 500.85V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q 900 Rated 52 A/600V  Q 902 Rated 52 A/600V	I/P:High-Line +3V =267 V 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.	Q900: VDS: (1)505V (2)505V (3)505V (4)501V (5)503V (6)473V (7)477V  Q902: VDS: (1)493V (2)493V (3)491V (4)493V (5)497V (6)477V (7)457V
3	P.F.C DIODE	D8 Rated 16 A/600V	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/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz Ta:25°C	(1) 441V (2) 449V (3) 421V (4) 421V
4	Diode Peak Voltage	D165 Rated : 8A/ 650V  D172 Rated : 8A/ 650V	AC ON/OFF I/P:High-Line +3V =267 V <u>VO: SPEC MAX</u> 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.	D165: <u>VO: SPEC MAX</u> VDS: (1) 416.84V (2) 7.12V (3) 416.64V (4) 416.67V (5) 416.39V (6) 420.76V (7) 6.59V (8) 412.92V  D172: <u>VO: SPEC MAX</u> VDS: (1) 415.24V (2) 7.2V (3) 416.33V (4) 416.47V (5) 416.43V (6) 420.84V (7) 7.16V (8) 412.53V

			(8).NO LOAD Ta:25°C	
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)432V (2)424V (3)448V (4) 432V
6	Clamp Diode Peak Voltage	D52 Rated : 600V /30A	AC ON/OFF  I/P : High-Line +3V = 267 V O/P : (1) Dynamic Load 90%Duty/1KHz (2)Full load continue Ta : 25°C	(1) 437 V  (2) 437 V

■ **SAFETY& E.M.C. TEST**

**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:12.52mA I/P-FG:11.32mA O/P-FG:16.93mA 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: 3.56 GΩ I/P-FG: 5.7 GΩ O/P-FG: 8.06 GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	19 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:100% LOAD Ta:25°C	Test by certified Lab
2	CONDUCTION	EN55032 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	Test by certified Lab
3	RADIATION	EN55032 CLASS A	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	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	EN61000-4-5 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 : NCP-3200-380 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25 °C 2. HIGH AMBIENT BURN-IN : 2.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50 °C																																																																																																																																		
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P : 230 VAC O/P : 108 * LOAD Ta : 25°C	TEST : OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/180VAC O/P : 80 * LOAD Ta= -35 °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 : 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	± 0.024 %/°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	-20~50°C	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	
8	VIBRATION TEST	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (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 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) 1065251.8HRS (2) 188311.7HRS (3) 270506.1HRS (4) 326144HRS	
10	MTBF	Conducted by Parts Stress Analysis Prediction 510.5K hrs min. Telcordia SR-332 (Bellcore) ; 45.8K 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 : 50,000 hours		

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

2020.10.1 TAG-QA-009