

Rack Mount Power Supply pNSP2U-1000P-AAS Series

With 4 Patents

Newcomer with Full Model Change with High Efficiency !
Redundant Power Supply with Primary Redundant System



pNSP2U-1000P-AAS

RoHS Directive

ERP2U

Continuous Max.	Peak Power
800W	1000W

BRAIN Power Supply

Rack Mount Power Supply

Non-backup Power Supply

Model	Description	Stock
pNSP2U-1000P-AAS	ATX output	Standard stock
pNSP2U-1000P-AAS (12)	+12V single output	Standard stock

■ Model Name Coding

pNSP2U - 1000P - A A S *

① ② ③ ④ ⑤ ⑥ ⑦

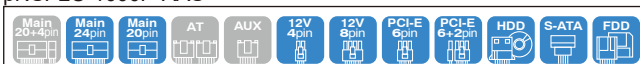
1. Series name	4. Primary input unit (upper side)	7. Output voltage
2. Output power	5. Primary input unit (lower side)	- : ATX output
3. Peak output compliant	6. Secondary DC output unit	(12) : +12V single output

Features

- High reliability and efficiency are achieved with unique primary redundant system (only primary side is redundant)
 - With input unit circuit improved, and with high performance parts and synchronous rectifying circuit adopted, high efficiency is at your hand. Surprisingly, approx. 10% higher efficiency than existing models.
 - Output harnesses can be easily customized to meet various requirements.
 - Flexible setting of power distribution ratio from 2 inputs by external signal
 - Defective unit is notified by a signal and LED display.
 - Change the primary unit and disparate input connection will be on hand*
- * DC input unit is under development.

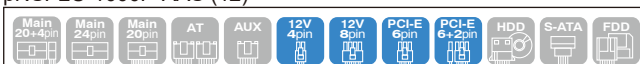
Output connector (optional component)

pNSP2U-1000P-AAS



*Refer to p.219 "Detachable output harness" for details

pNSP2U-1000P-AAS (12)



*Refer to p.219 "Detachable output harness" for details

Refer to "Product Page Guideline" on p.11

Safety standard / Approval	UL	CSA	EN	CE	CCC
Reliability Grade	HFA	FA	HOA	DA	

Function



*5VSB FAN is only equipped in a secondary side.

Input

AC input	85 - 264V (worldwide range)
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Output

pNSP2U-1000P-AAS

Output voltage	+3.3V	+5V	+12V	-12V	+5VSB
Max. current / max. power (continuous)	20A	20A	63.3A	0.5A	2A
	Total 765.6W				
Peak current / peak power (5 sec max.)	21A	21A	66A	0.5A	2A
	Total 982.3W				
Min. current	0A	0A	0A	0A	0A

pNSP2U-1000P-AAS (12)

Output voltage	+12V	+5VSB
Max. current / max. power (continuous)	66A	2A
	Total 802W	
Peak current / peak power (5 sec max.)	83A	2A
	Total 1006W	
Min. current	0A	0A

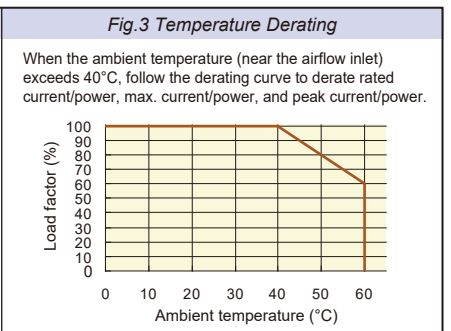
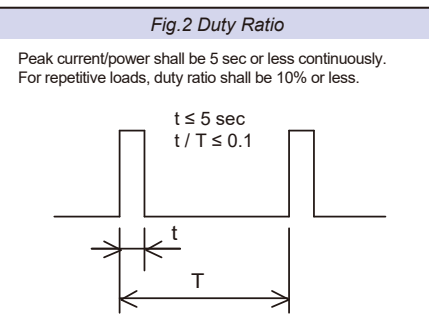
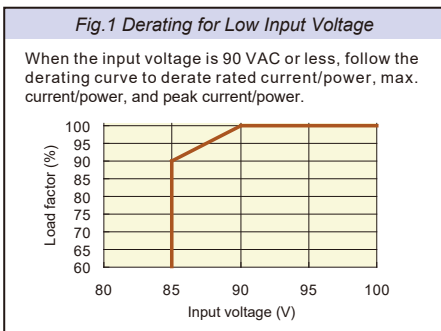
Dimensions

W×H×D (mm)	108×83.8×350
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General Specification Condition: at normal temperature and humidity unless otherwise specified

Refer to [] only for pNSP2U-1000P-AAS(12)

Items		Specification								Measurement conditions, etc.	
AC Input	Rated Voltage	100 - 240 VAC (85* - 264 VAC) (Startup voltage: 80 - 90 VAC)								Worldwide range *Refer to Fig.2	
	Input Frequency	50 / 60Hz								47 - 63Hz	
	Efficiency	81% typ. (100 VAC), 84% typ. (240 VAC) [82% typ. (100 VAC), 85% typ. (240 VAC)] *Characteristic data: Fig.4 and 17									
	Power Factor	99% typ. (100 VAC), 98% typ. (240 VAC) [99% typ. (100 VAC), 95% typ. (240 VAC)] *Characteristic data: Fig.5 and 18									
	Inrush Current	40A peak max. *Characteristic data: Fig.6 and 19								At rated input/output	
Input Current	Input Current	10.4A max. (100 VAC), 4.3A max. (240 VAC) [10A max. (100 VAC), 4.2A max. (240 VAC)] *Characteristic data: Fig.4 and 17								At rated input and max. output	
		13.2A max. (100 VAC), 5.4A max. (240 VAC) [13A max. (100 VAC), 5.4A max. (240 VAC)]								At rated input and peak output	
	Output	Rated Voltage	pNSP2U-1000P-AAS				pNSP2U-1000P-AAS (12)				
Output	Rated Current (Note 1)	+3.3V	+5V	+12V	-12V	+5VSB	+12V	+5VSB			
	Max. Current / Power (Note 1)	12A	12A	55A	0.5A	2A	66A	2A	Max. output power: 775.6W [802W]		
		20A	20A	63.3A	0.5A	2A	66A	2A			
	Peak Current / Power (Note 1)	765.6W max.									
		775.6W max.									
		21A	21A	66A	0.5A	2A	83A	2A	Peak output power: 982.3W [1006W] Time: 5 sec or less Duty ratio of repetitive load: 10% or less *Refer to Fig.2		
	Protection	Min. Current	0A	0A	0A	0A	0A	0A	0A		
Total Voltage Accuracy (%)		±4 max.	±4 max.	±5 max.	±5 max.	±5 max.	±5 max.	±5 max.	Total accuracy of temperature, input, and load fluctuations		
Max. Ripple Voltage (mVp-p)		50 max.	50 max.	150 max.	150 max.	50 max.	150 max.	50 max.	Two wires are coming out from the output connector and connected into one at the edge. 10µF electrolytic capacitor and 0.1µF film capacitor are placed on it and it is measured. *Characteristic data: Fig.15 and 28		
Max. Spike Voltage (mVp-p)		100 max.	100 max.	200 max.	200 max.	100 max.	200 max.	100 max.			
Overcurrent Protection		OCP Point (A)	22 min.	22 min.	67 min.	Short protection		84 min.	Short protection	All other outputs are at rated input/output.	
	22 min.		22 min.	84 min.	Short protection		-	-	All other outputs are at no load and rated input voltage.		
	Method	All outputs shutdown except for +5VSB				Fold back current limiting	All output shutdown	+12V shutdown	Fold back current limiting		
Recovery	Reclosing AC input				Automatic recovery		Reclosing AC input	Automatic recovery			
Overvoltage Protection	OVP Point (V)	3.9 - 4.5	5.7 - 6.5	13.3 - 14.5	-		13.4 - 15.6	5.7 - 7.0			
	Method	All outputs shutdown except for +5VSB				-		All outputs shutdown except for +5VSB	All outputs shutdown		
	Recovery	Reclosing AC input				-		Reclosing AC input	Reclosing AC input		
Alternating Operation Function (AC Unit)	When two units are in use, each unit switches operation in 2 sec (4 sec cycle) to avoid temperature concentration on one unit.								To correspond to +3.3V, +5V, and +12V [12V], in the case that operation priority is not specified.		
Operating Temp. / Humidity	0 to 60°C* / 10 to 90%								*Refer to Fig.3 No condensation		
Storage Temp. / Humidity	-25 to 70°C / 10 to 95%								No condensation		
Vibration	Acceleration amplitude: 2 g (10-55Hz), Sweep cycles: 10, Test duration: 45 minutes each axis								JIS-C-60068-2-6, at no operation		
Mechanical Shock	Lift one bottom edge up to 50mm and let it fall. Number of bumps: 3 each of 4 edges								JIS-C-60068-2-31, at no operation		
Dielectric Strength	AC input - DC output/FG and between AC inputs: 1500 VAC for 1 minute										
Insulation Resistance	AC input - DC output/FG and between AC inputs: 50MΩ min.								At 500 VDC		
Leakage Current	0.5mA max. (100 VAC) / 1mA max. (240 VAC) *Characteristic data: Fig.7 and 20								YEW. TYPE3226 (1kΩ) or equivalent per one input unit		
Line Noise Immunity	±2000V (pulse width: 100/1000ns, repetitive cycle: 30-100Hz, normal/common mode with pos./neg. polarity for 1 minute)								Measured by INS-410 No fluctuation of DC output or malfunction		
EMC	Electrostatic Discharge	EN61000-4-2 compliant									
	Radiated, Radio-Frequency EM Field	EN61000-4-3 compliant									
	Fast Transient Burst	EN61000-4-4 compliant									
	Lightning Surge	EN61000-4-5 compliant									
	RF Conducted Immunity	EN61000-4-6 compliant									
	Magnetic Field Immunity	EN61000-4-8 compliant									
	Voltage Dip / Regulation	EN61000-4-11 compliant									
	Conducted Emission	VCCI-A, FCC-A, EN55022-A compliant								Measured by single unit at rated output	
	Harmonic Current Regulation	IEC61000-3-2 (ver.2.1) Class D, EN61000-3-2 (A14) Class D compliant								At rated input/output	
	Safety Standards	UL60950-1, CSA C22.2 No. 60950-1 (c-UL)									
Others	Cooling System	Forced air cooling								Input unit: Lock sensing signal equipped To stop at 'H' of PS_ON# signal Output unit: Pulse sensing signal equipped. Low speed at 'H' of PS_ON# signal	
	Output Grounding	Connected to chassis (FG)									
	Output Hold-up Time	PWR_OK holds up 16ms min. after AC failure *Characteristic data: Fig.12 and 25								At rated output	
	Reliability Grade	FA (industrial equipment grade, double-sided PCB with plated through hole)								Follow our standard	
	Weight	4.7kg [4.5kg]									
Warranty	3 years after delivery. If any faults belong to us, the defective unit shall be repaired or replaced at our cost.								Except for errors caused by operation not listed		



(Note 1) This current and power is provided that both of upper and lower unit are connected to the output unit. For long-term operation with single input unit, install an optional dummy input unit, pNSP1U-1000P-P, to the upper or lower side to run. Also, In the case that only one input unit (upper or lower) is operated without the other unit or dummy unit installed, another 95% derating in addition to "Input voltage vs. Output derating" is required.

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Non-backup Power Supply

Signal Input / Output Specification Condition: at normal temperature and humidity unless otherwise specified

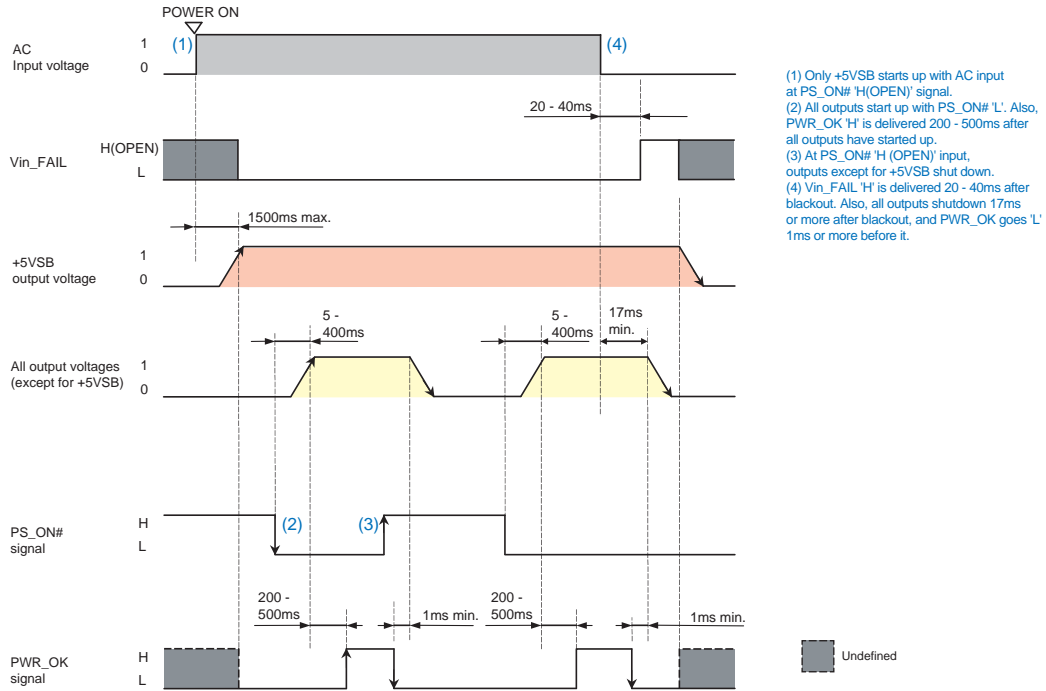
Refer to [] only for pNSP2U-1000P-AAS(12)

	Items	Specification	Note
Input Signal	Output ON / OFF Control Signal (PS_ON#)	+3.3V, +5V +12V, and -12V [12V] outputs shutdown with 'H' or 'OPEN' input.	Signal input between the pin 16 of MAIN connector [the pin 3 of SIG2 connector] and COM pin
	+3.3V SENSE [N/A]	The input terminal to detect the voltage of +3.3V output; by connecting to the load terminal, only the line drop of the + side of the output cable is compensated.	The pin 1 of MAIN connector, the pin 8 of SIG connector (the pin 8 of SIG connector is given priority if both are connected.)
	Operation priority signal_1 (PRIORITY_1)	Upon receipt of 'L', the upper unit starts to provide power to +3.3V, +5V, and +12V [+12V]. (If the upper unit is disconnected, failed, or blackout occurs, the lower unit starts to provide power regardless of this signal. Also, when both of PRIORITY_1 and PRIORITY_2 go 'L', the lower unit provides power. (PRIORITY_2 signal has the priority.))	The pin 13 of SIG1 connector
	Operation priority signal_2 (PRIORITY_2)	Upon receipt of 'L', the lower unit starts to provide power to +3.3V, +5V, and +12V [+12V]. (If the lower unit is disconnected, failed, or blackout occurs, the upper unit starts to provide power regardless of this signal. Also, when both of PRIORITY_1 and PRIORITY_2 go 'L', the lower unit provides power. (PRIORITY_2 signal has the priority.))	The pin 12 of SIG1 connector
Output Signal	Normal Output Signal (PWR_OK)	'H' signal is delivered when the +5V [+12V] output is normal (detection delay time: 200 - 500ms).	The pin 8 of MAIN connector [The pin 4 of SIG2 connector]
	Input fail detection signal_1 (Vin FAIL_1)	This signal goes 'OPEN' when the upper unit has no AC input. (detection voltage: 75 VAC typ., detection delay time: 20 - 40ms after AC input failure)	The pin 4 of SIG1 connector
	Input fail detection signal_2 (Vin FAIL_2)	This signal goes 'OPEN' when the lower unit has no AC input. (detection voltage: 75 VAC typ., detection delay time: 20 - 40ms after AC input failure)	The pin 3 of SIG1 connector
	Fan signal (FAN ALARM_1):Upper Input unit (FAN ALARM_2):Lower Input unit	This signal goes 'OPEN' when Fan keeps locked. However, it is undefined when PS_ON# signal is 'OPEN'.	FAN ALARM_1:The pin 10 of SIG1 connector FAN ALARM_2:The pin 9 of SIG1 connector
	(FAN M_S): Output unit	Two cycle pulses per one rotation of the fan motor are delivered.	The pin 11 of SIG1 connector
	Input unit failure signal_1 (UNIT FAIL_1)	'OPEN' is delivered when the upper unit is not connected, failed, blackout, or Input unit's fan is locked, or PRIORITY_2 signal goes 'L.' However, when PS_ON# signal goes 'OPEN', 'L' is delivered. Also, when total power of +3.3V, +5V, +12V1, +12V2, and +12V3 [+12V] is 20W or less this signal goes undefined. (Detection delay time is 2 to 10 sec)	The pin 14 of SIG1 connector
	Input unit failure signal_2 (UNIT FAIL_2)	'OPEN' is delivered when the lower unit is not connected, failed, blackout, or Input unit's fan is locked, or PRIORITY_1 signal goes 'L.' However, when PS_ON# signal goes 'OPEN', 'L' is delivered. Also, when total power of +3.3V, +5V, +12V1, +12V2, and +12V3 [+12V] is 20W or less this signal goes undefined. (Detection delay time is 2 to 10 sec)	The pin 15 of SIG1 connector
	Input connection signal_1 (UNIT IN_1)	5±1V voltage is delivered when the upper unit is connected.	The pin 8 of SIG1 connector
	Input connection signal_2 (UNIT IN_2)	5±1V voltage is delivered when the lower unit is connected.	The pin 7 of SIG1 connector
	Input unit failure LED (UNIT FAIL_LED_1)	LED turns in red when Input unit failure signal_1 or Input fail detection signal_1 goes 'H' and when the fan of the upper unit is locked at PS_ON# signal 'L.' Other than that, it turns in green. However, it may turn in red instantly (approx. 5ms) right after PS_ON# goes 'H'.	
	Input unit failure LED (UNIT FAIL_LED_2)	LED turns in red when Input unit failure signal_2 or Input fail detection signal_2 goes 'H' and when the fan of the lower unit is locked at PS_ON# signal 'L.' Other than that, it turns in green. However, it may turn in red instantly (approx. 5ms) right after PS_ON# goes 'H'.	

Signal Circuit

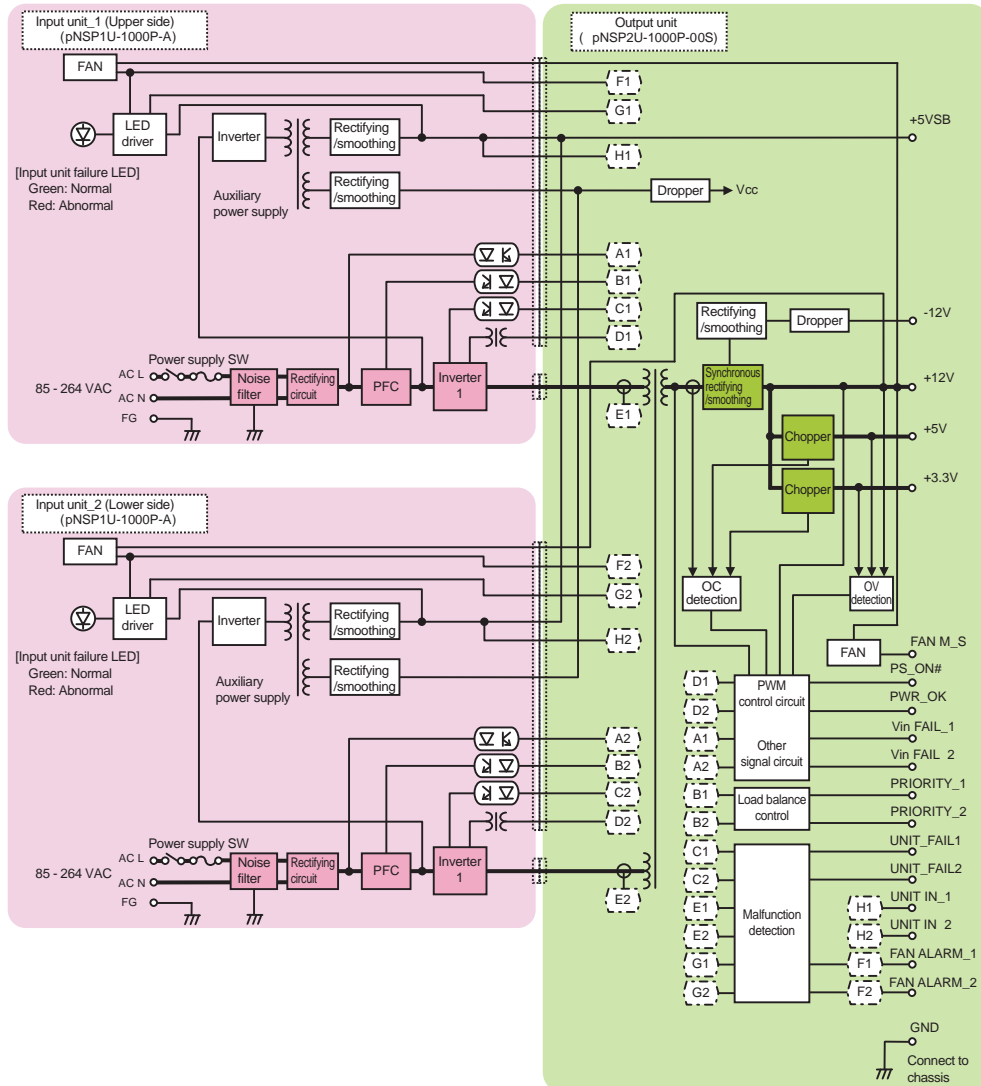
Input Signal Circuit	(PS_ON#)	(PRIORITY_1,2)	
Output Signal Circuit	(PWR_OK)	(Vin FAIL_1,2), (FAN ALARM_1,2), (FAN M_S), (UNIT FAIL_1,2)	(UNIT_IN)

Sequence Diagram (operated by single input unit)

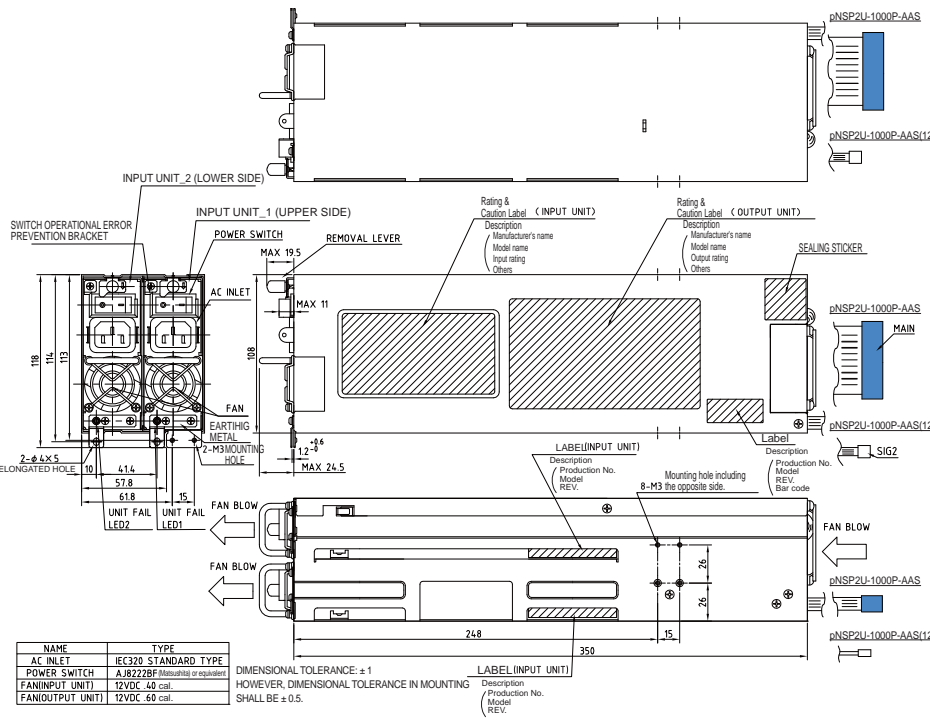


Block Diagram

pNSP2U-1000P-AAS

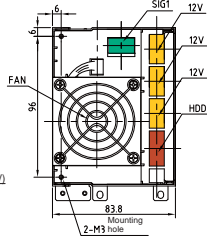


Outline Drawing



*CONNECTOR PINOUT ASSIGNMENT pNSP2U-1000P-AAS

SIG1				12V				HD				MAIN			
PN	FUNCTION	UNIT	VAL	PN	FUNCTION	UNIT	VAL	PN	FUNCTION	UNIT	VAL	PN	FUNCTION	UNIT	VAL
1	+5VSB	1.6A	1	1	GND	7.0A	1	1	+3.3V	7.0A	1	1	+5VSB	10mA	13
2	GND	1.6A	2	2	GND	7.0A	2	2	+5V	7.0A	2	2	+3.3V	6.0A	14
3	UNIT FAIL	3mA	3	3	GND	7.0A	3	3	GND	7.0A	3	3	GND	6.0A	15
4	UNIT FB	3mA	4	4	GND	7.0A	4	4	GND	7.0A	4	4	+5V	6.0A	16
5	NC	-	5	5	+12V	7.0A	5	5	+12V	7.0A	5	5	GND	6.0A	17
6	NC	-	6	6	+12V	7.0A	6	6	+3.3V	7.0A	6	6	+5V	6.0A	18
7	UNIT IN	3mA	7	7	+12V	7.0A	7	7	+5V	7.0A	7	7	GND	6.0A	19
8	UNIT IN	3mA	8	8	+12V	7.0A	8	8	GND	7.0A	8	8	PWR_OK	3mA	20
9	NC	-	9	9	GND	7.0A	9	9	GND	7.0A	9	9	GND	6.0A	21
10	FB	3mA	10	10	+12V	7.0A	10	10	+12V	7.0A	10	10	+5V	6.0A	22
11	FAN	6.3mA	11	11	FAN	6.3mA	11	11	FAN	6.3mA	11	11	+12V	6.0A	23
12	PROTECT	1mA	12	12	PROTECT	1mA	12	12	PROTECT	1mA	12	12	+3.3V	6.0A	24
13	PROTECT	1mA	13	13	PROTECT	1mA	13	13	PROTECT	1mA	13	13	+5V	6.0A	25
14	UNIT FB	3mA	14	14	UNIT FB	3mA	14	14	UNIT FB	3mA	14	14	GND	6.0A	26
15	UNIT FB	3mA	15	15	UNIT FB	3mA	15	15	UNIT FB	3mA	15	15	GND	6.0A	27
16	NC	-	16	16	NC	-	16	16	NC	-	16	16	GND	6.0A	28



*CONNECTOR PIN ASSIGNMENTS pNSP2U-1000P-AAS(12V)

SIG1				12V				HD				SIG2			
PN	FUNCTION	UNIT	VAL	PN	FUNCTION	UNIT	VAL	PN	FUNCTION	UNIT	VAL	PN	FUNCTION	UNIT	VAL
1	+5VSB	1.6A	1	1	GND	7.0A	1	1	NC	-	1	1	+5VSB	2.0A	1
2	GND	1.6A	2	2	GND	7.0A	2	2	NC	-	2	2	GND	2.0A	2
3	UNIT FAIL	3mA	3	3	GND	7.0A	3	3	NC	-	3	3	PS_ON	10mA	3
4	UNIT FB	3mA	4	4	GND	7.0A	4	4	NC	-	4	4	PWR_OK	3mA	4
5	NC	-	5	5	+12V	7.0A	5	5	+12V	7.0A	5	5	NC	-	5
6	NC	-	6	6	+12V	7.0A	6	6	NC	-	6	6	NC	-	6
7	UNIT FB	3mA	7	7	+12V	7.0A	7	7	NC	-	7	7	NC	-	7
8	UNIT FB	3mA	8	8	+12V	7.0A	8	8	GND	7.0A	8	8	GND	7.0A	8
9	FB	3mA	9	9	GND	7.0A	9	9	GND	7.0A	9	9	GND	7.0A	9
10	FB	3mA	10	10	+12V	7.0A	10	10	+12V	7.0A	10	10	+12V	7.0A	10
11	FAN	6.3mA	11	11	FAN	6.3mA	11	11	FAN	6.3mA	11	11	FAN	6.3mA	11
12	PROTECT	1mA	12	12	PROTECT	1mA	12	12	PROTECT	1mA	12	12	PROTECT	1mA	12
13	PROTECT	1mA	13	13	PROTECT	1mA	13	13	PROTECT	1mA	13	13	PROTECT	1mA	13
14	UNIT FB	3mA	14	14	UNIT FB	3mA	14	14	UNIT FB	3mA	14	14	UNIT FB	3mA	14
15	UNIT FB	3mA	15	15	UNIT FB	3mA	15	15	UNIT FB	3mA	15	15	UNIT FB	3mA	15
16	NC	-	16	16	NC	-	16	16	NC	-	16	16	NC	-	16

NAME	TYPE
AC INLET	IEC320 STANDARD TYPE
POWER SWITCH	AJ8222BF (Manufacturer's equivalent)
FAN(OUTPUT UNIT)	12VDC 40 call.
FAN(OUTPUT UNIT)	12VDC 60 call.

DIMENSIONAL TOLERANCE: ±1
HOWEVER, DIMENSIONAL TOLERANCE IN MOUNTING SHALL BE ±0.5.

Optional Components sold separately


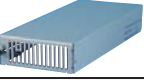
pNSP2U-1000P


Detachable Output Harness		Length and Type of Connector		Output Port Allocation	
Model					
Main power cable MAIN				pNSP2U-1000P-AAS	
WH-M2024-500	500±15	20-pin			
WH-M2424-500	500±15	24-pin		Acceptable cable(s)	
12V power cable 12V				MAIN 12V HD SIG1	
WH-V0808-500	500±15	12V 8-pin		1 model 3 models 1 model 1 model	
WH-V0408-500	500±15	12V 4-pin			
WH-VG208-500	500±15	12V 4-pin			
WH-VG208-500	500±15	PCI-E 6-pin			
WH-VV208-500-02	500±10	12V 8-pin			
WH-VG208-500-02	500±10	12V 8-pin			
WH-VG208-500-02	500±10	PCI-E 6-pin			
WH-G0808-500	500±10	PCI-E 6+2-pin			
WH-GG208-500	500±10	PCI-E 6-pin			
WH-GG208-500	500±10	PCI-E 6+2-pin			
HD power cable HD				pNSP2U-1000P-AAS(12V)	
WH-PP610-850	550±15	150±15 150±15	peripheral (HD)		
WH-PS610-850	550±15	150±15 150±15	FD	Acceptable cable(s)	
WH-PS710-850	550±15	150±15 150±15	S-ATA	12V HD SIG1	
WH-PS710-850	850±15	150±15 150±15	S-ATA	3 models 1 model 1 model	
SIG cable SIG1					
WH-S1616-500	500±15	SIG-4			
Harness set MAIN 12V HD					
WHS2828	[contents] / WH-M2024-500 (1) / WH-M2424-500 (1) / WH-V0808-500 (1) / WH-VG208-500 (1) / WH-PP610-850 (1) / WH-PS610-850 (2)				


*Only +12V output is available. (+3.3V and +5V are not outputting.)

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Optional Components Sold Separately

Module					
Picture	Model	Type	Description	Stock	Standard Price
	pNSP1U-1000P-A	Primary AC Input Unit	pNSP2U-1000P-AAS is equipped with two units as standard.	Standard stock	¥31,000
	pNSP1U-1000P-P	Dummy Input Unit	In the long term operation with only one Input unit, pNSP1U-1000P-A, install the dummy Input unit to the other side where pNSP1U-1000P-A is not connected (upper or lower side).	Standard stock	¥4,500

Cable			
Picture	Model	Type	Description
	WH6167	AC power cord	125 VAC 15A [PSE]

Parts / Unit			
Picture	Model	Type	Description
	ACC6169	AC power cord retention clamp	It can be connected to the primary side unit: pNSP1U-1000P-A.

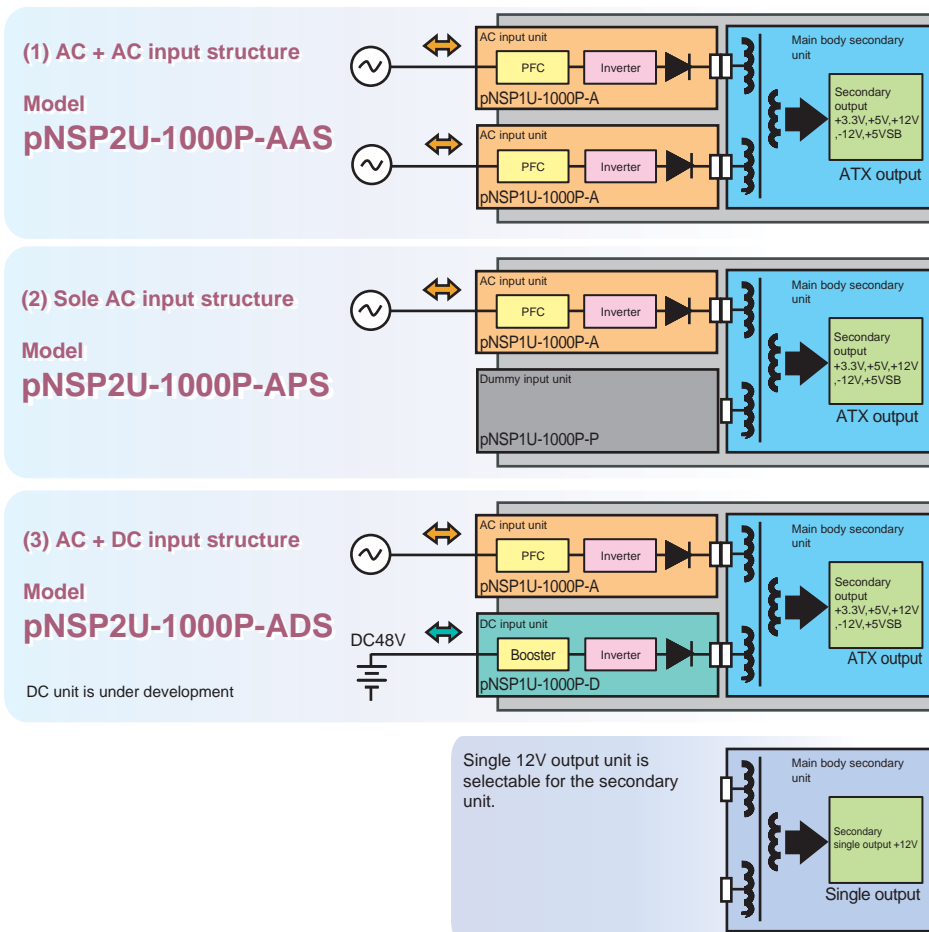
Other Optional Components			
Model	Description	Model	Description
ACC2637	Automatic startup unit	WH5105	12V 4-pin connector conversion harness (80mm)
WH2820	20-pin extension harness (600mm)	WH5105-02	12V 4-pin connector conversion harness (320mm)
WH2747	20-pin extension harness (450mm)	WH5055	AT connector conversion harness
WH2892-02	20-pin extension harness (200mm)	ACC5046	Harness with PS_ON switch
WH2812	PCI-E 6-pin connector conversion harness	ACC5077	PS_ON terminal short connector
		WH5073	PS_ON terminal short 20-pin harness

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Rack Mount Power Supply

Non-backup Power Supply

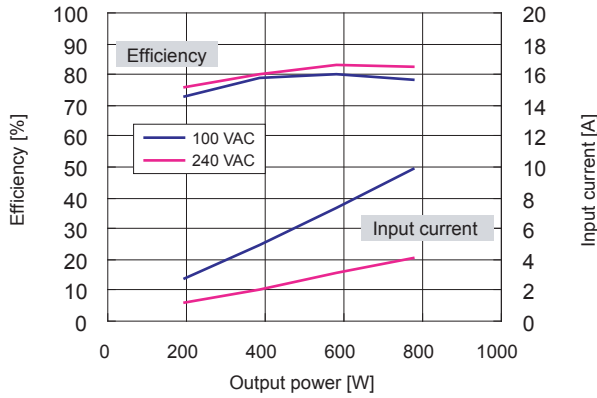
Input Structure



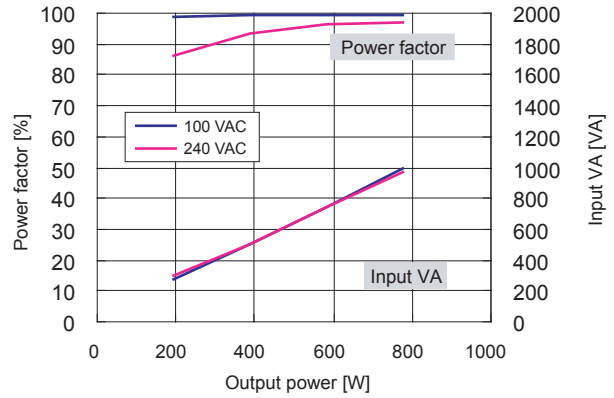
Characteristics Data pNSP2U-1000P-AAS (Examples of actual measurement)

BRAIN Power Supply
Rack Mount Power Supply
Non-backup Power Supply

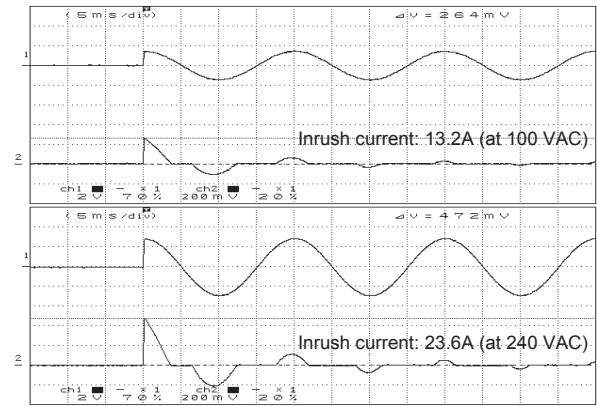
● Fig.4 Efficiency / Input Current vs. Output Power



● Fig.5 Power Factor / Input VA vs. Output Power



● Fig.6 Inrush Current

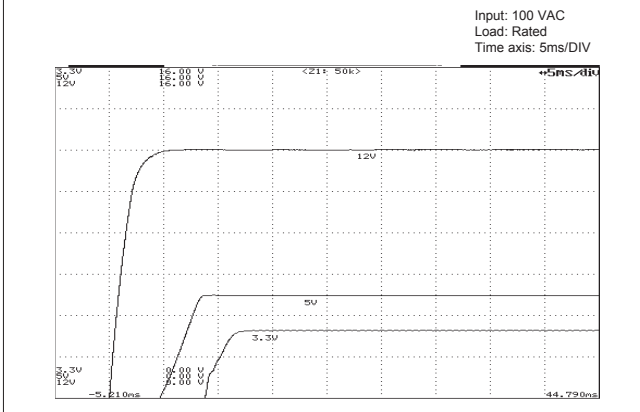


● Fig.7 Leakage Current

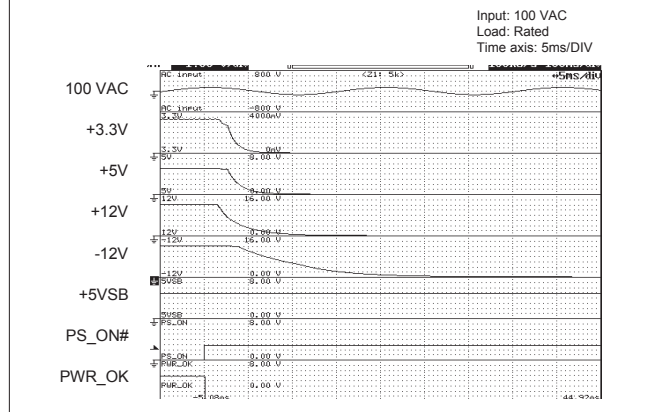
Input: 100 / 200 / 240 VAC
Load: Rated and min. load
Measurement conditions: IEC60950 compliant

	Rated load	Min. load
100 VAC	0.21mA	0.21mA
200 VAC	0.44mA	0.60mA
240 VAC	0.52mA	0.54mA

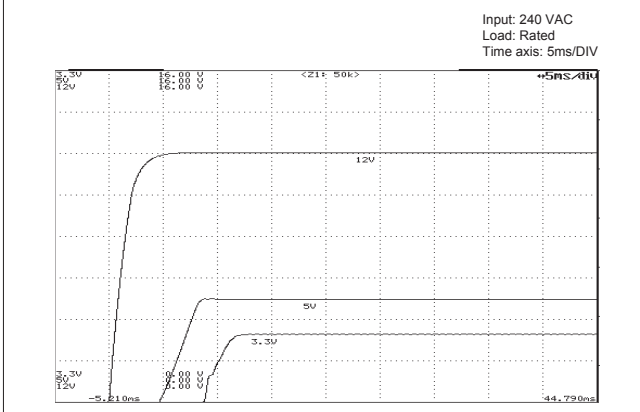
● Fig.8 Rising Characteristics at 100 VAC



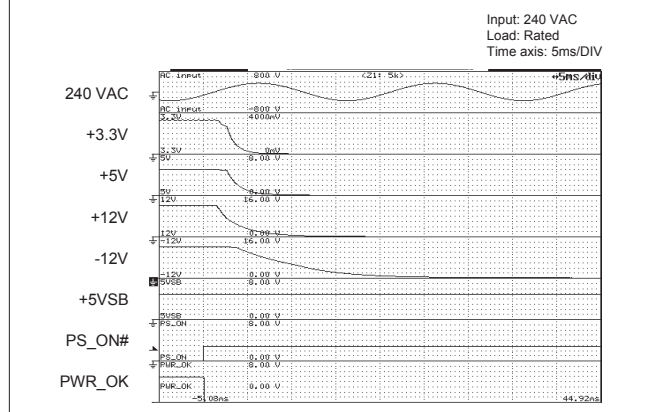
● Fig.9 Falling Characteristics at 100 VAC when REMOTE goes Off



● Fig.10 Rising Characteristics at 240 VAC

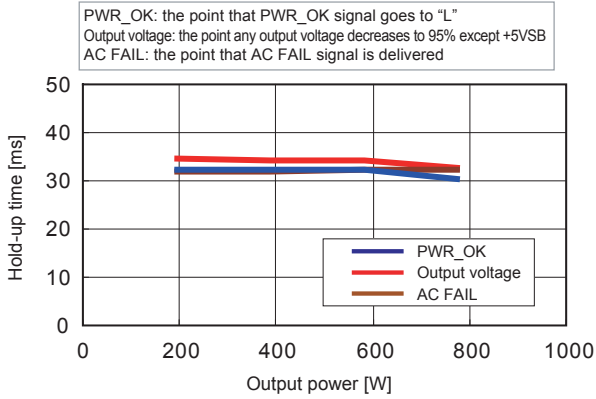


● Fig.11 Falling Characteristics at 240 VAC when REMOTE goes Off

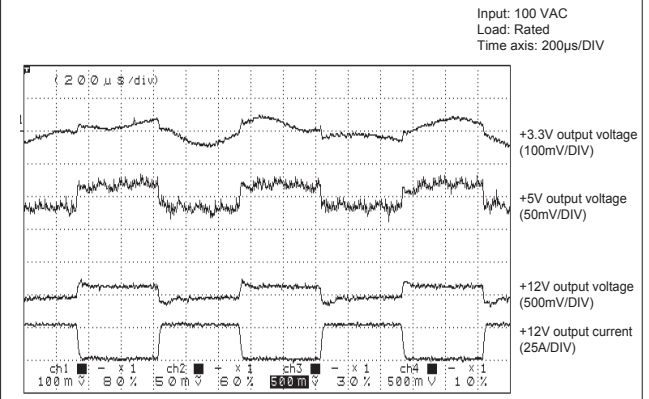


Characteristics Data pNSP2U-1000P-AAS (Examples of actual measurement)

• Fig.12 Output Hold-up Time vs. Output Power



• Fig.13 Dynamic Load Fluctuation Characteristics at 1kHz

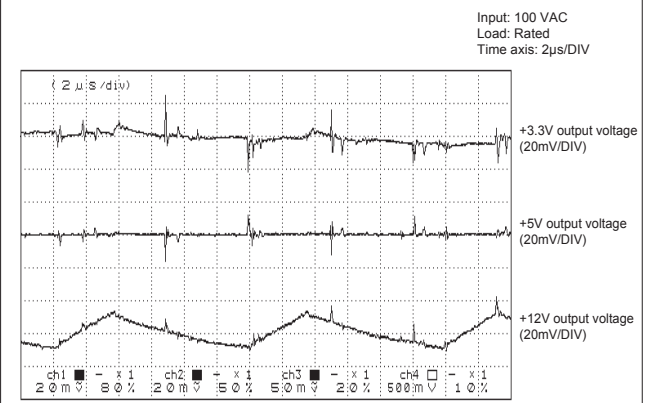


• Fig.14 Output Voltage Regulation

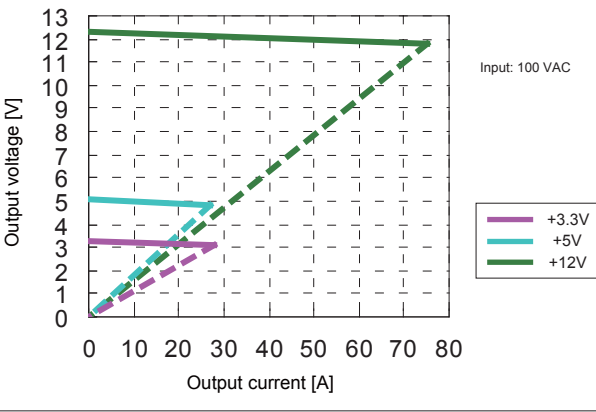
Output	Min. load	Rated load	Peak load
+12V output	0A	55A	66A
+5V output	0A	12A	21A
+3.3V output	0A	12A	21A

AC input voltage	85 VAC	100 VAC	132 VAC	176 VAC	240 VAC	264 VAC
+12V output (min. load)	12.245V	12.242V	12.241V	12.230V	12.228V	12.229V
+12V output (rated load)	12.024V	12.024V	12.021V	12.017V	12.017V	12.016V
+12V output (peak load)	11.965V	11.972V	11.975V	11.973V	11.962V	11.946V
+5V output (min. load)	5.160V	5.160V	5.160V	5.159V	5.159V	5.159V
+5V output (rated load)	4.931V	4.930V	4.930V	4.928V	4.927V	4.927V
+5V output (peak load)	4.895V	4.898V	4.899V	4.899V	4.900V	4.899V
+3.3V output (min. load)	3.423V	3.424V	3.424V	3.421V	3.422V	3.422V
+3.3V output (rated load)	3.260V	3.259V	3.259V	3.255V	3.254V	3.254V
+3.3V output (peak load)	3.180V	3.180V	3.182V	3.183V	3.181V	3.183V

• Fig.15 Ripple and Spike Voltage



• Fig.16 Over Current Protection (V-I Characteristic)



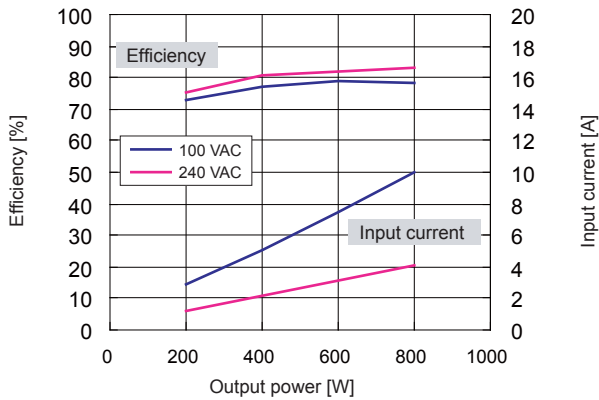
BRAIN
Power
Supply

Rack Mount Power Supply

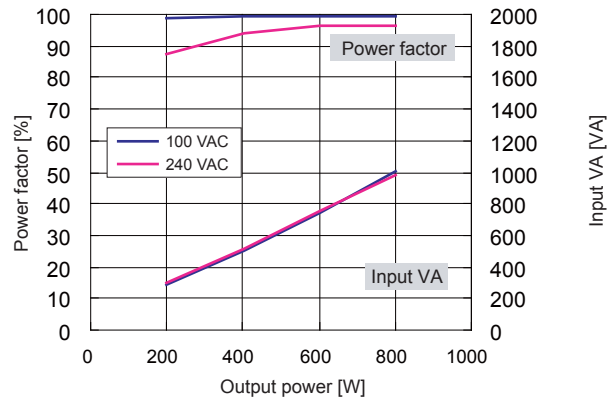
Non-backup Power Supply

Characteristics Data pNSP2U-1000P-AAS(12) (Examples of actual measurement)

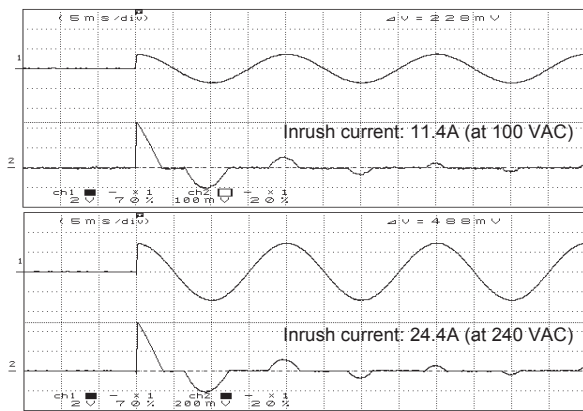
• Fig.17 Efficiency / Input Current vs. Output Power



• Fig.18 Power Factor / Input VA vs. Output Power



• Fig.19 Inrush Current

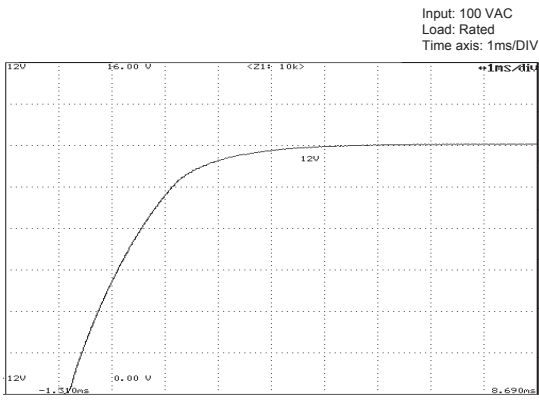


• Fig.20 Leakage Current

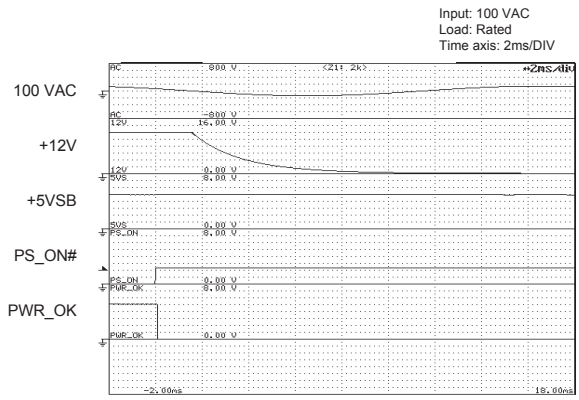
Input: 100 / 200 / 240 VAC
 Load: Rated and min. load
 Measurement conditions: IEC60950 compliant

	Rated load	Min. load
100 VAC	0.20mA	0.21mA
200 VAC	0.43mA	0.45mA
240 VAC	0.51mA	0.51mA

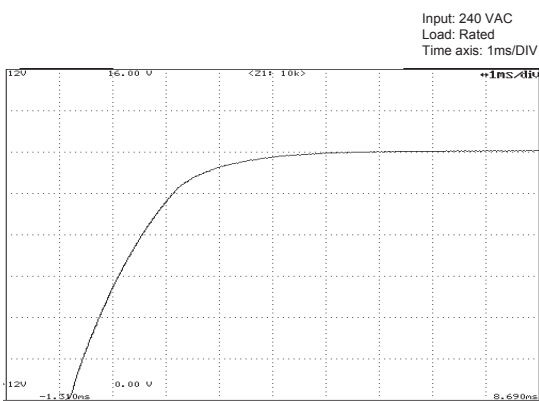
• Fig.21 Rising Characteristics at 100 VAC



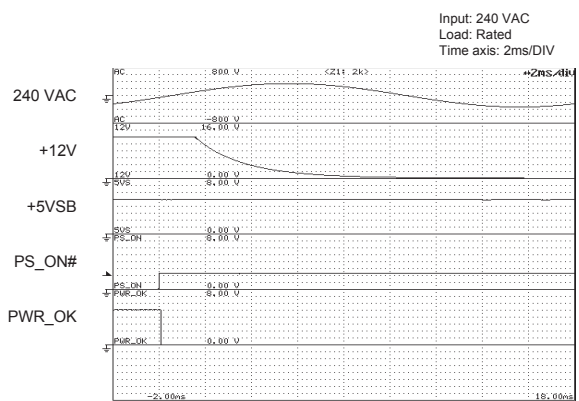
• Fig.22 Falling Characteristics at 100 VAC when REMOTE goes Off



• Fig.23 Rising Characteristics at 240 VAC

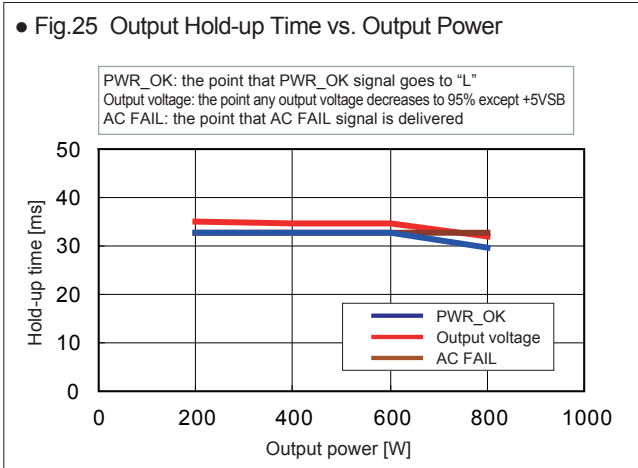


• Fig.24 Falling Characteristics at 240 VAC when REMOTE goes Off

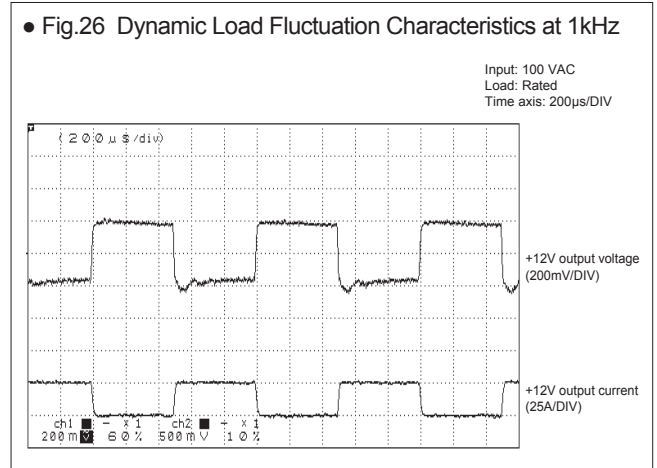


Characteristics Data pNSP2U-1000P-AAS(12) (Examples of actual measurement)

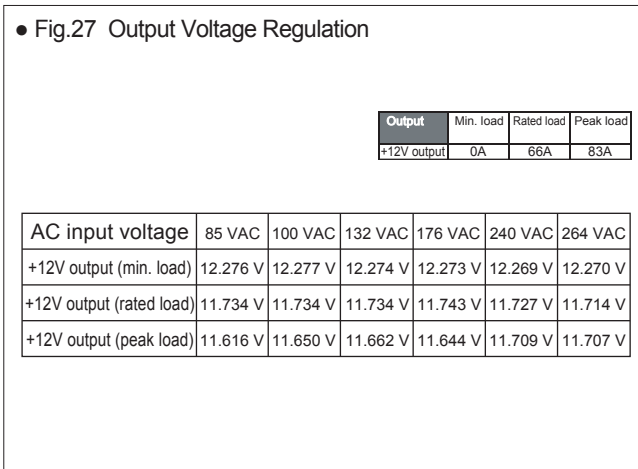
● Fig.25 Output Hold-up Time vs. Output Power



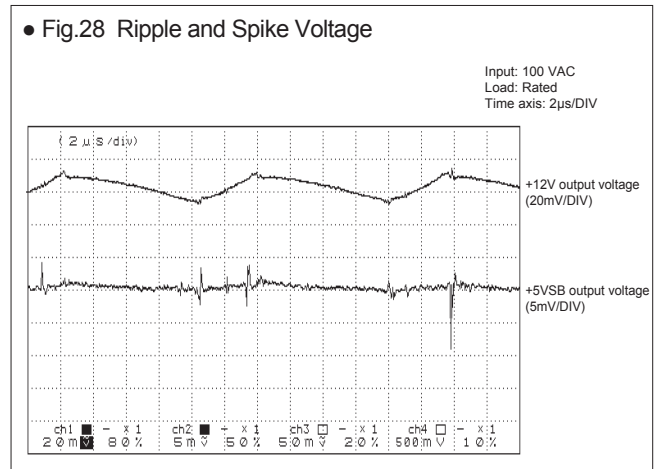
● Fig.26 Dynamic Load Fluctuation Characteristics at 1kHz



● Fig.27 Output Voltage Regulation



● Fig.28 Ripple and Spike Voltage



● Fig.29 Over Current Protection (V-I Characteristic)

