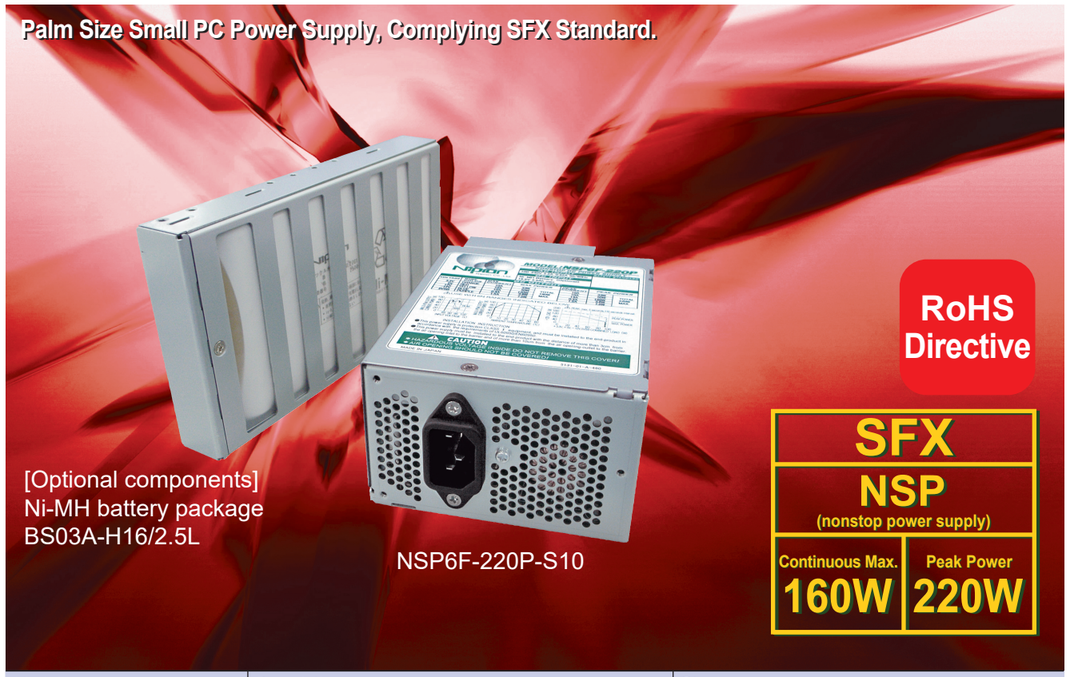
Desktop PC Power Supply NSP6F-220P Series



Model	*Description*	*Stock*
NSP6F-220P-S10	RS232C signal output	Standard stock
NSP6F-220P-T10	TTL signal output	Contact us

■Model Name Coding

NSP6F - 220 P - ＊1 0

① ② ③ ④⑤⑥

1. Series name
2. Output power
3. Peak output compliant
4. Signal output (S:RS232C signal output T:TTL signal output)
5. DC input voltage (battery voltage) 12V type
6. Modification code

Features

- With backup function, it protects your PC from blackout.
- High efficiency at 90% typ. is achieved at backup operation and the power loss of the battery package is minimized.
- Min. load current is 0A for all outputs.
- It is allow to be customized output voltages easily using the PCB chopper by synchronous rectification.
- Main 20+4 - pin connector

Refer to “Product Page Guideline” on p.13

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

Function

DC start | RS 232C | USB | TTL | PFC | Silence | 5VSB FAN | TSFC FAN | Connection | RoHS

*RS232C: only NSP6F-220P-S10
*TTL: only NSP6F-220P-T10

Automatic shutdown compliant OS

Windows 2000 | Windows XP | Windows Vista | Windows 7

Input

AC input	85 - 264V (worldwide range)
DC input	16.8V (dedicated battery package*)

*Battery package is optional (sold separately).

Output

Output voltage	*+3.3V*	*+5V*	*+12V*	*-12V*	*+5VSB*
Max. current / max. power (continuous)	10A	10A	10A	0.3A	1.5A
	Total 160W				
Peak current / peak power (5 sec max.)	10A	10A	14A	0.3A	1.8A
	Total 220W				
Min. current	0A	0A	0A	0A	0A

Dimensions

W×H×D (mm)	100×63.5×145 (SFX12V APPENDIX D size)

Output connector (optional component)

Main 20+4pin | Main 24pin | Main 20pin | AT | AUX | 12V 4pin | 12V 8pin | PCI-E 6pin | PCI-E 6+2pin | HDD | S-ATA | FDD

General Specification Condition: at normal temperature and humidity unless otherwise specified

	Items		*Specification*					*Measurement conditions, etc.*
AC Input	Rated Voltage		100 - 240 VAC (85* - 264 VAC)					Worldwide range, *Refer to Fig.1
	Input Frequency		50 / 60Hz					47 - 63Hz
	Efficiency		74% typ. *Characteristic data: Fig.5					At rated output
	Power Factor		90% min. *Characteristic data: Fig.6					
	Inrush Current		40A peak (100 VAC), 100A peak (240 VAC) *Characteristic data: Fig.7					At rated input/output at cold start (25°C)
	Input VA		*Characteristic data: Fig.6					At rated input
DC Input	Rated Voltage		16.8 VDC (corresponds to dedicated battery package)					No battery startup
	Efficiency		90% typ.					At rated input/output
Output	Rated Voltage		+3.3V	+5V	+12V	-12V	+5VSB	
	Rated Current		6A	7A	8A	0.3A	1A	
	Max. Current / Power		10A	10A	10A	0.3A	1.5A	Max. output power: 160W *Refer to Fig.1, 4
			33W	50W	120W	3.6W	7.5W	
			160W max.*					
	Peak Current / Power		10A	10A	14A	0.3A	1.8A	Peak output power: 220W *Refer to Fig. 1 and 4 Time: 5 sec or less Duty ratio of repetitive load: Refer to Fig. 2
			33W	50W	168W	3.6W	9W	
			220W max.*					
	Min. Current		0A	0A	0A	0A	0A	
	Total Voltage Accuracy (%)		±5 max.	±5 max.	±5 max.	±10 max.	±5 max.	Total accuracy of temperature, input, and load fluctuations
	Max. Ripple Voltage (mVp-p)		50 max.	50 max.	120 max.	120 max.	50 max.	Two wires are coming out from the output connector and connected into one. 47μF electrolytic capacitor is placed on it and it is measured *Characteristic data: Fig.18
	Max. Spike Voltage (mVp-p)		100 max.	100 max.	170 max.	170 max.	100 max.	
Protection	Overcurrent Protection	OCP Point (A)	10.5 min.	10.5 min.	14.1 min.*	0.32 min.	1.9 min.	Over current protection is performed under the condition of more than 10.5A with applying rated loads on other outputs voltages in each. *more than 14.1A at 12V should be taken all min. load with other outputs.
		Method	Hold down current limiting → all outputs are applied a latch stop except +5VSB				Hold down current limiting*	*All outputs are applied a latch stop at DC operation
	Recovery (Overcurrent)	At AC Operation	PS_ON# signal reclosing or input reclosing after 60 sec or longer.				Automatic recovery	
		At DC Operation	Reclosing AC input (60 sec min. interval)					
	Overvoltage Protection	OVP Point (V)	3.7 - 4.3	5.7 - 7.0	13.8 - 15.6	-13.8 - -15.6	5.7 - 7.0	Do not apply external overvoltage to +3.3V, +5V, and +12V output terminals.
		Method	All outputs are applied a latch stop					
	Recovery (Overvoltage)	At AC Operation	Reclosing AC input (60 sec min. interval)					
		At DC Operation	Reclosing AC input (60 sec min. interval)					
Environment	Operating Temp. / Humidity		0 to 60°C* / 10 to 90%					No condensation *Refer to Fig.3
	Storage Temp. / Humidity		-20 to 75°C / 10 to 95%					No condensation
	Vibration		Acceleration amplitude: 2gn (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
Insulation	Dielectric Strength		Input - DC output/FG: 1500 VAC for 1 minute					
	Insulation Resistance		Input - DC output/FG: 50MΩ min.					At 500 VDC
	Leakage Current		0.5mA max. (100 VAC) / 1mA max. (240 VAC) *Characteristic data: Fig.8					YEW.TYPE3226 (1kΩ) or equivalent
EMC	Line Noise Immunity		±2000V (pulse width: 100/1000ns, repetitive cycle: 30-100Hz, normal/common mode with pos./neg. polarity for 1 minute each)					Measured by INS-410. No fluctuation of DC output or malfunction
	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, CISPR22-A, EN55022-A compliant *Characteristic data: Fig.9, 10					Measured by single unit
	Harmonic Current Regulation		IEC-61000-3-2 class D compliant					At rated input/output
Others	Safety Standards		UL60950-1, CSA C22.2 No.60950-1 (c-UL)					
	Cooling System		Forced air cooling					At PS_ON# ‘H’, fan rotates at low speed
	Output Hold-up Time		Connected chassis (FG)					
	Reliability Grade		FA (industrial equipment grade, double-sided PCB with plated through hole)					Follow our standard
	MTBF		80,000 min.					Based on EIAJ RCR-9102
	Weight		1.25kg typ.					
	Warranty		1 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

Fig.1 Derating for Low Input Voltage

When the input voltage is 90 VAC or less, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

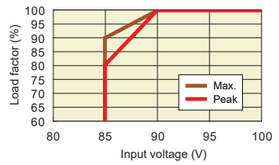


Fig.2 Duty Ratio

Peak current/power shall be within 5 sec or less continuously and the repetitive interval shall be 60 sec or longer.

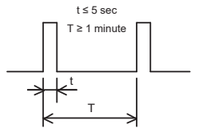


Fig.3 Temperature Derating

When the ambient temperature (near the airflow inlet) is more than 40°C or less than 10°C, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

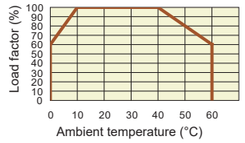
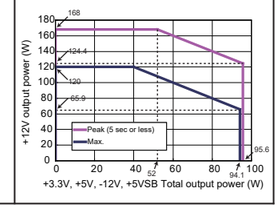
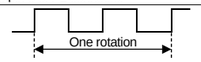


Fig.3 Output Power Cross Regulation

Please set up the each CH of total output power under the condition of "output power cross regulation" graph.



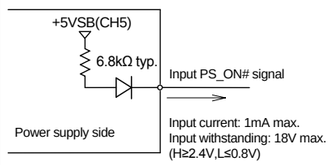
Signal Input / Output Specification Condition: at normal temperature and humidity unless otherwise specified

	Items	Specification	Note
Input Signal	Output ON / OFF Control Signal (PS_ON#)	+3.3V, +5V, +12V, and -12V outputs are delivered at 'L' input. At 'H(OPEN)' input, +3.3V, +5V, +12V, and -12V outputs shutdown and overcurrent/short protection circuits are activated to reset locked latch circuit at output shutdown status. When PS_ON# is 'H (OPEN)' (output OFF), reclosing interval to 'L' input (output ON) shall be longer 5 sec. If 'H (OPEN)' is inputting during the backup operation by connecting optional battery pack, all outputs shut down forcibly even if 'L' gets input again, the outputs do not recover unless otherwise AC input reclosing.	Signal input between the pin 16 of P1 connector and COM pin
	Battery Shutdown Signal (SHUT DOWN)	All outputs are forcibly shutdown with 'H' input (only available during backup operation). Even if 'L' is input again, the outputs do not recover unless otherwise AC input reclosing.	The pin 7 of P12 connector (apply to only NSP6F-220P-S10) The pin 2 of P12 connector (apply to only NSP6F-220P-T10)
Output Signal	Normal Output Signal (PWR_OK)	'H' signal is delivered when the +5V output is normal.	The pin 8 of P1 connector
	Fan Monitor Signal (FAN M)	Two cycle pulses per one rotation of the fan motor are delivered (open collector output). Duty ratio of the pulse shall be 0.5 typ. (Interval between the signals becomes longer at low speed and shorter at high speed.) The signal remains 'L' or 'OPEN' when the fan stops caused by any failure or malfunction.	
	Blackout Detection Signal (AC FAIL)	Signal 'positive'(NSP6F-220P-S10) or, 'H (OPEN)' (NSP6F-220P-T10) is delivered after AC failure is occurred and having detection delay time at 20 - 60ms.	The pin 9 of P12 connector (apply to only NSP6F-220P-S10) The pin 3 of P12 connector (apply to only NSP6F-220P-T10)
	Low Battery Voltage Signal (BATT LOW)	At backup operation by battery package, signal 'Negative' (NSP6F-220P-S10) or, 'H (OPEN)' (NSP6F-220P-T10) is delivered before battery voltage gets decreased until output voltage do not keep accuracy and backup operation stops by the detection of discharge cut-off voltage.	The pin 1 of P12 connector (apply to only NSP6F-220P-S10) The pin 4 of P12 connector (apply to only NSP6F-220P-T10)

Signal Circuit

Input Signal Circuit

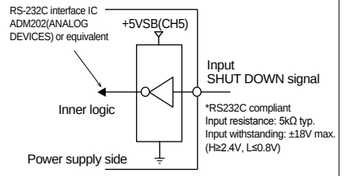
(PS_ON#)



Input current: 1mA max.
Input withstanding: 18V max.
(H≥2.4V,L≤0.8V)

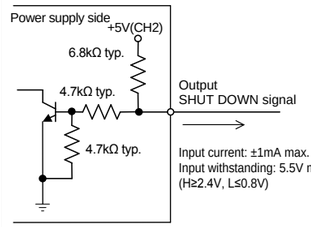
(SHUT DOWN)

Apply to only NSP6F-220P-S10



*RS232C compliant
Input resistance: 5kΩ typ.
Input withstanding: ±18V max.
(H≥2.4V, L≤0.8V)

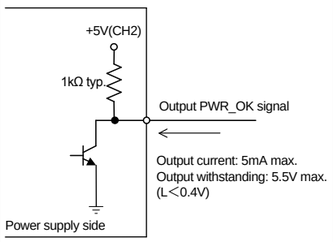
Apply to only NSP6F-220P-T10



Input current: ±1mA max.
Input withstanding: 5.5V max.
(H≥2.4V, L≤0.8V)

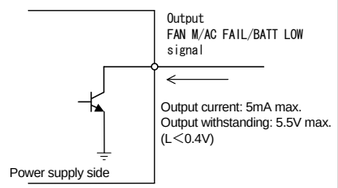
Output Signal Circuit

(PWR_OK)



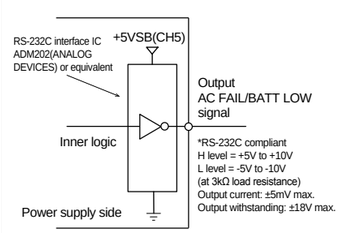
Output current: 5mA max.
Output withstanding: 5.5V max.
(L<0.4V)

(FAN M)(Apply to NSP6F-220P)
(AC FAIL), (BATT LOW) (Apply to only NSP6F-220P-T10)



Output current: 5mA max.
Output withstanding: 5.5V max.
(L<0.4V)

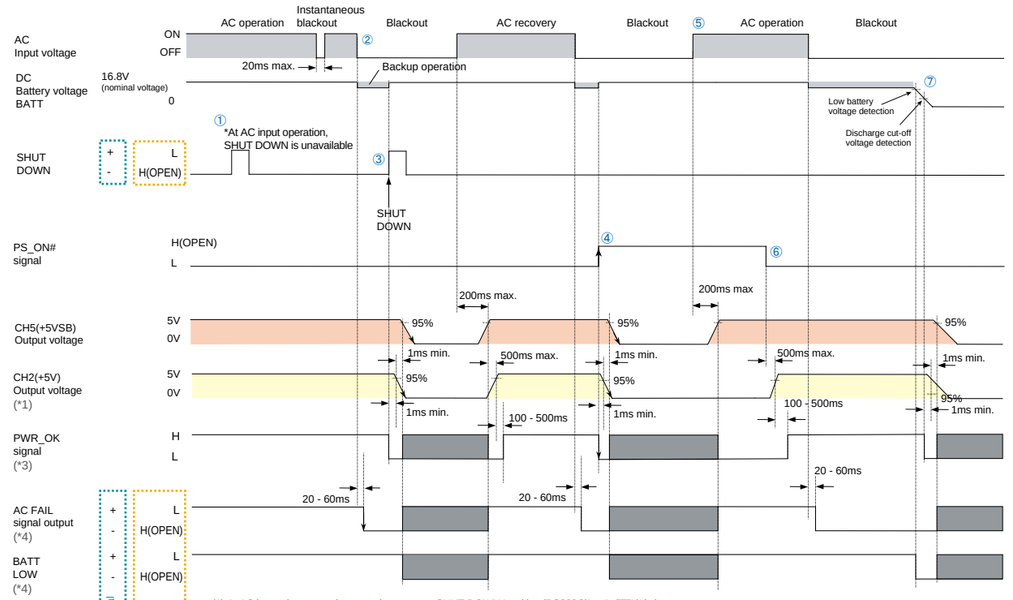
(AC FAIL), (BATT LOW)
(Apply to only NSP6F-220P-S10)



*RS-232C compliant
H level = +5V to +10V
L level = -5V to -10V
(at 3kΩ load resistance)
Output current: ±5mV max.
Output withstanding: ±18V max.

Internal Structure

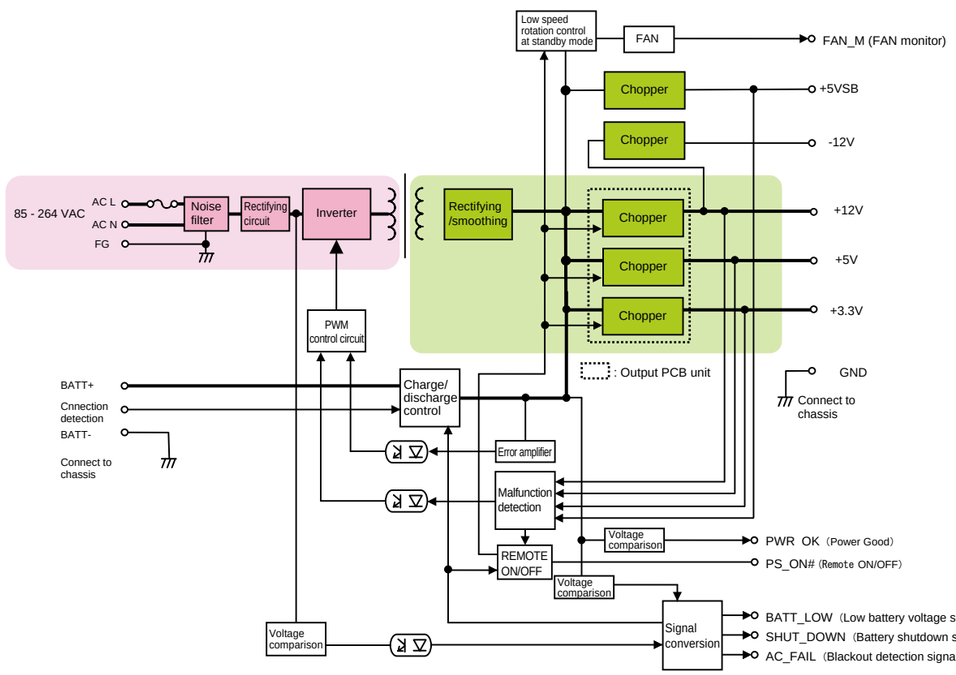
Sequence Diagram Follow the rated input/output condition when connecting w/ dedicated battery package



(1) At AC input, the output does not change even SHUT DOWN 'positive (RS232C)' or 'L (TTL)' is input.
(2) AC FAIL 'negative (RS232C)' and 'H(OPEN) (TTL)' are delivered 20 - 60ms after blackout.
(3) At blackout, all outputs including +5VSB output shut dowm with SHUT DOWN 'positive (RS232C)' or 'L(TTL)' input.
(4) At backup operation, all outputs are shut down by operation of PS_ON# 'H (OPEN)' input, including +5VSB.
(5) With AC input, only +5VSB starts up.
(6) With PS_ON# 'L' input, all outputs start up. After 100 - 500ms, PWR_OK goes 'H'.
(7) When the battery voltage decreases to 13V typ. at backup operation, BATT LOW 'L (RS232C)' and 'L(OPEN) (TTL)' are delivered; after it decreases to 12V typ., all outputs including +5VSB shutdown.

Note1: All other outputs except +5V shall follow this timing, and the rising time differences from +5V shall be less than ±30ms . In addition, output voltage level of +5V and +12V at rising shall be more than the voltage level of +3.3V.
Note2: After the low battery voltage detection (BATT LOW signal output), only the voltage regulation accuracy of +12V output shall be out of the specification.
Note3: A rise and a fall time of PWR_OK signal shall be less than 1ms at the time of the capacitive load is not connected to signal output.
Note4: A rise and a fall time of AC FAIL/BATT LOW signal shall be less than 10ms at the time of the capacitive load is not connected to signal output.

Block Diagram



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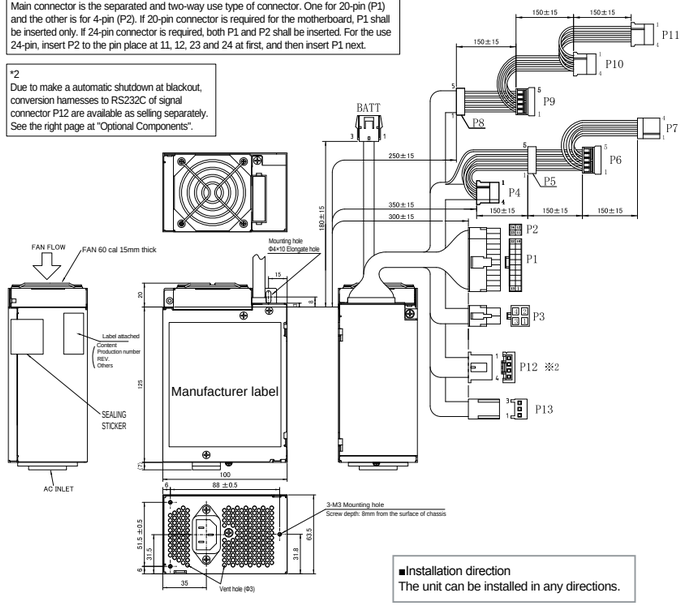
Outline Drawing / Output Harness

NSP6F-220P-S10

*1
Main connector is the separated and two-way use type of connector. One for 20-pin (P1) and the other is for 4-pin (P2). If 20-pin connector is required for the motherboard, P1 shall be inserted only. If 24-pin connector is required, both P1 and P2 shall be inserted. For the use 24-pin, insert P2 to the pin place at 11, 12, 23 and 24 at first, and then insert P1 next.

*2
Due to make a automatic shutdown at blackout, conversion harnesses to RS232C of signal connector P12 are available as selling separately. See the right page at "Optional Components".



■Installation direction
The unit can be installed in any directions.

*Dimensional tolerance shall be ±1 unless otherwise specified.

		PIN No.	FUNCTION	WIRE COLOR	WIRE TYPE	CONECTOR TYPE
(MAIN)	P1	1	3.3V	Orange	UL1007 AWG18	Housing: P1(1~10,13~22pin) : CP-01120030-C (Cvilux) P2(11,12,23,24pin) : CP-01104030-C (Cvilux) Terminal: 11pin : CP-01100105(Cvilux) Other pin : CP-01100102(Cvilux) or equivalent *1
		2	3.3V	Orange	UL1007 AWG18	
		3	GND	Black	UL1007 AWG18	
		4	5V	Red	UL1007 AWG18	
		5	GND	Black	UL1007 AWG18	
		6	5V	Red	UL1007 AWG18	
		7	GND	Black	UL1007 AWG18	
		8	PWR_OK	Gray	UL1007 AWG22	
		9	5VSB	Purple	UL1007 AWG18	
	P2	10	12V	Yellow	UL1007 AWG18	
		11	12V	Yellow	UL1007 AWG18	
		12	3.3V	Orange	UL1007 AWG18	
	P1	13	3.3V (3.3V SENSING)	Orange	UL1007 AWG22	
		14	-12V	Blue	UL1007 AWG18	
		15	GND	Black	UL1007 AWG18	
		16	PS_ON#	Green	UL1007 AWG22	
		17	GND	Black	UL1007 AWG18	
		18	GND	Black	UL1007 AWG18	
		19	GND	Black	UL1007 AWG18	
		20	N.C.			
		21	5V	Red	UL1007 AWG18	
		22	5V	Red	UL1007 AWG18	
	P2	23	5V	Red	UL1007 AWG18	
		24	GND	Black	UL1007 AWG18	
(12V Power)	P3	1	GND	Black	UL1007 AWG18	Housing: CP-01104030(Cvilux) Terminal: CP-01100102(Cvilux) or equivalent
		2	GND	Black	UL1007 AWG18	
		3	12V	Yellow	UL1007 AWG18	
		4	12V	Yellow	UL1007 AWG18	
(Peripheral)	P4, P10	1	12V	Yellow	UL1007 AWG18	Housing: LCP-04(JST) Terminal: SLC-22T-2.0(JST) or equivalent
		2	GND	Black	UL1007 AWG18	
		3	GND	Black	UL1007 AWG18	
		4	5V	Red	UL1007 AWG18	
	P11	1	12V	Yellow	UL1007 AWG18	Housing: LCP-04(JST) Terminal: SLC-21T-2.0(JST) or equivalent
		2	GND	Black	UL1007 AWG18	
		3	GND	Black	UL1007 AWG18	
		4	5V	Red	UL1007 AWG18	
(Serial ATA)	P5 P8	Wire 1	12V	Yellow	UL1007 AWG18	Housing: C194PFIA1A0(Cvilux) Terminal: C194PFIC010(Cvilux) or equivalent
		Wire 2	GND	Black	UL1007 AWG18	
		Wire 3	5V	Red	UL1007 AWG18	
		Wire 4	GND	Black	UL1007 AWG18	
		Wire 5	3.3V	Orange	UL1007 AWG18	
	P6 P9	Wire 1	12V	Yellow	UL1007 AWG18	Housing: C194PF00100(Cvilux) Terminal: 5pin : C194T03APP0 Other pin: (Cvilux) C194TA3APP0(Cvilux) or equivalent
		Wire 2	GND	Black	UL1007 AWG18	
		Wire 3	5V	Red	UL1007 AWG18	
		Wire 4	GND	Black	UL1007 AWG18	
		Wire 5	3.3V	Orange	UL1007 AWG18	
(Floppy)	P7	1	5V	Red	UL1007 AWG20	Housing: 171822-4(AMP) Terminal: 170204-1(AMP) or equivalent
		2	GND	Black	UL1007 AWG20	
		3	GND	Black	UL1007 AWG20	
		4	12V	Yellow	UL1007 AWG20	
(RS-232C *2 Signal)	P12	1	GND	Black	UL1007 AWG22	Housing: XAP-04V-1(JST) Terminal: SXA-001T-P0.6(JST) or equivalent
		2	SHUT DOWN	Yellow	UL1007 AWG22	
		3	AC FAIL	Blue	UL1007 AWG22	
		4	BATT LOW	White	UL1007 AWG22	
(FAN M Signal)	P13	1	GND	Black	UL1007 AWG22	Housing: C12103S0000(Cvilux) Terminal: C131T021BE0(Cvilux) or equivalent
		2	N.C.			
		3	FAN M	Purple	UL1007 AWG22	
(Battery Input) Connection	BATT	1	BATT+	Red	UL1015 AWG14	Housing: VLR-03VF(JST) Terminal: L.2pin SVM-61T-P2.0(JST) 3pin SVM-42T-P2.0(JST) or equivalent
		2	BAT-	Black	UL1015 AWG14	
		3	TH	White	UL1015 AWG22	

NSP6F-220P-T10

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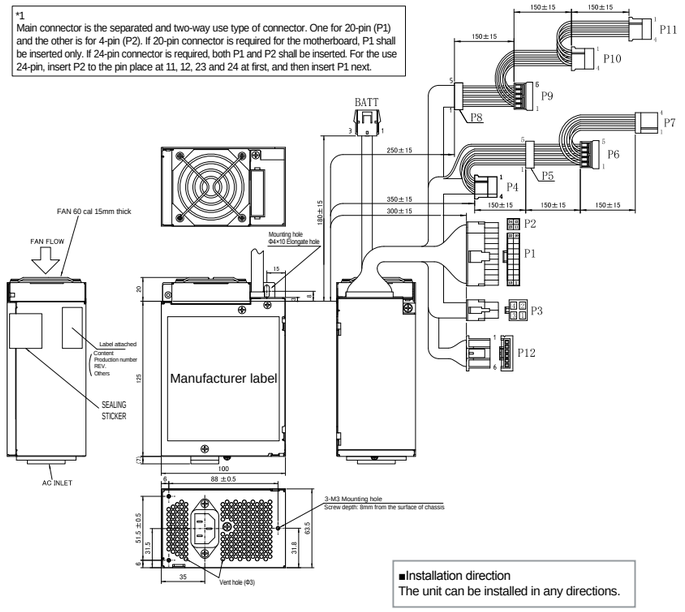

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*Dimensional tolerance shall be ±1 unless otherwise specified.

		PIN No.	FUNCTION	WIRE COLOR	WIRE TYPE	CONECTOR TYPE
(MAIN)	P1	1	3.3V	Orange	UL1007 AWG18	Housing: P1(1~10,13~22pin) : CP-01120030-C (Cvilux) P2(11,12,23,24pin) : CP-01104030-C (Cvilux) Terminal: 11pin : CP-01100105(Cvilux) Other pin : CP-01100102(Cvilux) or equivalent *1
		2	3.3V	Orange	UL1007 AWG18	
		3	GND	Black	UL1007 AWG18	
		4	5V	Red	UL1007 AWG18	
		5	GND	Black	UL1007 AWG18	
		6	5V	Red	UL1007 AWG18	
		7	GND	Black	UL1007 AWG18	
		8	PWR_OK	Gray	UL1007 AWG22	
		9	5VSB	Purple	UL1007 AWG18	
	P2	10	12V	Yellow	UL1007 AWG18	
		11	12V	Yellow	UL1007 AWG18	
		12	3.3V	Orange	UL1007 AWG18	
	P1	13	3.3V (3.3V SENSING)	Orange	UL1007 AWG22	
		14	-12V	Blue	UL1007 AWG18	
		15	GND	Black	UL1007 AWG18	
		16	PS_ON#	Green	UL1007 AWG22	
		17	GND	Black	UL1007 AWG18	
		18	GND	Black	UL1007 AWG18	
		19	GND	Black	UL1007 AWG18	
		20	N.C.			
		21	5V	Red	UL1007 AWG18	
		22	5V	Red	UL1007 AWG18	
	P2	23	5V	Red	UL1007 AWG18	
		24	GND	Black	UL1007 AWG18	
(12V Power)	P3	1	GND	Black	UL1007 AWG18	Housing: CP-01104030(Cvilux) Terminal: CP-01100102(Cvilux) or equivalent
		2	GND	Black	UL1007 AWG18	
		3	12V	Yellow	UL1007 AWG18	
		4	12V	Yellow	UL1007 AWG18	
(Peripheral)	P4, P10	1	12V	Yellow	UL1007 AWG18	Housing: LCP-04(JST) Terminal: SLC-22T-2.0(JST) or equivalent
		2	GND	Black	UL1007 AWG18	
		3	GND	Black	UL1007 AWG18	
		4	5V	Red	UL1007 AWG18	
	P11	1	12V	Yellow	UL1007 AWG18	Housing: LCP-04(JST) Terminal: SLC-21T-2.0(JST) or equivalent
		2	GND	Black	UL1007 AWG18	
		3	GND	Black	UL1007 AWG18	
		4	5V	Red	UL1007 AWG18	
(Serial ATA)	P5 P8	Wire 1	12V	Yellow	UL1007 AWG18	Housing: C194PFIA1A0(Cvilux) Terminal: C194PFIC010(Cvilux) or equivalent
		Wire 2	GND	Black	UL1007 AWG18	
		Wire 3	5V	Red	UL1007 AWG18	
		Wire 4	GND	Black	UL1007 AWG18	
		Wire 5	3.3V	Orange	UL1007 AWG18	
	P6 P9	Wire 1	12V	Yellow	UL1007 AWG18	Housing: C194PF00100(Cvilux) Terminal: 5pin : C194T03APP0 Other pin: (Cvilux) C194TA3APP0(Cvilux) or equivalent
		Wire 2	GND	Black	UL1007 AWG18	
		Wire 3	5V	Red	UL1007 AWG18	
		Wire 4	GND	Black	UL1007 AWG18	
		Wire 5	3.3V	Orange	UL1007 AWG18	
(Floppy)	P7	1	5V	Red	UL1007 AWG20	Housing: 171822-4(AMP) Terminal: 170204-1(AMP) or equivalent
		2	GND	Black	UL1007 AWG20	
		3	GND	Black	UL1007 AWG20	
		4	12V	Yellow	UL1007 AWG20	
(Signal)	P12	1	GND	Black	UL1007 AWG22	Housing: XAP-04V-1(JST) Terminal: SXA-001T-P0.6(JST) or equivalent
		2	SHUT DOWN	Yellow	UL1007 AWG22	
		3	AC FAIL	Blue	UL1007 AWG22	
		4	BATT LOW	White	UL1007 AWG22	
		5	N.C.			
		6	FAN M	Purple	UL1007 AWG22	
(Battery Input) Connection	BATT	1	BAT+	Red	UL1015 AWG14	Housing: VLR-03VF(JST) Terminal: L.2pin SVM-61T-P2.0(JST) 3pin SVM-42T-P2.0(JST) or equivalent
		2	BAT-	Black	UL1015 AWG14	
		3	TH	White	UL1015 AWG22	

Optional Components Sold Separately

RS232C Conversion Harness

Page	Picture	Specification	Compatible Pin Assignments
	WH-10RF04XAR-150	Type 1 Wire length: 150±10 (Polarizing key) Connect to P12 Type 1	The pin assignments of the serial port connector (internal connector) on mother board.
	WH-10RF04XAR-150-01	Type 2 150±10 (Polarizing key) NSP6F-220P-S10 P12 Type 2	The pin assignments of the serial port connector (internal connector) on mother board.

Type 1 — WIRE

PIN No.	FUNCTION	COLOR/TYPE		CONNECTOR TYPE
1	BATT LOW(DCD)	White	UL1007 AWG#24	Housing: RF-10(JST) Terminal: RF-SC2210(JST) Polarizing key PK-RF-1(JST) or equivalent
4	SHUT DOWN	Yellow	UL1007 AWG#24	
5	GND	Black	UL1007 AWG#24	
8	AC FAIL(CTS)	Blue	UL1007 AWG#24	
10	(Polarizing key)			
Other	N.C.	--	--	

Type 1 pin assignments

DCD	1	2	DSR
RXD(SIN)	3	4	RTS
TXD(SOUT)	5	6	CTS
DTR	7	8	RI
GND	9		

Type 2 — WIRE

PIN No.	FUNCTION	COLOR/TYPE		CONNECTOR TYPE
1	BATT LOW(DCD)	White	UL1007 AWG#24	Housing: RF-10(JST) Terminal: RF-SC2210(JST) Polarizing key PK-RF-1(JST) or equivalent
4	GND	Black	UL1007 AWG#24	
5	SHUT DOWN(DTR)	Yellow	UL1007 AWG#24	
8	AC FAIL(CTS)	Blue	UL1007 AWG#24	
10	(Polarizing key)			
Other	N.C.	--	--	

Type 2 pin assignments

DCD	1	2	RXD(SIN)
TXD(SOUT)	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9		

*Only NSP6F-220P-S10 can connect them.
*Harnesses for automatic shutdown at blackout.
Please select the compatible conversion harness for RS232C to the pin assignments of serial port connector for your motherboard.

Battery Package

Page	Picture	Model	Type	Shape (size)	Backup Time
P.406		BP03A-H16/2.5L (no case)	Ni-MH	3.5 inch bay size (W×D×H=92.5×159.5×23.7 mm)	Time (minute) 30 20 10 0 / 50 60 70 80 90 100 Load (W)
P.406		BS03A-H16/2.5L (with case)	Ni-MH	3.5-inch bay fixed type (W×D×H=101.5×180×26.5 mm)	Time (minute) 30 20 10 0 / 50 60 70 80 90 100 Load (W)

*The backup time is a reference value at initial use; it is not a guaranteed value.

Cable

Picture	Model	Type	Description
	WH2753	AC power cord	125 VAC 12A [PSE]
	WH2753-02	AC power cord	125 VAC 12A (tracking resistance type) [PSE]

Software

Picture	Model	Type	Description
	NSP Pro 2	Automatic shutdown software	Dedicated to Windows 2000 / XP / Vista / 7

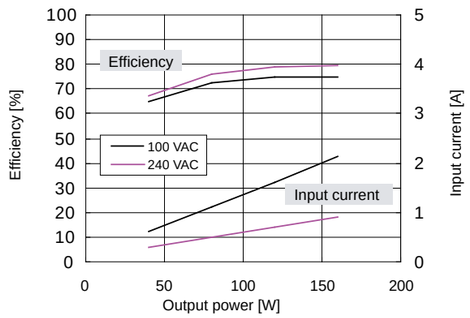
*Free software "NSP Pro 2" available at our web-site
*The UPS service of Windows 2000 and XP available

Other Optional Components

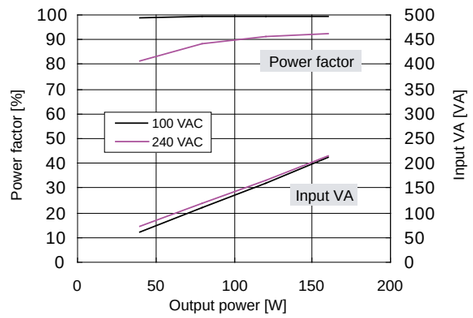
Model	Description	Model	Description
ACC2637	Automatic startup unit	WH5105	12V 4-pin connector conversion harness (80mm)
WH2820	20-pin extension harness (600mm)	WH5105-02	12V 4-pin connector conversion harness (320mm)
WH2747	20-pin extension harness (450mm)	WH5055	AT connector conversion harness
WH2892-02	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

Characteristics Data NSP6F-220P-S10 (Examples of actual measurement)

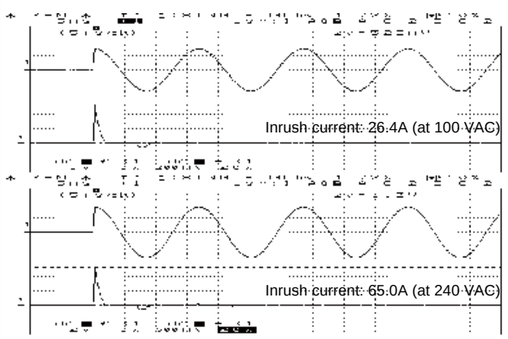
● Fig.5 Efficiency / Input Current vs. Output Power



● Fig.6 Power Factor / Input VA vs. Output Power



● Fig.7 Inrush Current



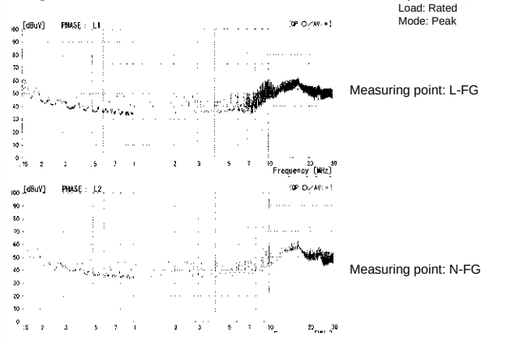
● Fig.8 Leakage Current

Input: 100 / 200 / 240 VAC
Load: Rated and min. load

	Rated load	Min. load
100 VAC	0.22mA	0.19mA
200 VAC	0.39mA	0.38mA
240 VAC	0.49mA	0.49mA

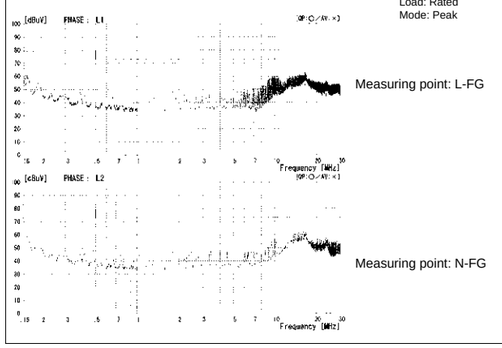
● Fig.9 Conducted Emission at 100 VAC

Input: 100 VAC
Load: Rated
Mode: Peak



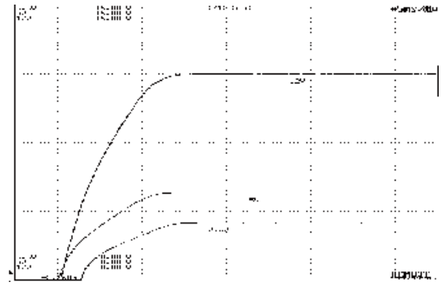
● Fig.10 Conducted Emission at 230 VAC

Input: 230 VAC
Load: Rated
Mode: Peak



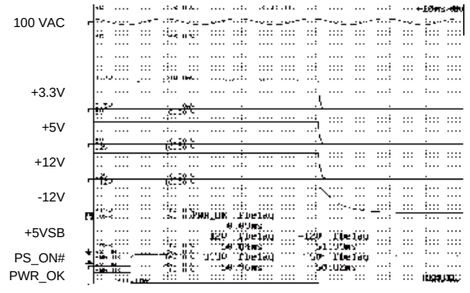
● Fig.11 Rising Characteristics at 100 VAC

Input: 100 VAC
Load: Rated
Time axis: 5ms/DIV



● Fig.12 Falling Characteristics at 100 VAC when REMOTE goes Off

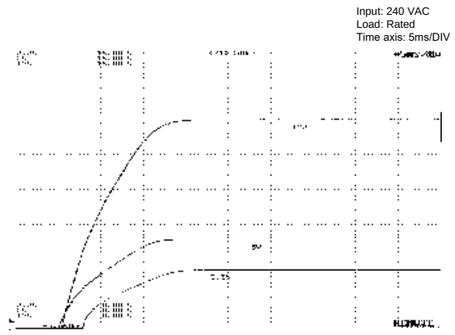
Input: 100 VAC
Load: Rated
Time axis: 10ms/DIV



Characteristics Data NSP6F-220P-S10 (Examples of actual measurement)

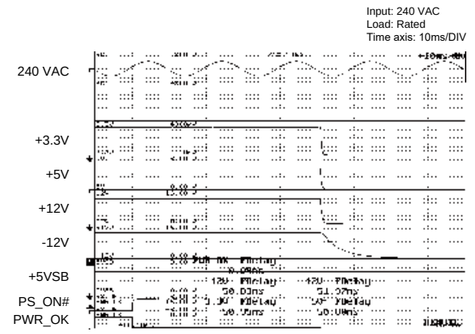
● Fig.13 Rising Characteristics at 240 VAC

Input: 240 VAC
Load: Rated
Time axis: 5ms/DIV



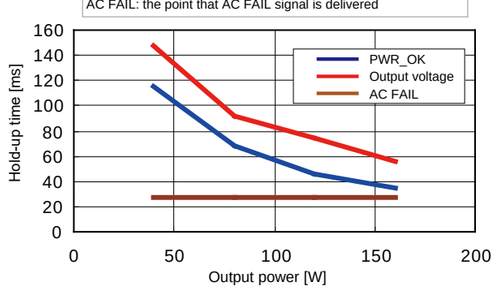
● Fig.14 Falling Characteristics at 240 VAC when REMOTE goes Off

Input: 240 VAC
Load: Rated
Time axis: 10ms/DIV



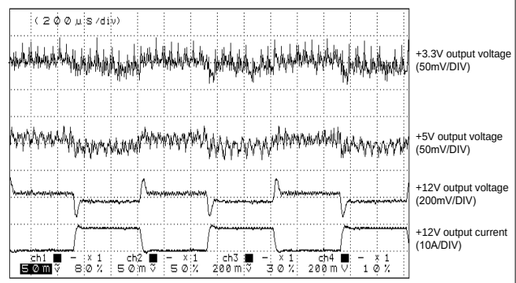
● Fig.15 Output Hold-up Time vs. Output Power

PWR_OK: the point that PWR_OK signal goes to "L"
Output voltage: the point any output voltage decreases to 95% except +5VSB
AC FAIL: the point that AC FAIL signal is delivered



● Fig.16 Dynamic Load Fluctuation Characteristics at 1kHz

Input: 100 VAC
Load: Rated
Time axis: 200μs/DIV



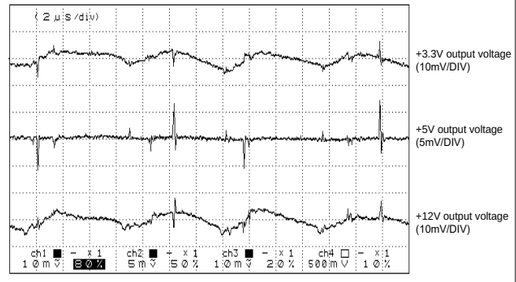
● Fig.17 Output Voltage Regulation

Output	Min. load	Rated load	Peak load
+12V output	0A	8A	14A
+5V output	0A	7A	10A
+3.3V output	0A	6A	10A

AC input voltage	85 VAC	100 VAC	132 VAC	176 VAC	240 VAC	264 VAC
+3.3V output (min. load)	3.342 V	3.341 V	3.341 V	3.341 V	3.340 V	3.340 V
+3.3V output (rated load)	3.281 V	3.281 V	3.281 V	3.281 V	3.281 V	3.281 V
+3.3V output (peak load)	3.250 V	3.249 V	3.249 V	3.249 V	3.249 V	3.249 V
+5V output (min. load)	5.085 V	5.084 V	5.084 V	5.083 V	5.083 V	5.083 V
+5V output (rated load)	4.978 V	4.978 V	4.978 V	4.978 V	4.977 V	4.977 V
+5V output (peak load)	4.933 V	4.933 V	4.933 V	4.933 V	4.933 V	4.933 V
+12V output (min. load)	11.998 V	11.997 V	11.996 V	11.995 V	11.992 V	11.992 V
+12V output (rated load)	11.935 V	11.935 V	11.935 V	11.935 V	11.935 V	11.935 V
+12V output (peak load)	11.897 V	11.900 V	11.899 V	11.901 V	11.900 V	11.901 V

● Fig.18 Ripple and Spike Voltage

Input: 100 VAC
Load: Rated
Time axis: 2μs/DIV



● Fig.19 Ambient Temperature vs. Expected Service Life

■ Electrolytic capacitors

Input: 100 VAC
Load: Rated
Operating time: 24 consecutive hours

Intake air temp.	20°C	30°C	40°C
Expected service life (yr)	approx. 71	approx. 35	approx. 17

※ Lifetime shall be 15 years at longest due to deterioration of sealing plates.

■ Fan

Ambient temp.	20°C	30°C	40°C
Expected service life (yr)	approx. 8.6	approx. 8.6	approx. 8.6

● Fig.20 Over Current Protection (V-I Characteristic)