Desktop PC Power Supply HPCSA-570P-X2S

Model	Description	Stock
HPCSA-570P-X2S	———	Standard stock

■Model Name Coding

HPCSA - 570 P - X 2 S

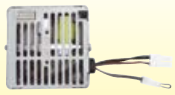
① ② ③ ④ ⑤ ⑥

1. Series name
2. Output power
3. Peak power available
4. ATX output
5. +3.3V output equipped
6. Standard

Features

- 80PLUS BRONZE approved ATX power supply
- Double-sided PCB with plated through hole suitable for industrial use.
- High efficiency with synchronous rectification circuit
- Min. load current is 0A for all outputs.
- Safety standard certified (IEC/UL/CSA60950-1)
- By building in the thermal-sensing variable speed fan, noise reduction can be realised.
- Less than 0.5W standby power complying with ErP directive

News Additional output unit can be fitted



Additional output unit

By connecting the optional output unit on HPCSA-570-X2S, +24V or +48V can be output from isolated ATX outputs simultaneously. Refer to the output specification below.

Refer to “Product Page Guideline” on p.11

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

Input

AC input	85 - 264V (worldwide range, PFC mounted)

Output

Output voltage	+3.3V	+5V	+12V	-12V	+5VSB
Max. current / max. power (continuous)	20A	24A	30A	0.5A	2A
	Total 150W		360W	6W	10W
	Total 390W				
	Total 400W				
Peak current / peak power (5 sec max.)	30A	30A	35A	0.5A	3A
	Total 200W		420W	6W	15W
	Total 555W				
	Total 570W				
Min. current	0A	0A	0A	0A	0A

Output / Dimensions (with additional output unit)

Model	HPCSA-570P-X2S-24V						HPCSA-570P-X2S-48V					
Output voltage	+3.3V	+5V	+12V	-12V	+5VSB	+24V	+3.3V	+5V	+12V	-12V	+5VSB	+48V
Max. current / max. power (continuous)	20A	24A	25A	0.5A	2.0A	8.3A	20A	24A	16.5A	0.5A	2.0A	4.0A
	150W		300W	6W	10W	200W	150W		198W	6W	10W	192W
	300W						199.1W					
	400W						305.1W					
Peak current / peak power (5 sec max.)	30A	30A	35A	0.5A	3A	12.5A	30A	30A	35A	0.5A	3.0A	4.0A
	200W		420W	6W	15W	300W	200W		420W	6W	15W	192W
	555W						555W					
	570W						570W					
Min. current	0A	0A	0A	0A	0A	0A	0A	0A	0A	0A	0A	0A
Dimensions	150(W)×86(H)×175(D)mm											

*HPCSA-570P-X2S-48V is safety approved

Dimensions

W×H×D (mm)	150×86×140 (PS/2 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

Refer to p.81 “Detachable Output Harness” for details

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		80% typ. (100 VAC), 85% typ. (240 VAC) *Characteristic data: Fig.5					At rated input/output, 80PLUS BRONZE approved
	Power Factor		96% min. (100 VAC), 90% min. (240 VAC) *Characteristic data: Fig.6					At rated input/output
	Inrush Current		31A peak (100 VAC), 75A peak (240 VAC) *Characteristic data: Fig.7					Reclosing interval should be 15 sec. or longer at rated input/output. The inrush current into X-capacitor of input noise filter is not specified unless its period is more than 100μs.
	Input Current		4.8A typ. (100 VAC), 2.1A typ. (240 VAC) *Characteristic data: Fig.6					
Output	Rated Voltage		+3.3V	+5V	+12V	-12V	+5VSB	
	Rated Current		10A	10A	25A	0.5A	2A	Reference value during the measurement of input/output characteristics
	Max. Current / Power		20A	24A	30A	0.5A	2A	Max. output power: 400W
			150W max.		360W	6W	10W	
			390W max.					
			400W max.					
	Peak Current / Power		30A	30A	35A	0.5A	3A	Peak output power: 570W Time: 5 sec or less Duty ratio of repetitive load: 10% or less *Refer to Fig.18
			200W		420W	6W	15W	
			555W max.					
			570W max.					
	Min. Current		0A	0A	0A	0A	0A	
	Total Voltage Accuracy (%)		±5 max.	±5 max.	±5 max.	±5 max.	±5 max.	*Refer to Fig.4
	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 at the edge. 47μF electrolytic capacitor and 0.1μF ceramic capacitor are 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)	27 min.	31 min.	37 min.	Short protection		3.3V: 5V max., others no load 5V: 3.3V max., others no load Others: all CHs rated load
		Method	All outputs except for +5VSB shutdown			Hold down current limiting	All outputs shutdown	
		Recovery	Reclosing AC input, or switching PS_ON# signal from 'H' to 'L'			Automatic recovery		
	Overvoltage Protection	OVP Point (V)	3.76 - 4.3	5.74 - 7.0	13.4 - 15.6	-		
		Method	All outputs except for +5VSB shutdown			-		
		Recovery	Reclosing AC input, or switching PS_ON# signal from 'H' to 'L'			-		
Environment	Operating Temp. / Humidity		0 to 60°C* / 10 to 90%					No condensation *Refer to Fig.3
	Storage Temp. / Humidity		-20 to 70°C / 10 to 95%					No condensation
	Vibration		Acceleration amplitude: 2g (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		AC input - FG/DC output: 1500 VAC for 1 minute					Cut-off current: 10mA
	Insulation Resistance		AC input - FG/DC output: 50MΩ min.					at 500 VDC
	Leakage Current		0.5mA max. (100 VAC) / 1mA max. (200 VAC) / 1.2mA 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 10 minutes 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-B, FCC-B, EN55022-B compliant *Characteristic data: Fig.9 and 10					Measured by single unit
	Harmonic Current Regulation		IEC61000-3-2 (Ver.2.1) Class D, EN61000-3-2 (A14) Class D compliant					At rated input/output
Others	Safety Standards		UL60950, CSA60950 (c-UL), CCC certified, EN60950 compliant, PSE (ordinance clause 2) compliant, CE Marking					
	Cooling System		Forced air cooling: thermal-sensing variable speed fan embedded					Fan rotates at low speed depending on the internal temperature of power supply even PS_ON# signal 'H'.
	Output Grounding		Connected chassis (FG)*					*It can be customized to connect to capacitor.
	Output Hold-up Time		PWR_OK holds up 16ms min. after AC failure *Characteristic data: Fig.15					At rated output
	Reliability Grade		FA (industrial equipment grade, double-sided PCB with plated through hole)					Follow our standard
	MTBF		70,000H min.					Based on EIAJ RCR-9102
	Weight		1.7kg typ.					
	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

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.

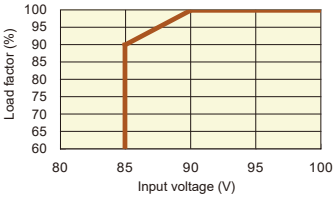


Fig.2 Duty Ratio

Peak current/power shall be 5 sec or less continuously. For repetitive loads, duty ratio shall be 10% or less.

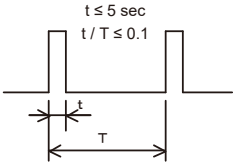


Fig.3 Temperature Derating

When the ambient temperature (near the airflow inlet) exceeds 45°C, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

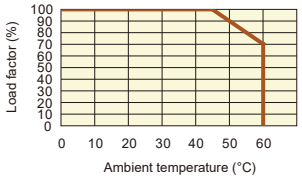
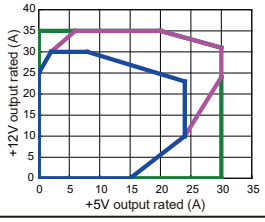
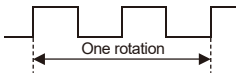


Fig.4 Cross Regulation

The total output voltage accuracy of CH2 (5V) and CH3 (12V) is defined by the combinatorial range shown the figure in Cross Regulation. It should be used within the combinatorial power between each CH.



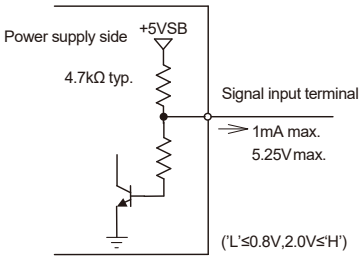
Signal Input / Output Specification Condition: at normal temperature and humidity unless otherwise specified

	Items	Specification	Note
Input Signal	Output ON / OFF Control Signal (PS_ON#)	+3.3V, +5V, +12V, and -12V outputs shutdown with 'H' or 'OPEN' input.	The pin 22 of MAIN1 connector
	+3.3V SENSE	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 2 of MAIN1 connector
	Fan Control Signal (FAN_C)	The control terminal of fan motor; the fan motor is forcibly rotated at full speed at 'L' input.	The pin 4 of SIG connector
Output Signal	Normal Output Signal (PWR_OK)	'H'signal is delivered at normal output (detection delay time: 100 - 500ms).	The pin 21 of MAIN1 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.	The pin 5 of SIG connector 

Signal Circuit

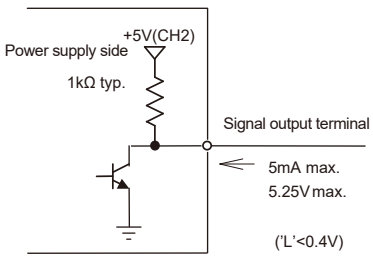
Input Signal Circuit

(PS_ON#)

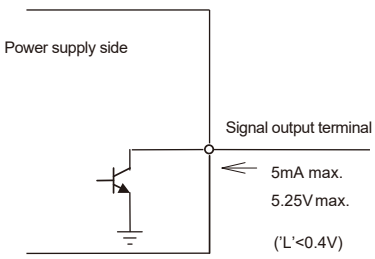


Output Signal Circuit

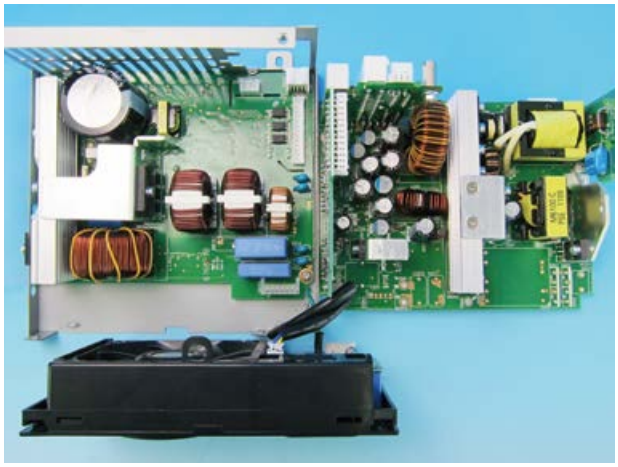
(PWR_OK)

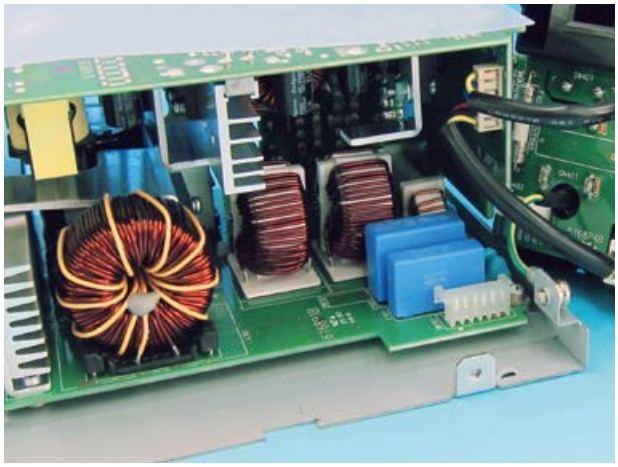


(FAN_M)

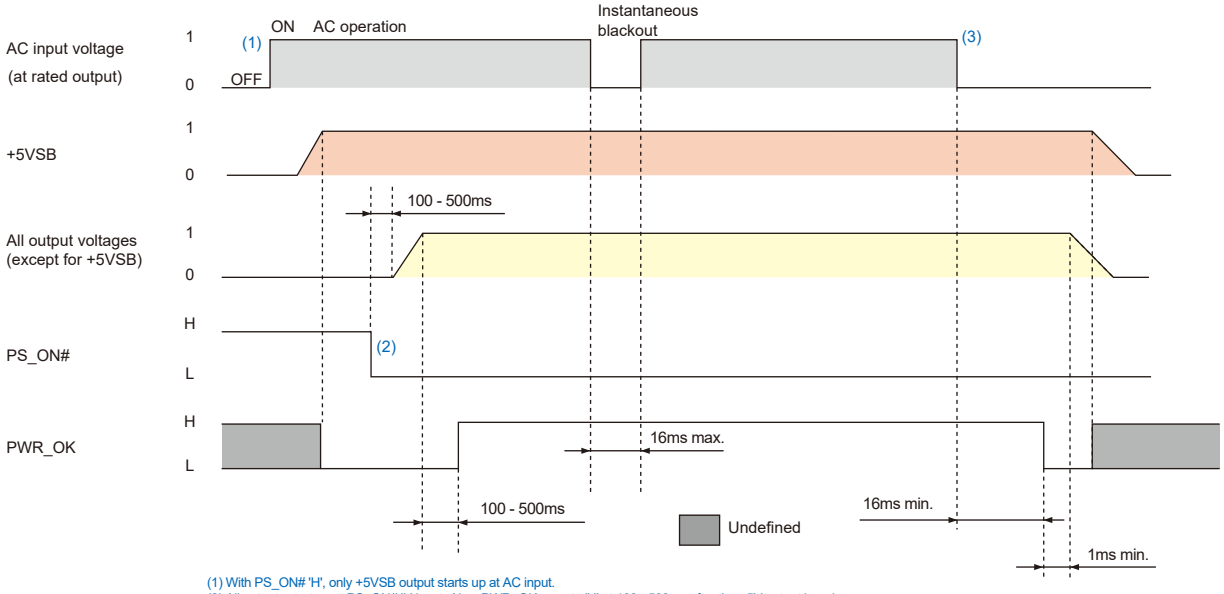


Internal Structure



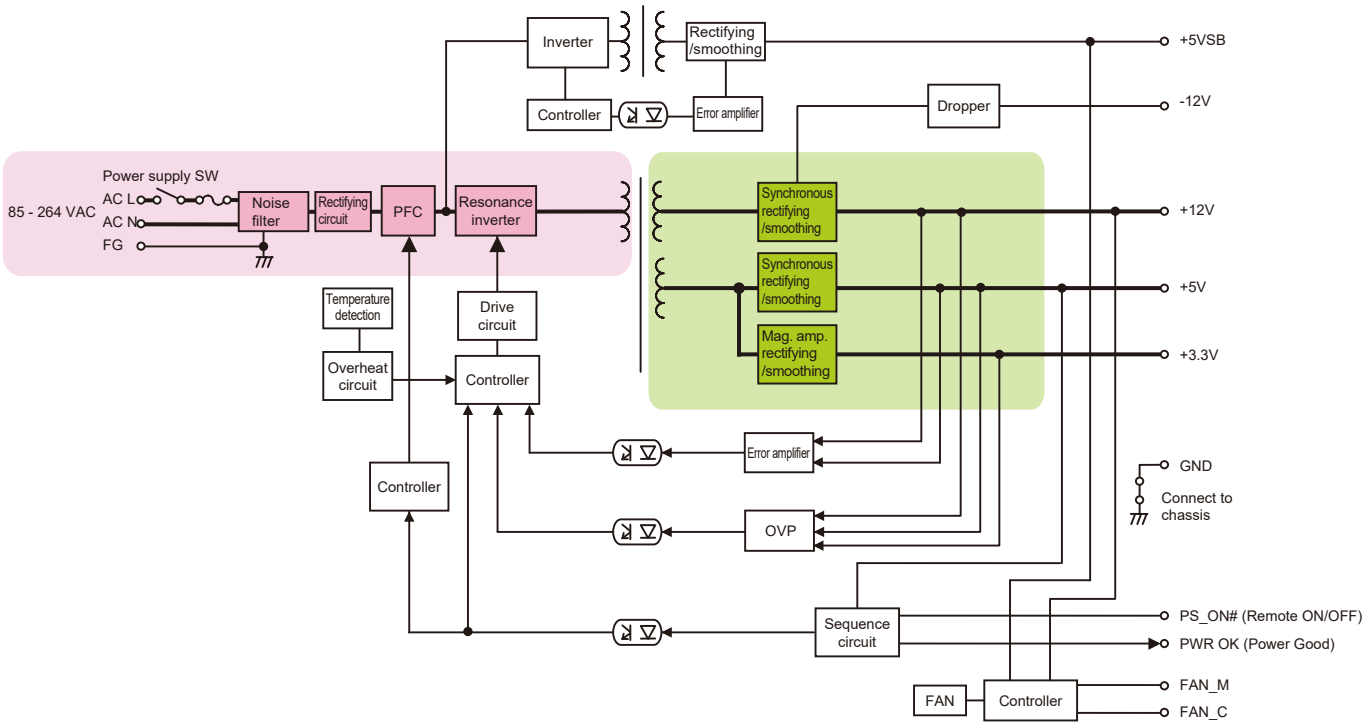


Sequence Diagram



(1) With PS_ON# 'H', only +5VSB output starts up at AC input.
(2) All outputs start up at PS_ON# 'L' input. Also, PWR_OK goes to 'H' at 100 - 500ms after the +5V output has risen.
(3) PWR_OK turns to 'L' after 16ms or longer from blackout. 1ms later than this event, the +5V output shuts down and another 1ms later followed by +5VSB shutdown.

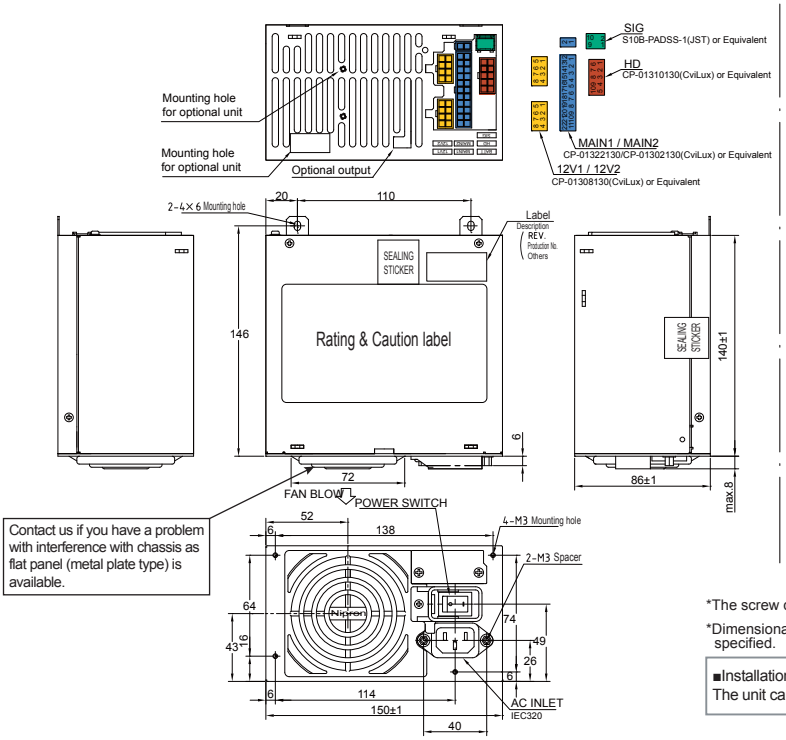
Block Diagram



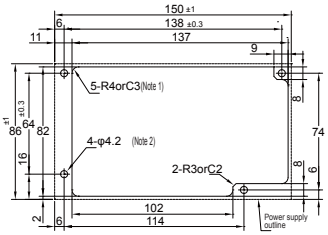
Outline Drawing

CN Name	PIN No.	FUNCTION	MAX.CURRENT
MAIN1	1	+3.3V	6 A
	2	+3.3V SE	-
	3	+12V	6 A
	4	+5V	6 A
	5	+5V	6 A
	6	COM	6 A
	7	COM	6 A
	8	COM	6 A
	9	COM	6 A
	10	-12V	0.6A
	11	+5VSB	4 A
	12	+3.3V	6 A
	13	+3.3V	6 A
	14	+12V	6 A
	15	+5V	6 A
	16	+5V	6 A
	17	COM	6 A
	18	COM	6 A
	19	COM	6 A
	20	COM	6 A
	21	PWR_OK	-
	22	PS_ON	-
MAIN2	1	+5V	6 A
	2	+3.3V	6 A

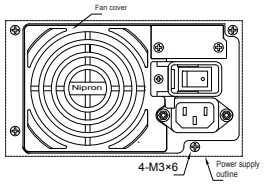
CN Name	PIN No.	FUNCTION	MAX.CURRENT
12V 1-2	1	COM	6 A
	2	COM	6 A
	3	COM	6 A
	4	COM	6 A
	5	+12V	6 A
	6	+12V	6 A
	7	+12V	6 A
	8	+12V	6 A
HD	1	+3.3V	6 A
	2	+5V	6 A
	3	COM	6 A
	4	COM	6 A
	5	+12V	6 A
	6	+3.3V	6 A
	7	+5V	6 A
	8	COM	6 A
	9	COM	6 A
	10	+12V	6 A
SIG	1	NC	-
	2	NC	-
	3	NC	-
	4	FAN_C	-
	5	FAN_M	5 mA
	6	PS_ON	5 mA
	7	COM	2 A
	8	+3.3V SE	-
	9	NC	-
	10	+5VSB	2 A



How to process the mounting holes(Recommended)



Note 1: Smaller dimension for R4 and C3 is acceptable.
Note 2: Threaded hole for mounting



When replacing a fan with power supply mounted to the chassis of PC, etc., process holes as specified.

*The screw depth of penetration into PSU is 12mm max.

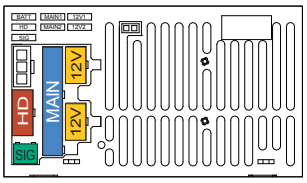
*Dimensional tolerance shall be ±0.5 unless otherwise specified.

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

Optional Components Sold Separately

Detachable Output Harness

Model	Length and Type of Connector	
Main power cable MAIN		
WH-M2022-500	MAIN 500±10 20-pin	
WH-M2022-300	MAIN 300±10 20-pin	
WH-M2422-500	MAIN 500±15 24-pin	
12V power cable 12V		
WH-V0808-500	12V 500±15 12V 8-pin	
WH-V0408-500	12V 500±15 12V 4-pin	
WH-VG208-500	12V 500±15 12V 4-pin, PCI-E 6-pin	
WH-VV208-500-02	12V 500±10 12V 8-pin, 12V 8-pin	
WH-VG208-500-02	12V 500±10 12V 8-pin, PCI-E 6-pin	
WH-G0808-500	12V 500±10 PCI-E 6+2-pin	
WH-GG208-500	12V 500±10 PCI-E 6-pin, PCI-E 6+2-pin	
HD power cable HD		
WH-PP610-850	HD 550±15, 150±15, 150±15	peripheral (HD)
WH-PS610-850	HD 550±15, 150±15, 150±15	FD
WH-PS710-850	HD 550±15, 150±15, 150±15, 850±15	S-ATA
SIG cable SIG		
WH-S0610-500	SIG 500±15 SIG-1	
WH-S0610-500-01	SIG 500±15 SIG-2	
WH-S0310-500	SIG 500±15 SIG-3	



Acceptable cable(s)

MAIN	12V	HD	SIG
1 model	2 models	1 model	1 model

Optional Components Sold Separately

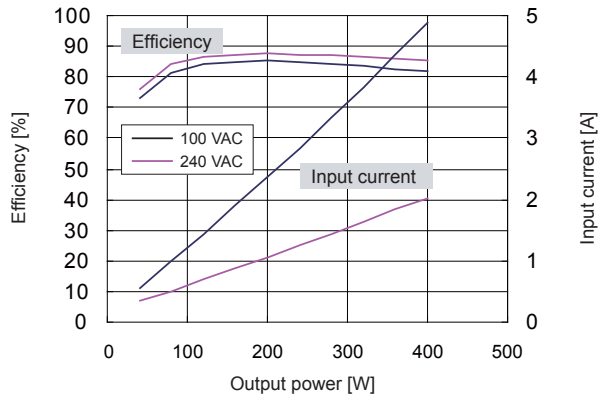
Cable			
Picture	*Model*	*Type*	*Description*
	WH2753	AC power cord	125 VAC 12A [PSE]
	WH2753-02	AC power cord	125 VAC 12A (tracking resistance type) [PSE]

Parts / Unit			
Picture	*Model*	*Type*	*Description*
	ACC2734	AC power cord retention clamp	It prevents the slipping of AC power cord (WH2753, WH2753-02)and operational mistakes of power switch. *In some cases, the clamp (ACC2734) might not be possible mounted to a commercial AC power cord.

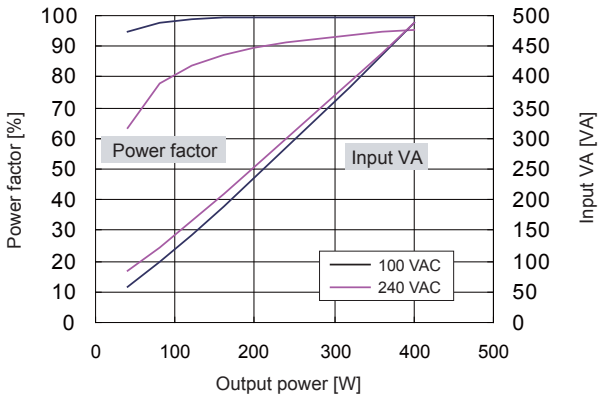
Other Optional Components			
Model	*Description*	*Model*	*Description*
ACC2637	Automatic startup unit	WH5105	12V 4-pin connector conversion harness (80mm)
WH2820	20-pin extension harness (600mm)	WH5105-02	12V 4-pin connector conversion harness (320mm)
WH2747	20-pin extension harness (450mm)	WH5055	AT 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 (Examples of actual measurement)

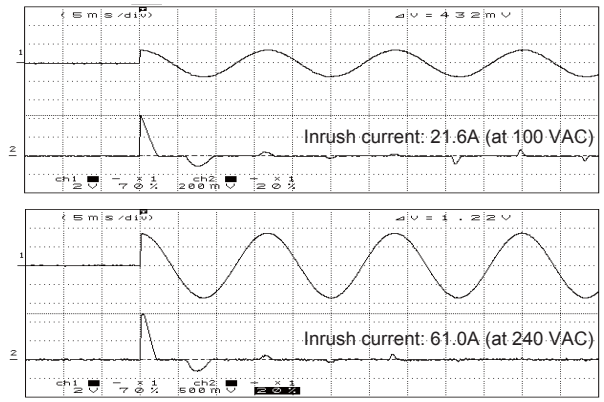
● Fig.5 Efficiency / Input Current vs. Output Power



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



● Fig.7 Inrush Current



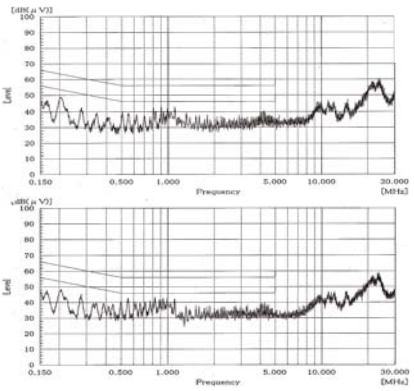
● Fig.8 Leakage Current

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

	Rated load	Min. load
100 VAC	0.18mA	0.17mA
200 VAC	0.30mA	0.29mA
240 VAC	0.35mA	0.35mA

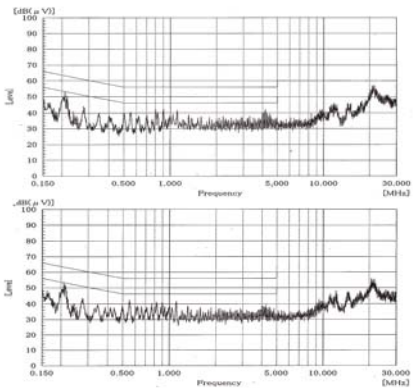
● Fig.9 Conducted Emission at 100 VAC

Input: 100 VAC
Load: Rated
Mode: Peak



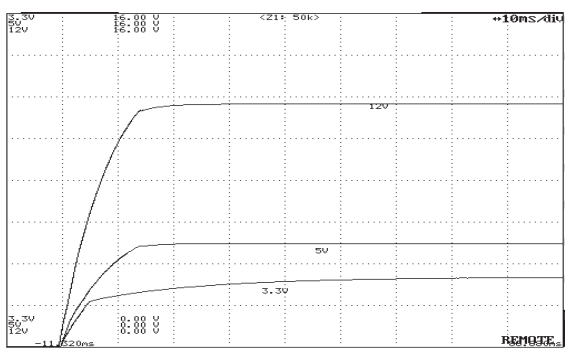
● Fig.10 Conducted Emission at 230 VAC

Input: 230 VAC
Load: Rated
Mode: Peak



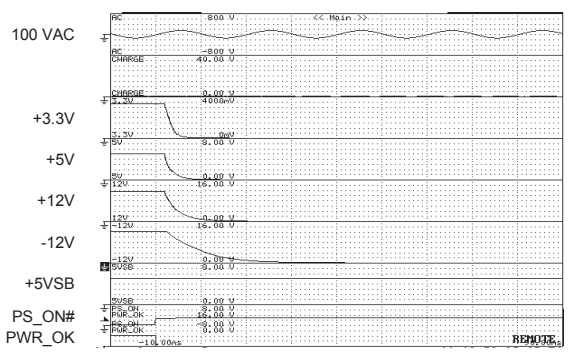
● Fig.11 Rising Characteristics at 100 VAC

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



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

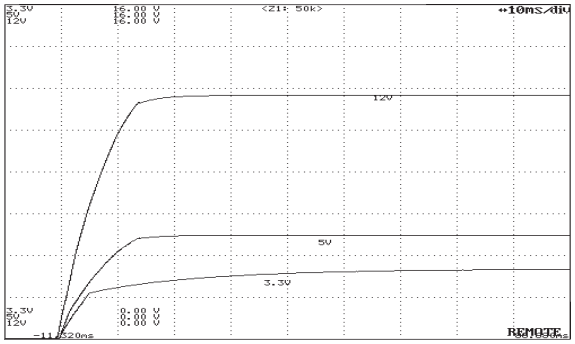
Input: 100 VAC
Load: Rated
Time axis: 10ms/DIV



Characteristics Data (Examples of actual measurement)

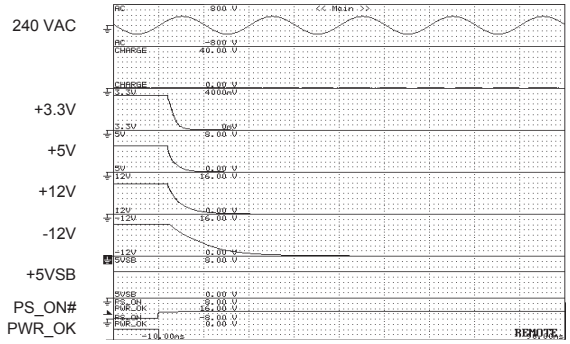
● Fig.13 Rising Characteristics at 240 VAC

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



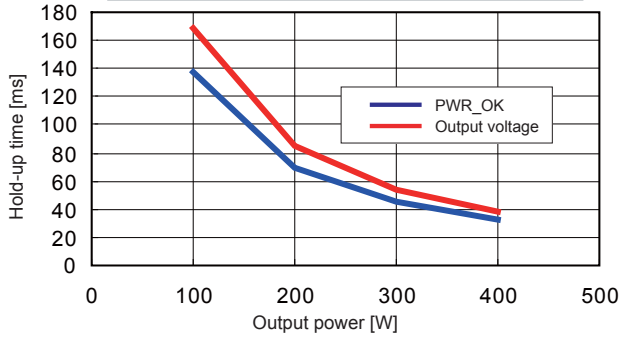
● Fig.14 Falling Characteristics at 240 VAC when REMOTE goes Off

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



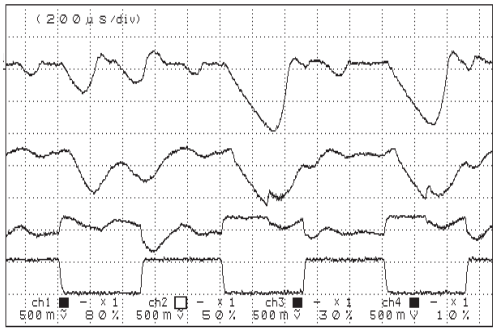
● Fig.15 Output Hold-up Time vs. Output Power

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



● Fig.16 Dynamic Load Fluctuation Characteristics at 1kHz

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



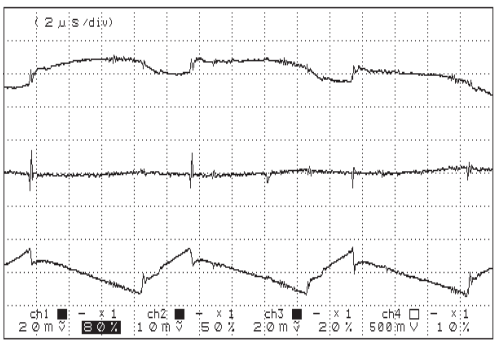
● Fig.17 Output Voltage Regulation

Output	Min. load	Rated load
+12V output	0A	25A
+5V output	0A	10A
+3.3V output	0A	10A

AC input voltage	85 VAC	100 VAC	132 VAC	176 VAC	240 VAC	264 VAC
+3.3V output (min. load)	3.311 V	3.311 V	3.311 V	3.308 V	3.308 V	3.308 V
+3.3V output (rated load)	3.303 V	3.303 V	3.303 V	3.299 V	3.298 V	3.298 V
+5V output (min. load)	5.072 V	5.073 V	5.073 V	5.073 V	5.072 V	5.072 V
+5V output (rated load)	5.009 V	5.009 V	5.010 V	5.008 V	5.009 V	5.009 V
+12V output (min. load)	12.028 V	12.027 V	12.026 V	12.014 V	12.015 V	12.014 V
+12V output (rated load)	11.982 V	11.982 V	11.980 V	11.978 V	11.976 V	11.976 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

Intake air temp.	20°C	30°C	40°C	45°C
Expected service life (yr)	approx. 65	approx. 32	approx. 16	approx. 11

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

■ Fan

Ambient temp.	20°C	30°C	40°C	45°C
Expected service life (yr)	approx. 13	approx. 13	approx. 13	approx. 11

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