

Desktop PC Power Supply HPCSA-570P-X2S

80PLUS & ErP Directive Compliant.
Low Power Consumption and High Efficiency ATX Power Supply !



ErP Directive
Standby power:
0.5W max.

RoHS Directive

HPCSA-570P-X2S



Standby Power
at 100 VAC at 230 VAC
0.08W 0.11W

ATX
Continuous Max. Peak Power
400W 570W

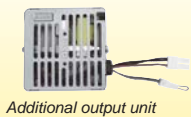
*Standby power is an example of actual measurement.

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

Features

- 80PLUS BRONZE approved ATX power supply
- Double-sided through hole PCB suitable for industrial use.
- High efficiency with synchronous rectification circuit
- Min. load current is 0A for all outputs.
- Safety standard approved (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



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.

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	30A	0.5A	2.0A	8.3A	20A	24A	16.5A	0.5A	2.0A	4.0A
	390W			200W			199.1W			192W		
	400W						305.1W					
Peak current / peak power (5 sec max.)	30A	30A	35A	0.5A	2.5A	12.5A	30A	30A	35A	0.5A	3.0A	4.0A
	507.5W			300W			555W			192W		
	580W						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

Refer to "Product Page Guideline" on p.13

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

Function



Input

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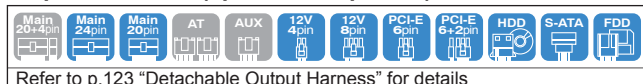
Output

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

Dimensions

W×H×D (mm)	150×86×140 (PS/2 size)
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Output connector (optional component)

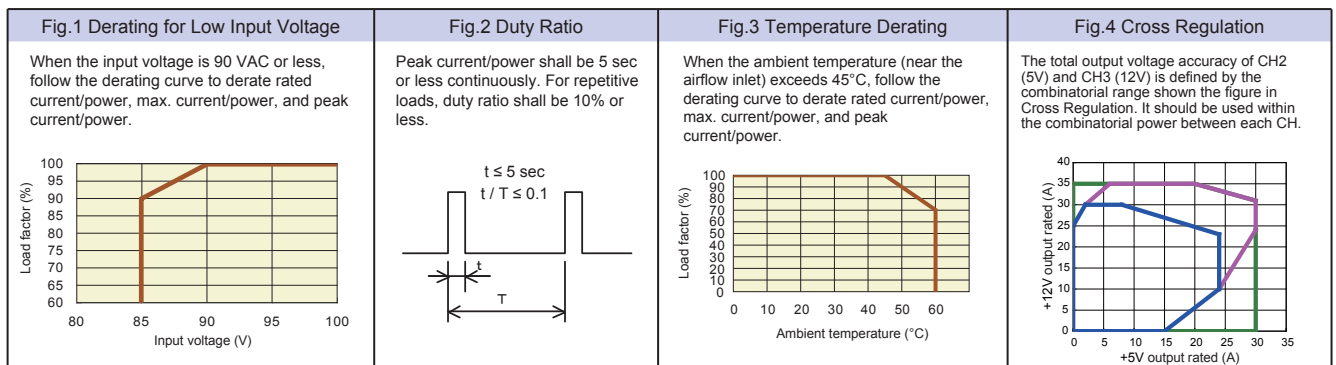


Refer to p.123 "Detachable Output Harness" for details

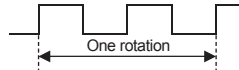
General Specification Condition: at normal temperature and humidity unless otherwise specified

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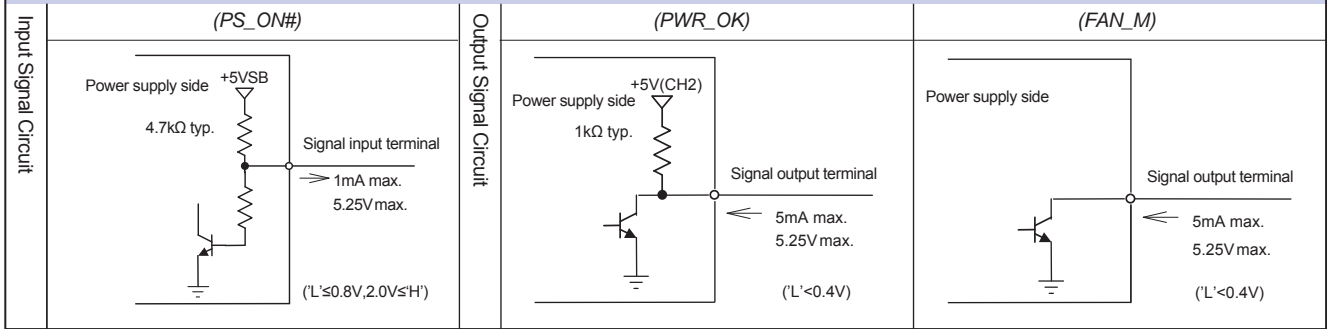
Items		Specification					Measurement conditions, etc.
AC Input	Rated Voltage	100 - 240 VAC (85* - 264 VAC)					Worldwide range, *Refer to Fig.1
	Input Frequency	50 / 60Hz					47 - 63Hz
	Efficiency	80% typ. (100 VAC), 85% typ. (240 VAC) *Characteristic data: Fig.5					At rated input/output, 80PLUS BRONZE 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	
		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 Standard	UL60950-1, CSA60950-1 (c-UL) approved EN60950, PSE (Paragraph 2) compliant, CE Marking (LVD, EMC)					
	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 through hole PCB)					Follow our standard
	MTBF	70,000H min.					Based on EIAJ RCR-9102
	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



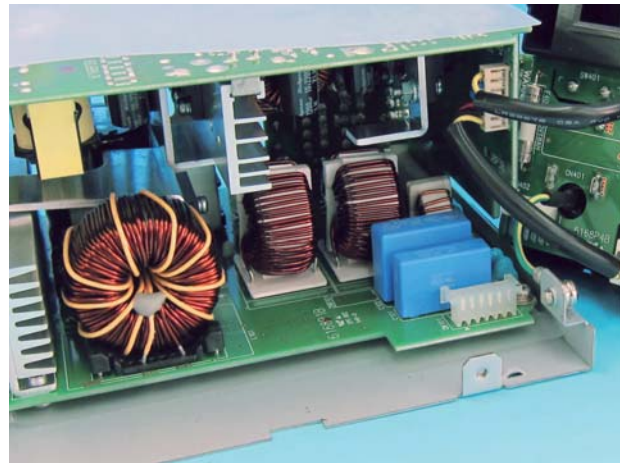
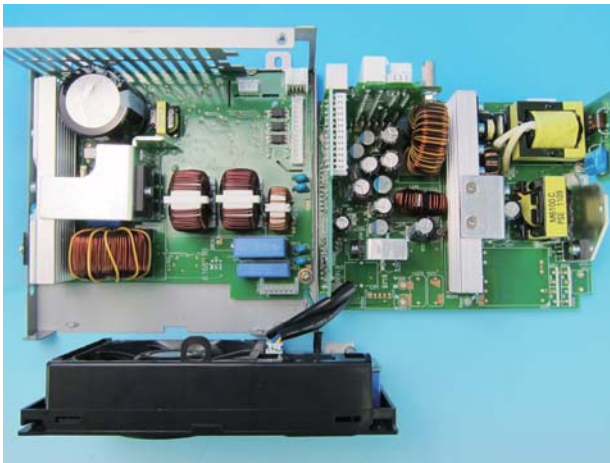
Signal Input / Output Specification Condition: at normal temperature and humidity unless otherwise specified

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 

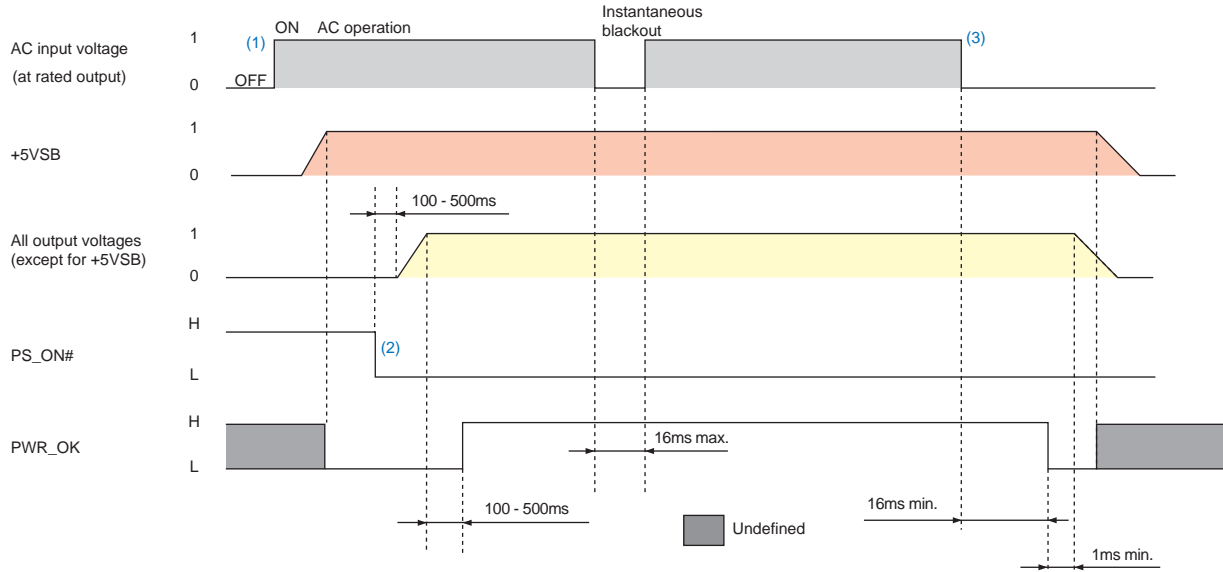
Signal Circuit



Internal Structure

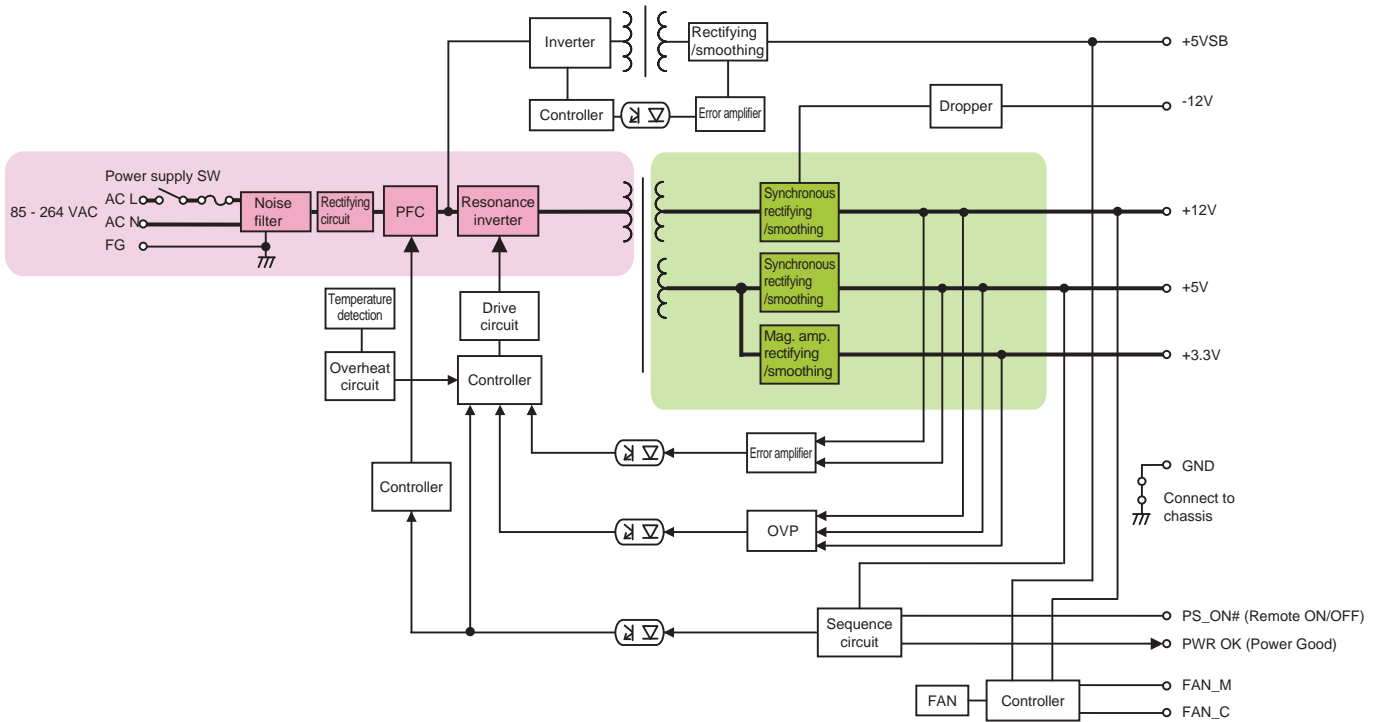


Sequence Diagram



- (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



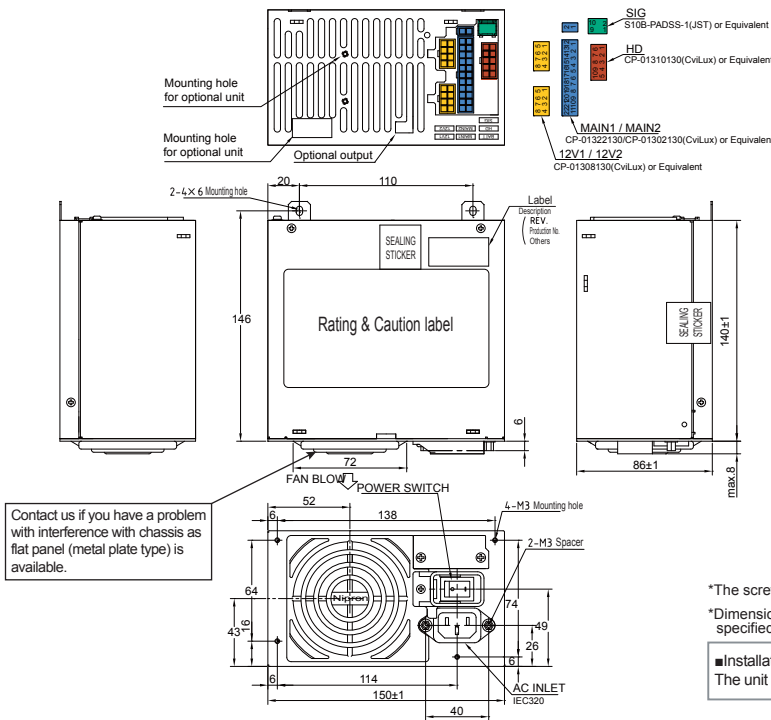
Outline Drawing

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Non-backup Power Supply

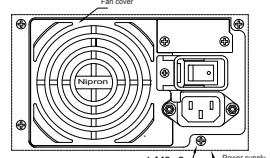
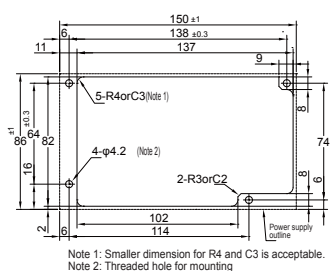
CN Name	PN No.	FUNCTION	MAX CURRENT
MAIN1	1	+3.3V	6 A
MAIN1	2	+3.3V SE	
MAIN1	3	+12V	6 A
MAIN1	4	+5V	6 A
MAIN1	5	+5V	6 A
MAIN1	6	COM	6 A
MAIN1	7	COM	6 A
MAIN1	8	COM	6 A
MAIN1	9	COM	6 A
MAIN1	10	-12V	0.8A
MAIN1	11	+5VSB	4 A
MAIN1	12	+3.3V	6 A
MAIN1	13	+3.3V	6 A
MAIN1	14	+12V	6 A
MAIN1	15	+5V	6 A
MAIN1	16	+5V	6 A
MAIN1	17	COM	6 A
MAIN1	18	COM	6 A
MAIN1	19	COM	6 A
MAIN1	20	COM	6 A
MAIN1	21	PWR_OK	
MAIN1	22	PS_ON	
MAIN2	1	+5V	6 A
MAIN2	2	+3.3V	6 A

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



Contact us if you have a problem with chassis as flat panel (metal plate type) is available.

How to process the mounting holes(Recommended)



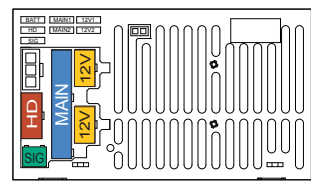
When replacing a fan with power supply mounted to the chassis of PC, etc., process holes as specified.

*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		Length and Type of Connector		Output Port Allocation	
Model					
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		
WH-VV208-500-02	12V	500±10	12V 8-pin		
WH-VG208-500-02	12V	500±10	12V 8-pin		
WH-VG208-500-02	12V	500±10	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		
WH-GG208-500	12V	500±10	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	S-ATA	
WH-PS710-850	HD	850±15			
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

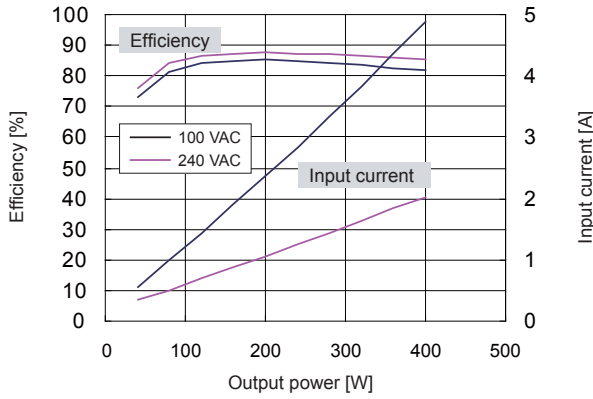
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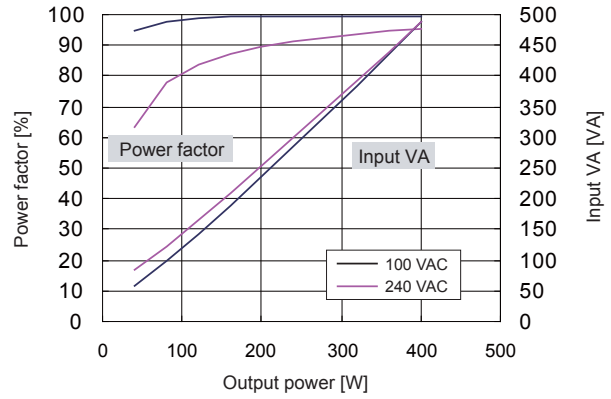
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Characteristics Data (Examples of actual measurement)

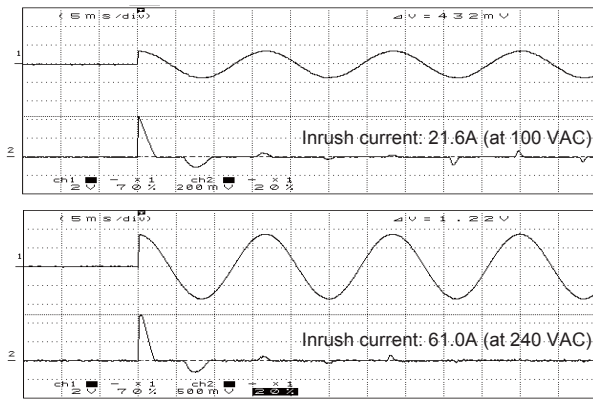
• Fig.5 Efficiency / Input Current vs. Output Power



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



• Fig.7 Inrush Current

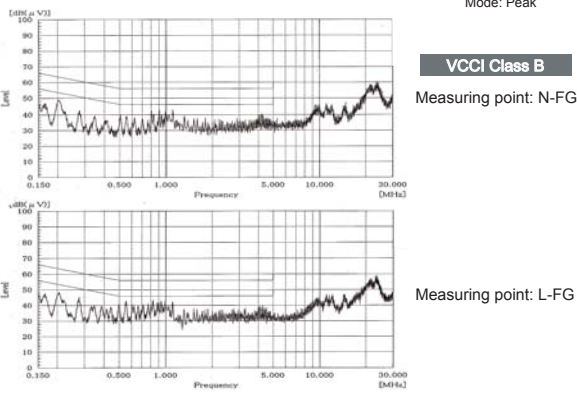


• Fig.8 Leakage Current

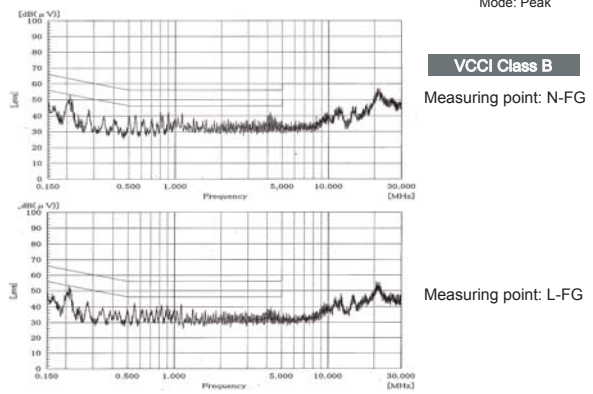
Input: 100 / 200 / 240 VAC
Load: Rated and min. load
Measurement conditions: IEC60950 compliant

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

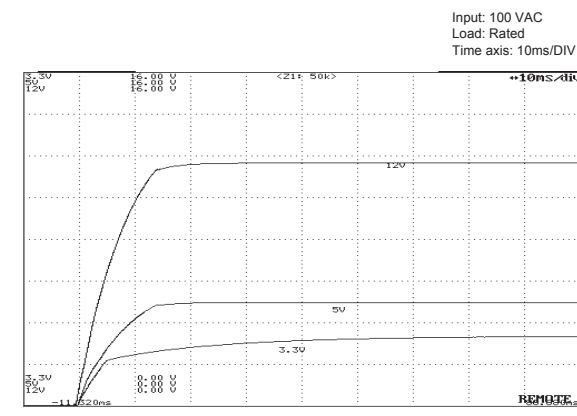
• Fig.9 Conducted Emission at 100 VAC



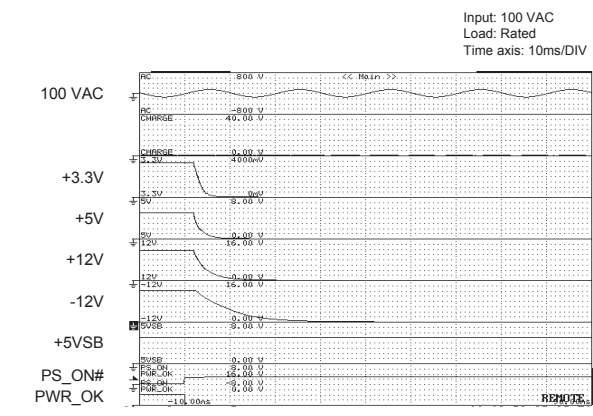
• Fig.10 Conducted Emission at 230 VAC



• Fig.11 Rising Characteristics at 100 VAC

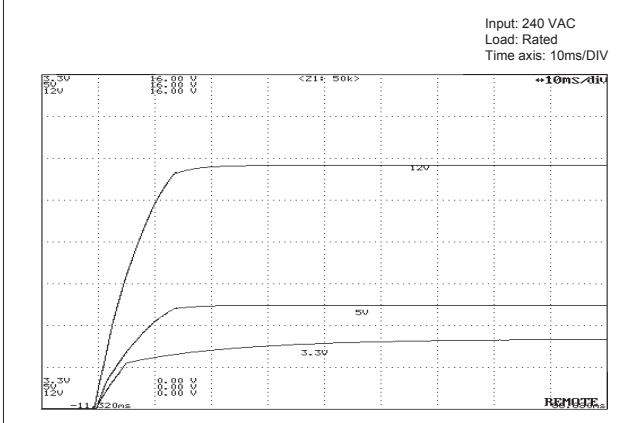


• Fig.12 Falling Characteristics at 100 VAC when REMOTE goes Off

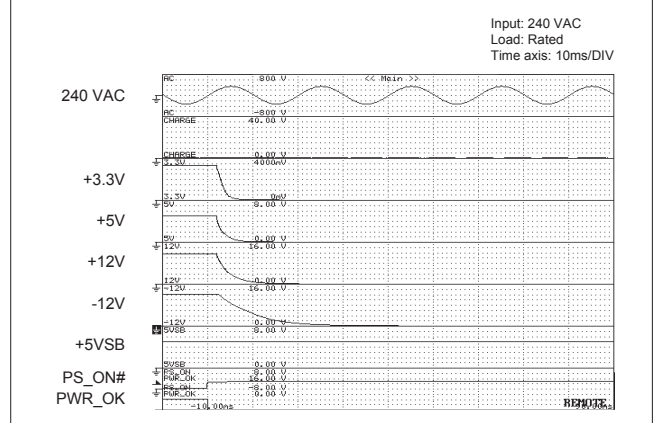


Characteristics Data (Examples of actual measurement)

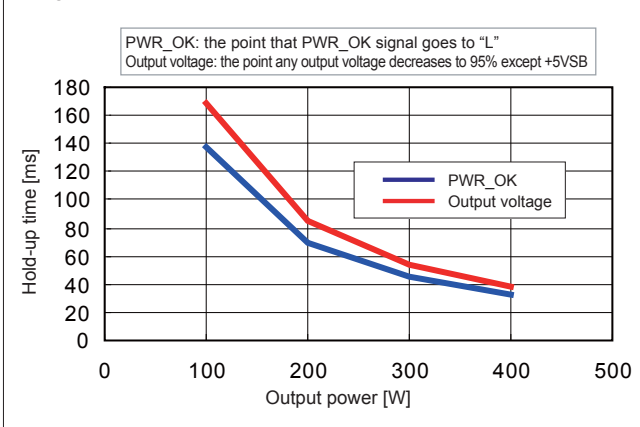
● Fig.13 Rising Characteristics at 240 VAC



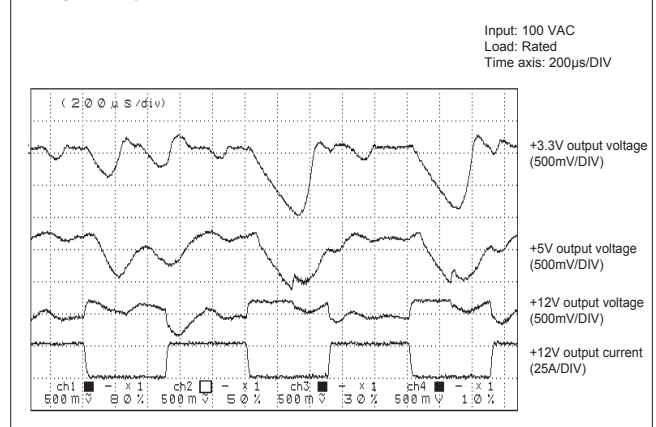
● Fig.14 Falling Characteristics at 240 VAC when REMOTE goes Off



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



● Fig.16 Dynamic Load Fluctuation Characteristics at 1kHz

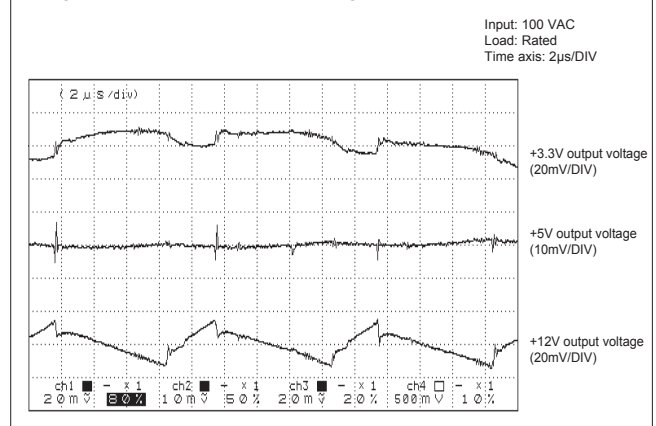


● Fig.17 Output Voltage Regulation

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



● 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)

