Desktop PC Power Supply PCSF-350P-X2S1

Model	Description	Stock
PCSF-350P-X2S1	———	Standard stock

■Model Name Coding

PCSF - 350 P - X 2 S 1
① ② ③ ④ ⑤ ⑥ ⑦

1. Series name
2. Output power
3. Peak output compliant
4. ATX output
5. +3.3V output equipped
6. Standard
7. Thermal-sensing variable speed fan embedded

Compact but High Power

Features

- SFX power supply corresponding to APPENDIX C mounting surface
- microATX case corresponding SFX power supply with 350W
- +12V dual outputs to serve for stable CPU operation
- Stable operation even 0 (zero) A load as min. load for all outputs
- Output harness selection is at your discretion with connector system.

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)

Output

Output voltage	*+3.3V*	*+5V*	*+12V1*	*+12V2*	*-12V*	*+5VSB*
Max. current / max. power (continuous)	14A	16A	10A	16A	0.5A	2A
	Total 90W		Total 220W			
	Total 250W					
Peak current / peak power (+12V2: 0.5 sec, Others: 5 sec max.)	20A	21A	16A	22A	0.8A	3A
	Total 120W		Total 270W			
	Total 350W					
Min. current	0A	0A	0A	0A	0A	0A

Dimensions

W×H×D (mm)	125×63.5×125 (SFX APPENDIX C mounting surface 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.129 “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 Or, load factor shall be 100% (within 10sec) with 0.05 of duty ratio
	Input Frequency		50 / 60Hz						47 - 63Hz
	Efficiency		73% min. (100 VAC), 77% min. (240 VAC) *Characteristic data: Fig.4						At rated input/output
	Power Factor		96% min. (100 VAC), 90% min. (240 VAC) *Characteristic data: Fig.5						
	Inrush Current		31A peak (100 VAC), 75A peak (240 VAC) *Characteristic data: Fig.6						At rated input/output at cold start (25°C)
	Input VA		3.4A max. (100 VAC), 1.4A max. (240 VAC) *Characteristic data: Fig.5						At rated input and max. output
Output	Rated Voltage		+3.3V	+5V	+12V1	+12V2	-12V	+5VSB	
	Rated Current		8A	8A	6A	8A	0.5A	2.0A	
	Max. Current / Power		14A	16A	10A	16A	0.5A	2.0A	Max. output power: 250W
			90W max.		220W max.				
			250W max.						
	Peak Current / Power		20A	21A	16A	22A	0.8A	3.0A	Peak output power: 350W Time: 5 sec or less Duty ratio of repetitive load: 10% or less Only CH4: 0.5 sec or less *Refer to Fig.2
			120W max.		270W max.				
			350W max.						
	Min. Current		0A	0A	0A	0A	0A	0A	Min. load current for the voltage accuracy
	Total Voltage Accuracy (%)		±5 max.	±5 max.	±5 max.	±5 max.	±5 max.	±5 max.	Total accuracy of temperature, input, and load fluctuations, and configuration deviation.
	Max. Ripple Voltage (mVp-p)		50 max.	50 max.	80 max.	80 max.	80 max.	50 max.	Two wires are coming out from the output connector and connected into one at the edge of 150mm max. long. 10μF electrolytic capacitor and 0.1μF ceramic capacitor are placed on it and it is measured by the 100MHz oscilloscope. *Characteristic data: Fig.17
	Max. Spike Voltage (mVp-p)		100 max.	100 max.	200 max.	200 max.	200 max.	100 max.	
Protection	Overcurrent Protection	OCP Point (A)	21 min.	22 min.	17 min.	17 min. (0.5 sec min.)	Short protection		When measuring +12V1 and +12V2, no load on other outputs. Each other outputs are having rated current at the time of measuring other output. Input reclosing interval should be 10 sec. or longer.
		Method	All outputs except for +5VSB shutdown				All outputs shutdown		
		Recovery	Reclosing AC input				Automatic recovery CH5: or reclosing AC input		
	Overvoltage Protection	OVP Point (V)	3.76 - 4.3	5.74 - 7.0	13.4 - 15.6		-	6.4 - 7.5	Input reclosing interval shall be 10 sec min.
		Method	All outputs except for +5VSB shutdown				-	Zener Clamp	
		Recovery	Reclosing AC input				-		
Environment	Operating Temp. / Humidity		0 to 60°C* / 10 to 90%						*Refer to Fig.3 No condensation
	Storage Temp. / Humidity		-20 to 70°C / 10 to 95%						
	Vibration		Acceleration: 19.6m/s^2 (10-55Hz), Sweep cycles: 20, Test duration: 60 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 - DC output/FG: 1500 VAC for 1 minute						Cut-off current: 20mA
	Insulation Resistance		AC input - DC output/FG: 50MΩ min.						At 500 VDC
	Leakage Current		0.5mA max. (100 VAC) / 1.2mA max. (240 VAC) *Characteristic data: Fig.7						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)						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, FCC, EN55022 Class A compliant *Characteristic data: Fig.8 and 9						Measured by single unit
	Harmonic Current Regulation		IEC61000-3-2 Class D compliant						At rated input/output
Others	Safety Standards		UL60950, CSA60950 (c-U), CE Marking (IEC62368-1), PSE compliant						
	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.14						At rated output
	Reliability Grade		FA (industrial equipment grade, double-sided PCB with plated through hole)						Follow our standard
	MTBF		70,000 H min.						Based on EIAJ RCR-9102
	Weight		1.2 kg 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 no 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.

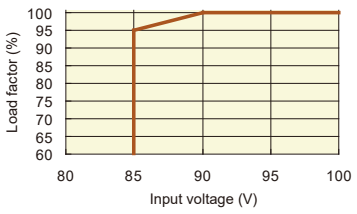


Fig.2 Duty Ratio

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

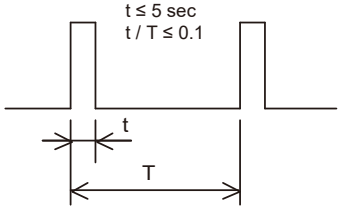
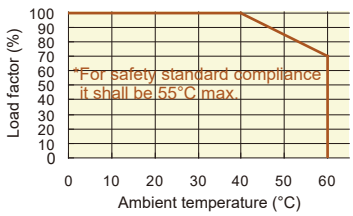
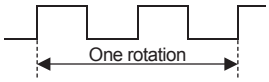


Fig.3 Temperature Derating

When the ambient temperature (near the airflow inlet) exceeds 40°C, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.



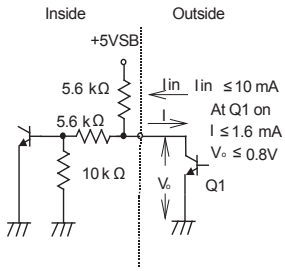
Signal Input / Output Specification Condition: at normal temperature and humidity unless otherwise specified

	Items	Specification	Note
Input Signal	Output ON / OFF Control Signal (PS_ON#)	+3.3V,+5V,+12V1,+12V2, and -12V outputs shutdown with 'H' or 'OPEN' input.	The pin 16 of P1MAIN connector
Input Signal	+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 13 of P1MAIN connector
Output Signal	Normal Output Signal (PWR_OK)	'H' signal is delivered when the +5V output is normal (detection delay time: 100 - 500ms).	The pin 8 of P1MAIN connector
Output Signal	Fan Monitor Signal (FAN_M1,FAN_M2)	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 1 and 2 of P4SIG connector 

Signal Circuit

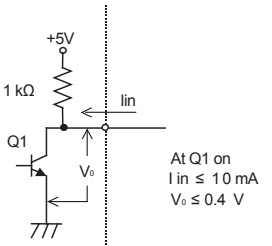
Input Signal Circuit

(PS_ON#)

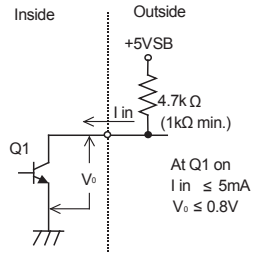


Output Signal Circuit

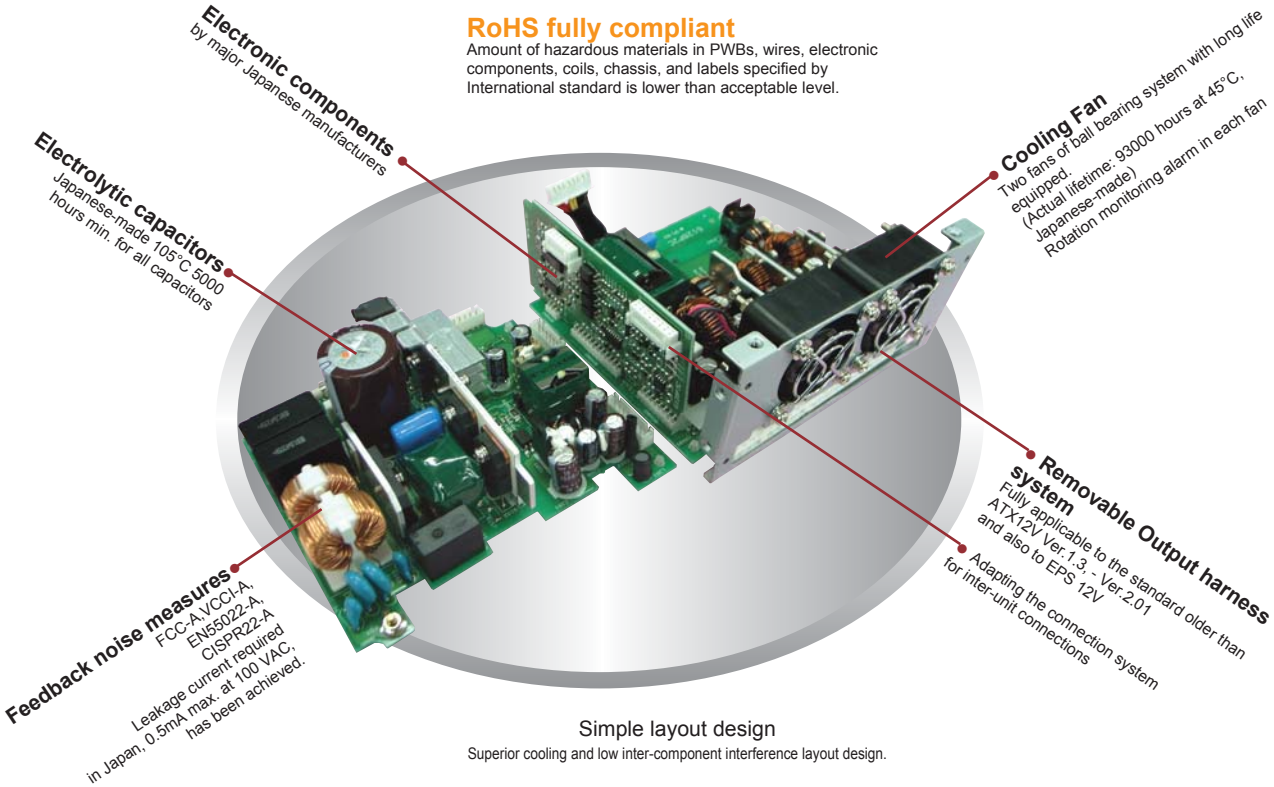
(PWR_OK)



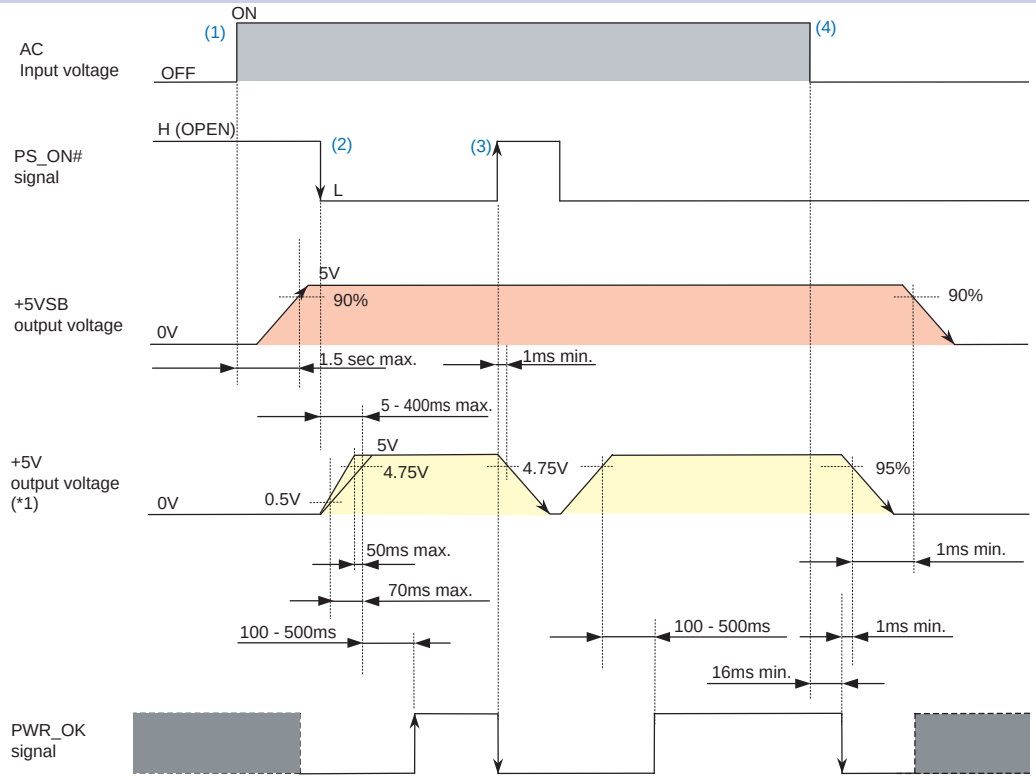
(FAN_M1), (FAN_M2)



Internal Structure



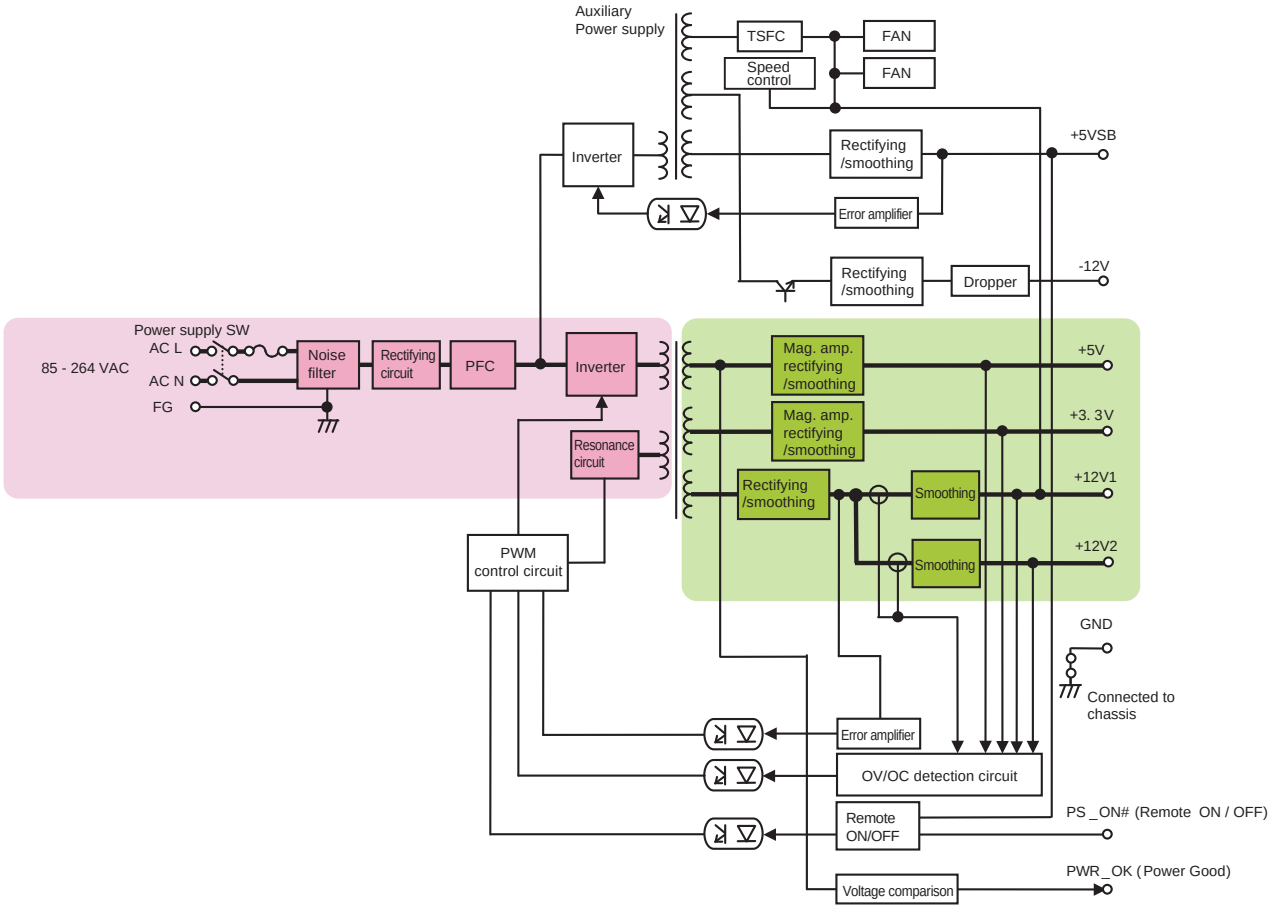
Sequence Diagram



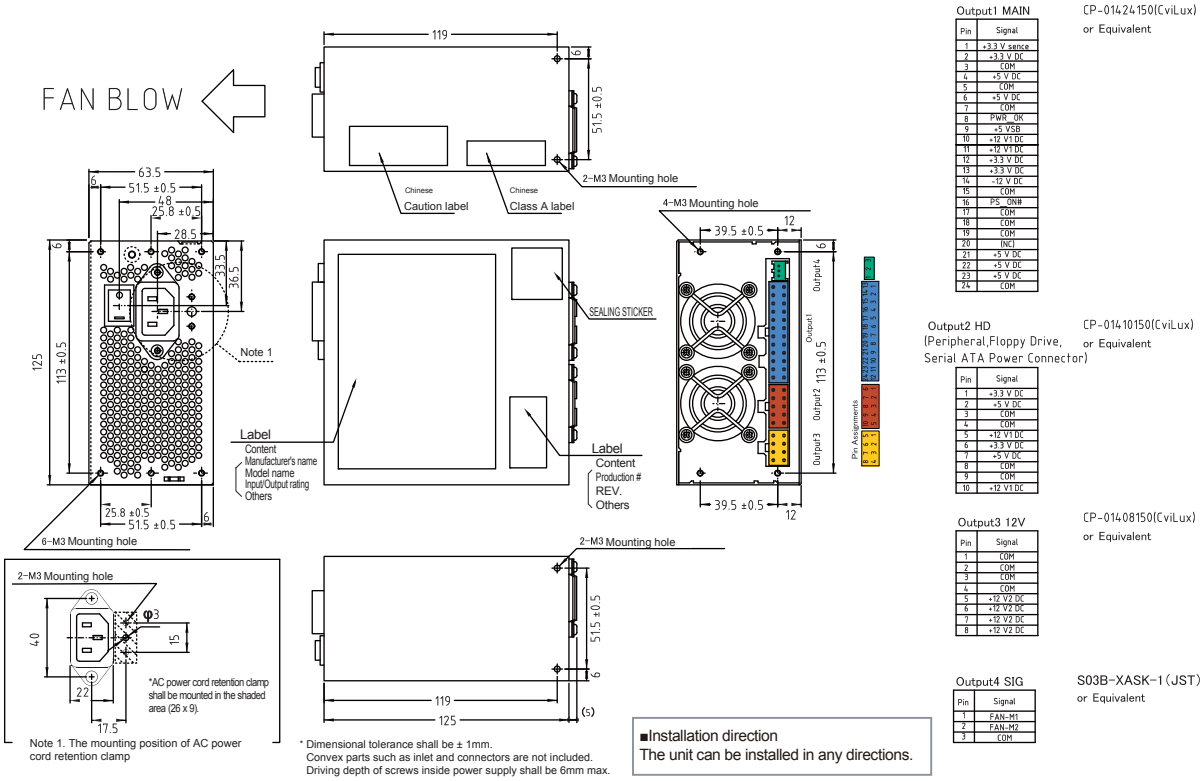
(*1) All other outputs shall follow this timing except voltage values.
In addition, rising time difference among outputs shall be 50ms max.

(1) With PS_ON# 'H (OPEN)', only +5VSB output starts up at AC input.
(2) +5VSB output starts up with PS_ON# 'L'. Also, PWR_OK 'H' is delivered 100 - 500ms after +5VSB has started up.
(3) +5V output shuts down upon receipt of PS_ON# 'H' signal.
(4) PWR_OK goes to 'L' 16ms or later after blackout. +5V and +5VSB outputs shutdown 1ms or later after that.

Block Diagram



Outline Drawing



Output1 MAIN — CP-01424150(CviLux) or Equivalent

Pin	Signal
1	+3.3 V sence
2	+3.3 V DC
3	COM
4	+5 V DC
5	COM
6	+5 V DC
7	COM
8	PWR_OK
9	+5 VSB
10	+12 V1 DC
11	+12 V1 DC
12	+3.3 V DC
13	+3.3 V DC
14	-12 V DC
15	COM
16	PS_ON#
17	COM
18	COM
19	COM
20	INC1
21	+5 V DC
22	+5 V DC
23	+5 V DC
24	COM

Output2 HD (Peripheral,Floppy Drive, Serial ATA Power Connector) — CP-01410150(CviLux) or Equivalent

Pin	Signal
1	+3.3 V DC
2	+5 V DC
3	COM
4	COM
5	+12 V1 DC
6	+3.3 V DC
7	+5 V DC
8	COM
9	COM
10	+12 V1 DC

Output3 12V — CP-01408150(CviLux) or Equivalent

Pin	Signal
1	COM
2	COM
3	COM
4	COM
5	+12 V2 DC
6	+12 V2 DC
7	+12 V2 DC
8	+12 V2 DC

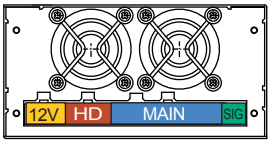
Output4 SIG — S03B-XASK-1(JST) or Equivalent

Pin	Signal
1	FAN-M1
2	FAN-M2
3	COM

Optional Components Sold Separately

Detachable Output Harness

Model	Length and Type of Connector	Output Port Allocation
Main power cable MAIN		
WH-M2024-500	MAIN 500±15 → 20Pin	
WH-M2424-500	MAIN 500±15 → 24Pin	
12V power cable 12V		
WH-V0808-500	12V 500±15 → 12V 8Pin	
WH-V0408-500	12V 500±15 → 12V 4Pin	
WH-VG208-500	12V 500±15 → 12V 4Pin, PCI-E 6Pin	
WH-VV208-500-02	12V 500±10 → 12V 8Pin, 12V 8Pin	
WH-VG208-500-02	12V 500±10 → 12V 8Pin, PCI-E 6Pin	
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-S0603-500	SIG 500±15 → SIG-2	
WH-S0303-500	SIG 500±15 → SIG-3	
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)	



Acceptable cable(s)

MAIN	12V	HD	SIG
1 model	1 model	1 model	1 model

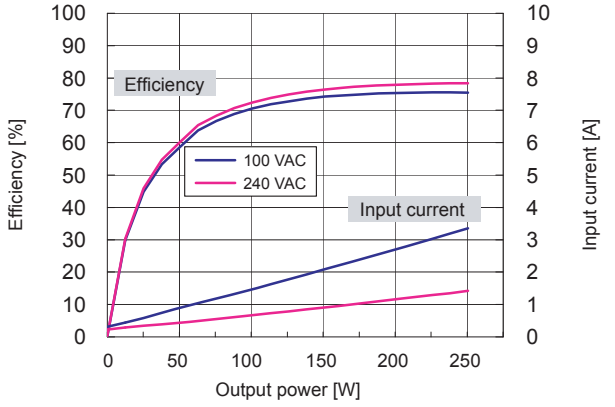
Optional Components Sold Separately

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]

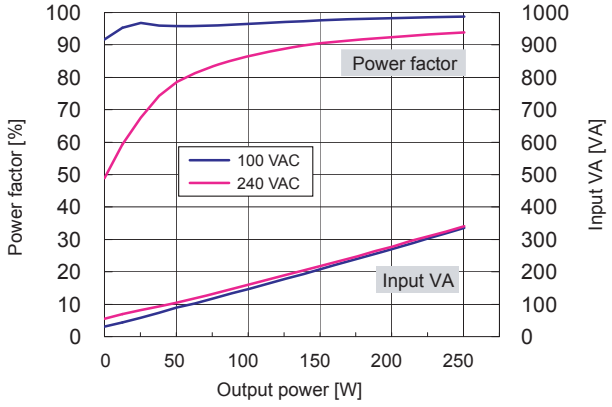
Other Optional Components			
Model	*Description*	*Model*	*Description*
ACC2637	Automatic startup unit	WH5105	12V 4-pin connector conversion harness (80mm)
WH2820	20-pin extension harness (600mm)	WH5105-02	12V 4-pin connector conversion harness (320mm)
WH2747	20-pin extension harness (450mm)	WH5055	AT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

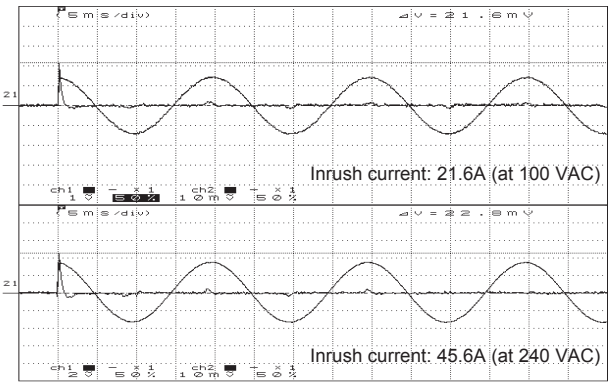
● Fig.4 Efficiency / Input Current vs. Output Power



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



● Fig.6 Inrush Current



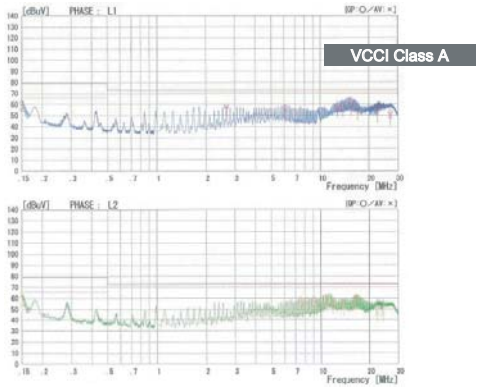
● Fig.7 Leakage Current

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

	Rated load	Min. load
100 VAC	0.33mA	0.30mA
240 VAC	0.80mA	0.80mA

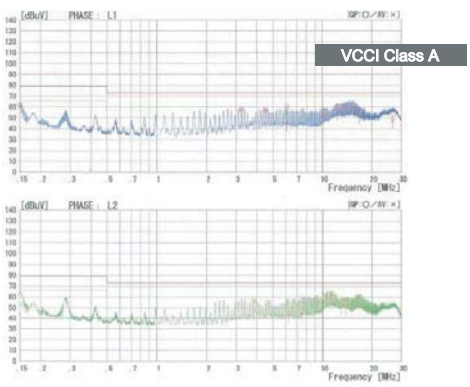
● Fig.8 Conducted Emission at 100 VAC

Input: 100 VAC
Load: Rated
Mode: Peak



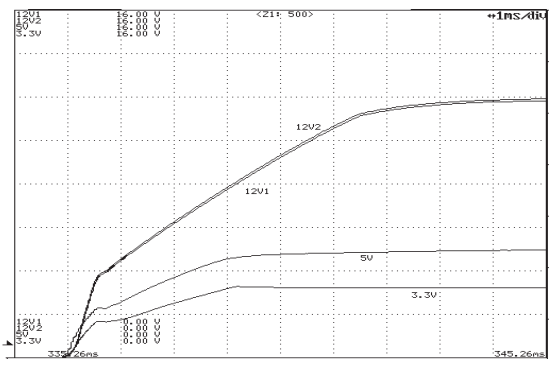
● Fig.9 Conducted Emission at 240 VAC

Input: 240 VAC
Load: Rated
Mode: Peak



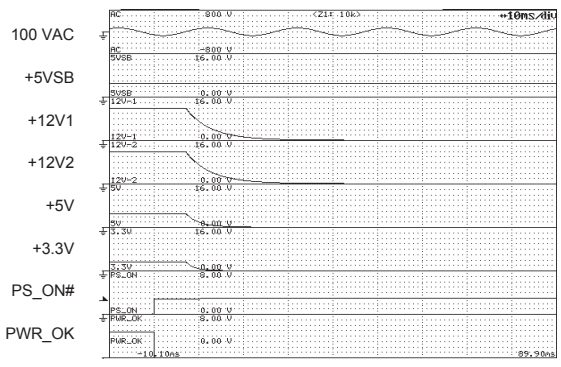
● Fig.10 Rising Characteristics at 100 VAC

Input: 100 VAC
Load: Rated
Time axis: 1ms/DIV



● Fig.11 Falling Characteristics at 100 VAC when REMOTE goes Off

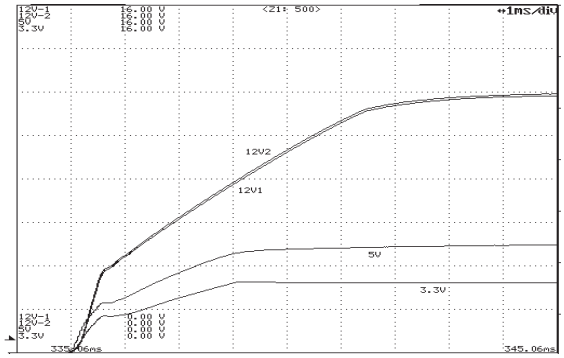
Input: 100 VAC
Load: Rated
Time axis: 10ms/DIV



Characteristics Data (Examples of actual measurement)

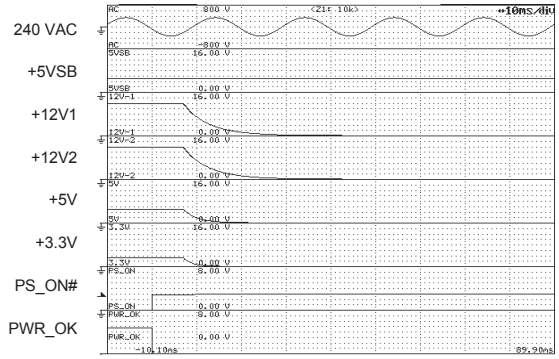
● Fig.12 Rising Characteristics at 240 VAC

Input: 240 VAC
Load: Rated
Time axis: 1ms/DIV



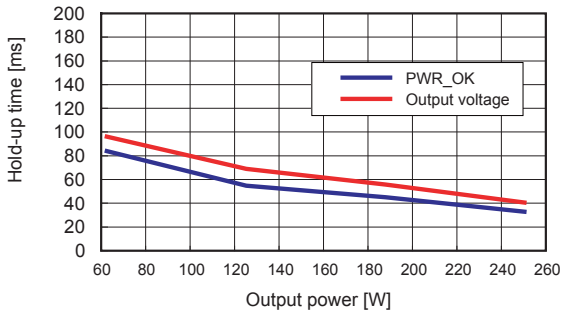
● Fig.13 Falling Characteristics at 240 VAC when REMOTE goes Off

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



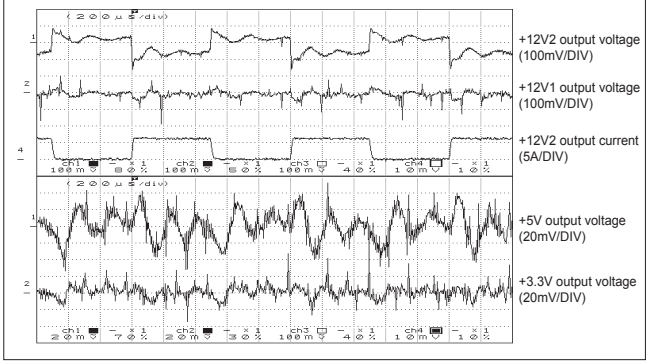
● Fig.14 Output Hold-up Time vs. Output Power

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



● Fig.15 Dynamic Load Fluctuation Characteristics at 1kHz

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



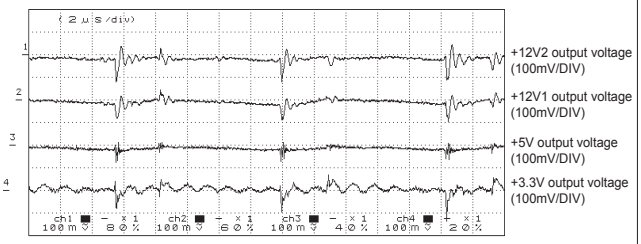
● Fig.16 Output Voltage Regulation

Output	Min. load	Rated load	Peak load
+12V1 output	0A	10A	16A
+12V2 output	0A	16A	22A
+5V output	0A	16A	21A
+3.3V output	0A	14A	20A

AC input voltage	85 VAC	100 VAC	132 VAC	176 VAC	240 VAC	264 VAC
+12V1 output (min. load)	12.121 V	12.121 V	12.119 V	12.119 V	12.118 V	12.117 V
+12V1 output (rated load)	12.052 V	12.049 V	12.049 V	12.048 V	12.048 V	12.048 V
+12V1 output (peak load)	11.869 V	11.866 V	11.866 V	11.865 V	11.864 V	11.863 V
+12V2 output (min. load)	12.113 V	12.113 V	12.111 V	12.109 V	12.110 V	12.109 V
+12V2 output (rated load)	11.954 V	11.952 V	11.952 V	11.951 V	11.951 V	11.949 V
+12V2 output (peak load)	11.910 V	11.910 V	11.910 V	11.910 V	11.910 V	11.910 V
+5V output (min. load)	5.165 V	5.165 V	5.164 V	5.164 V	5.163 V	5.163 V
+5V output (rated load)	5.065 V	5.064 V	5.063 V	5.062 V	5.062 V	5.062 V
+5V output (peak load)	4.960 V	4.956 V	4.953 V	4.952 V	4.951 V	4.950 V
+3.3V output (min. load)	3.344 V	3.344 V	3.344 V	3.344 V	3.344 V	3.344 V
+3.3V output (rated load)	3.277 V	3.276 V	3.276 V	3.276 V	3.276 V	3.276 V
+3.3V output (peak load)	3.228 V	3.227 V	3.227 V	3.227 V	3.227 V	3.227 V

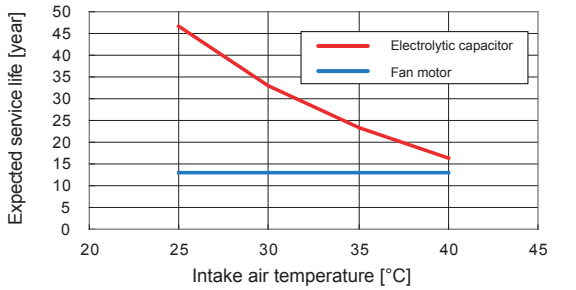
● Fig.17 Ripple and Spike Voltage

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



● Fig.18 Ambient Temperature vs. Expected Service Life

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



*Life span for electrolytic capacitor shall be 15 years max. considering the degradation of the sealing plate.

● Fig.19 Over Current Protection (V-I Characteristic)