Desktop PC Power Supply PCSF-200P-X2S

Model	Description	Stock
PCSF-200P-X2S	———	Standard stock

■Model Name Coding

PCSF - 200 P - X 2 S
① ② ③ ④ ⑤ ⑥

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

Features

- Compact but High power SFX12V power supply
- Secure design with overheat protection equipped. Outputs can be shutdown in safe even when abnormal temperature inside the power supply occurs due to Fan lock, etc.
- S-ATA connector and +12V power connector equipped as standard
- Double-sided PCB with plated through hole suitable for industrial use
- Operation at 60°C of ambient temperature is acceptable.

Introduction of modified products: For startup voltage settable type

Modify product of PCSF-200P-X2S

Startup voltage of this product is set to 70 VAC typ. or higher

■Model: PCSF-160P-X2H

■Output

Output voltage	*+3.3V*	*+5V*	*+12V*	*-12V*	*+5VSB*
Max. current/ max. power (continuous)	16A	12A	9A	0.3A	1.0A
	Total 61W				
	Total 117.8W				
	Total 126.4W				
Peak current/ peak power (5 sec max.)	16A	12A	10A	0.3A	1.0A
	Total 151.9W				
	Total 163W				
Min. current	0.3A	0.3A	0.5A	0A	0A

*Min. lot is 50 pcs: Lead time 100days
Please ask for detail

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*	*+12V*	*-12V*	*+5VSB*
Max. current / max. power (continuous)	16A	12A	9A	0.3A	1.0A
	Total 70W				
	Total 141.8W				
	Total 150.4W				
Peak current / peak power (5 sec max.)	16A	12A	10A	0.3A	1.5A
	Total 188W				
	Total 200W				
Min. current	0.3A	0.3A	0.5A	0A	0A

Dimensions

W×H×D (mm)	100×63.5×125 (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
	Input Frequency		50 / 60Hz					47 - 63Hz
	Efficiency		65% typ. *Characteristic data: Fig.3					At rated input/output
	Power Factor		90% min. *Characteristic data: Fig.4					
	Inrush Current		25A peak (100 VAC), 50A peak (240 VAC) *Characteristic data: Fig.5					At rated input/output at cold start (25°C)
	Input VA		250VA max. *Characteristic data: Fig.4					At rated input/output
Output	Rated Voltage		+3.3V	+5V	+12V	-12V	+5VSB	
	Rated Current		6A	10A	6A	0.3A	1.0A	
	Max. Current / Power		16A	12A	9A	0.3A	1.0A	Max. output power: 150.4W
			70W max.					
			141.8W max.					
	Peak Current / Power		16A	12A	10A	0.3A	1.5A	Peak output power: 200W Time: 5 sec or less Duty ratio of repetitive load: 10% or less *Refer to Fig.1
			188W max.					
	Min. Current		0.3A	0.3A	0.5A	0A	0A	
	Total Voltage Accuracy (%)		±4 max.	±5 max.	±5 max.	±5 max.	±5 max.	Total accuracy of temperature, input, and load fluctuations
	Max. Ripple Voltage (mVp-p)		50 max.	50 max.	100 max.	50 max.	50 max.	Two wires are coming out from the output connector and connected into one at the edge of 50cm max. long. 10μF electrolytic capacitor is placed on it and it is measured by the 100MHz oscilloscope. *Characteristic data: Fig.16
	Max. Spike Voltage (mVp-p)		100 max.	100 max.	120 max.	100 max.	100 max.	
Protection	Overcurrent Protection	OCP Point (A)	17.6 min.	13.2 min.	11 min.	Short protection		All other outputs are at rated loads. However, in measuring +5V, +3.3V load shall be 2.7A with rated load for other outputs All outputs except +5VSB shutdown at overcurrent of +3.3V, +5V and +12V
		Method	All outputs except for +5VSB shutdown			Fold back current limiting	All outputs shutdown	
		Recovery	Reclosing AC input (5 sec min. interval)			Automatic recovery		
	Overvoltage Protection	OVP Point (V)	3.7 - 4.3	5.7 - 7.0	13.4 - 15.6	-	-	All outputs except +5VSB shutdown at overvoltage of +3.3V, +5V and +12V Reclosing AC input for recovery (10 sec min. interval)
		Method	All outputs except for +5VSB shutdown			-	-	
		Recovery	Reclosing AC input (10 sec min. interval)			-	-	
	Overheating Protection	Method	Output shuts down at abnormal temperature inside the power supply					
		Recovery	Reclosing AC input at low temperature					
Environment	Operating Temp. / Humidity		0 to 60°C* / 10 to 90%					*Refer to Fig.2 Note: At low temp. (5°C max.) startup, outputs may shortly drop before PWR_OK signal starts up No condensation
	Storage Temp. / Humidity		-25 to 70°C / 10 to 95%					No condensation
	Vibration		Displacement amplitude: 0.15mm (10-55Hz), Sweep cycles: 10, Test duration: 45 minutes each axis					JIS-C-60068-2-6
	Mechanical Shock		Lift one bottom edge up to 50mm and let it fall. Number of bumps: 3 each of 4 edges					JIS-C-60068-2-3 at no operation
Insulation	Dielectric Strength		AC input - DC output/FG: 1500 VAC for 1 minute					Cut-off current: 10mA
	Insulation Resistance		AC input - DC output/FG: 50MΩ min.					At 500 VDC
	Leakage Current		0.5mA max. (100 VAC) / 1mA max. (240 VAC) *Characteristic data: Fig.6					YEW. TYPE3226 (1kΩ) or equivalent
EMC	Line Noise Immunity		± 2000V (pulse width: 100/1000ns, repetitive cycle: 10-50ms, 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-A compliant *Characteristic data: Fig.7 and 8					The margin shall be 4dB or more
	Harmonic Current Regulation		IEC61000-3-2 Class D, EN61000-3-2 Class D compliant					At rated input/output
Others	Safety Standards		UL60950-1, c-UL, EN62368-1(NEMKO)					
	Cooling System		Forced air cooling					
	Output Grounding		Connected chassis (FG)					
	Output Hold-up Time		PWR_OK holds up 16ms min. after AC failure *Characteristic data: Fig.13					At rated output
	Reliability Grade		FA (industrial equipment grade, double-sided PCB with plated through hole)					Follow our standard
	MTBF		100,000 H min.					Based on EIAJ RCR-9102
	Weight		1.0 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 Duty Ratio

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

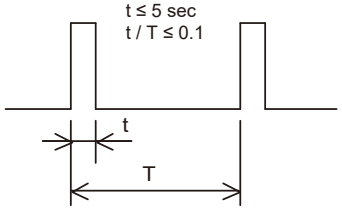
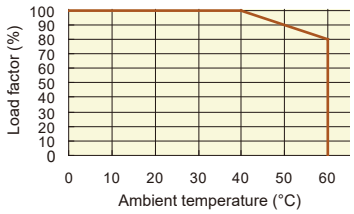
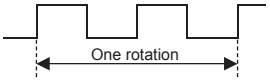


Fig.2 Temperature Derating

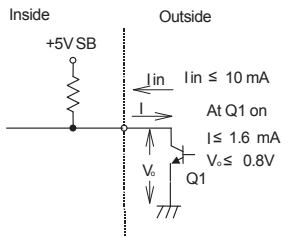
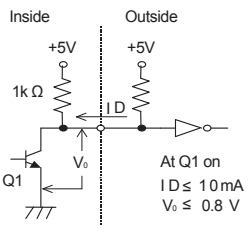
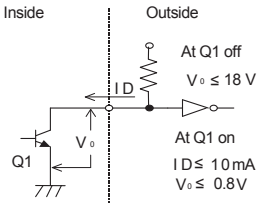
When the ambient temperature (near the airflow inlet) exceeds 40°C, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.



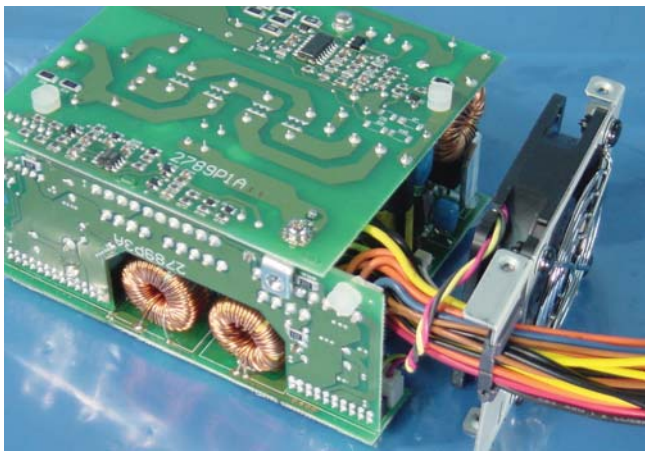
Signal Input / Output Specification Condition: at normal temperature and humidity unless otherwise specified

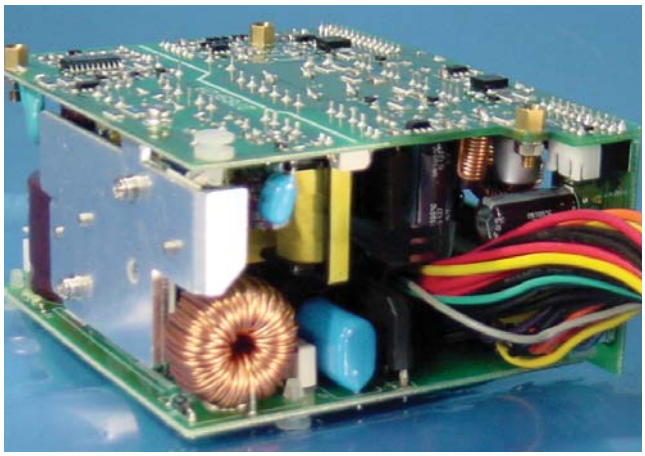
	Items	Specification	Note
Input Signal	Output ON / OFF Control Signal (PS_ON#)	+3.3V, +5V, +12V, and -12V outputs shutdown with 'H' or 'OPEN' input.	Signal input between the pin 14 of P1 connector and COM pin
Input Signal	+3.3V SENSE	The input terminal to detect the voltage of +3.3V output; by connecting to the load terminal, only the line drop of the + side of the output cable is compensated.	The pin 11 of P1 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 P1 connector
Output Signal	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.	

Signal Circuit

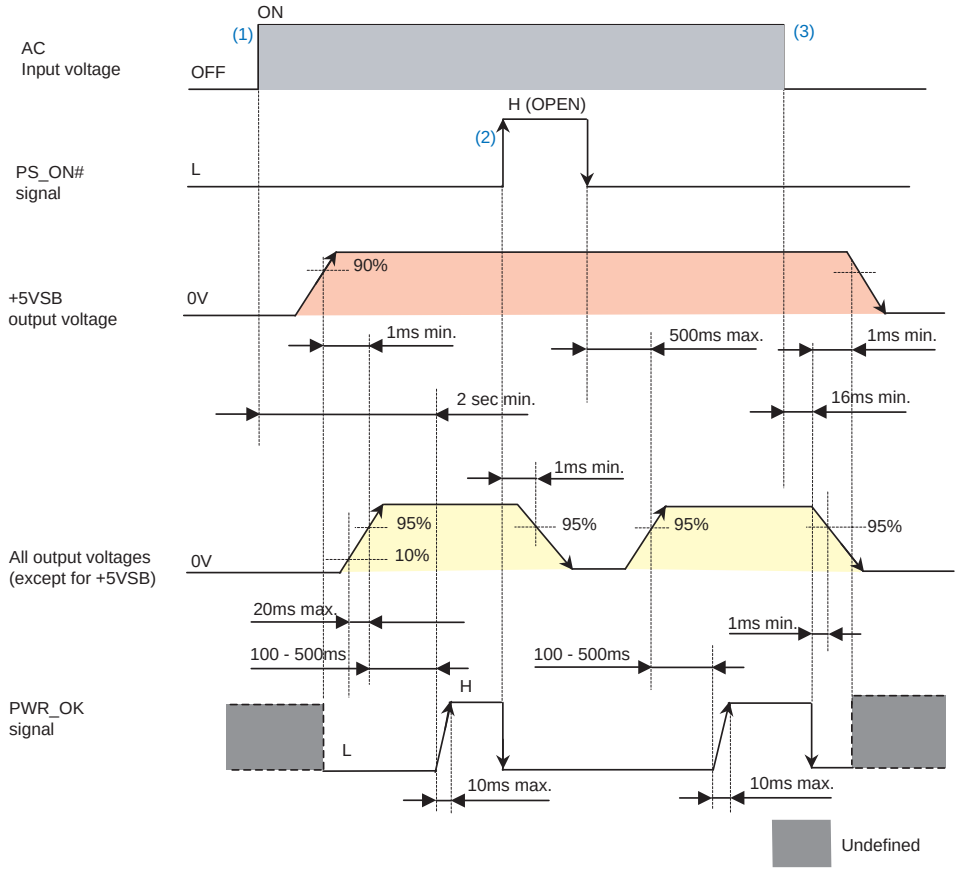
Input Signal Circuit		Output Signal Circuit	
(PS_ON#)	*(PWR_OK)*		*(FAN M)*
			

Internal Structure



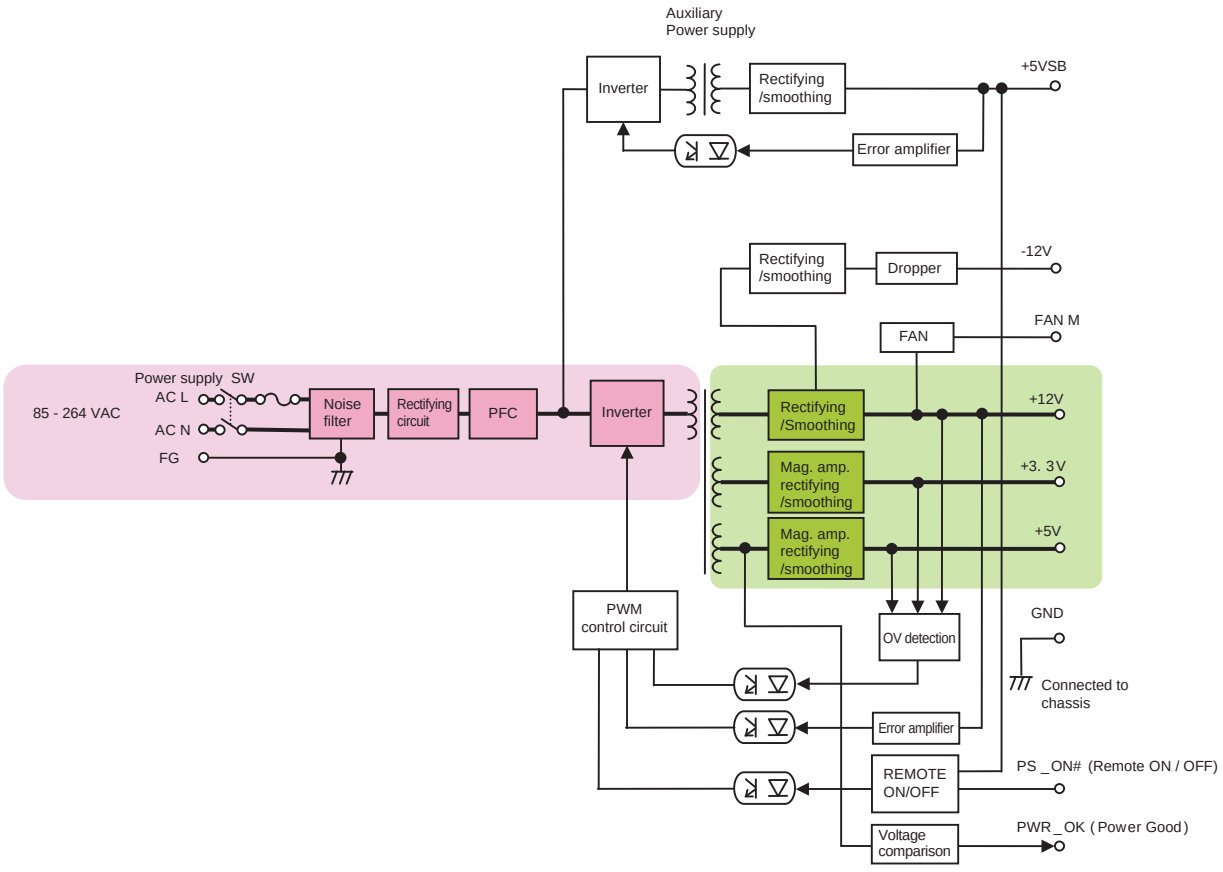


Sequence Diagram

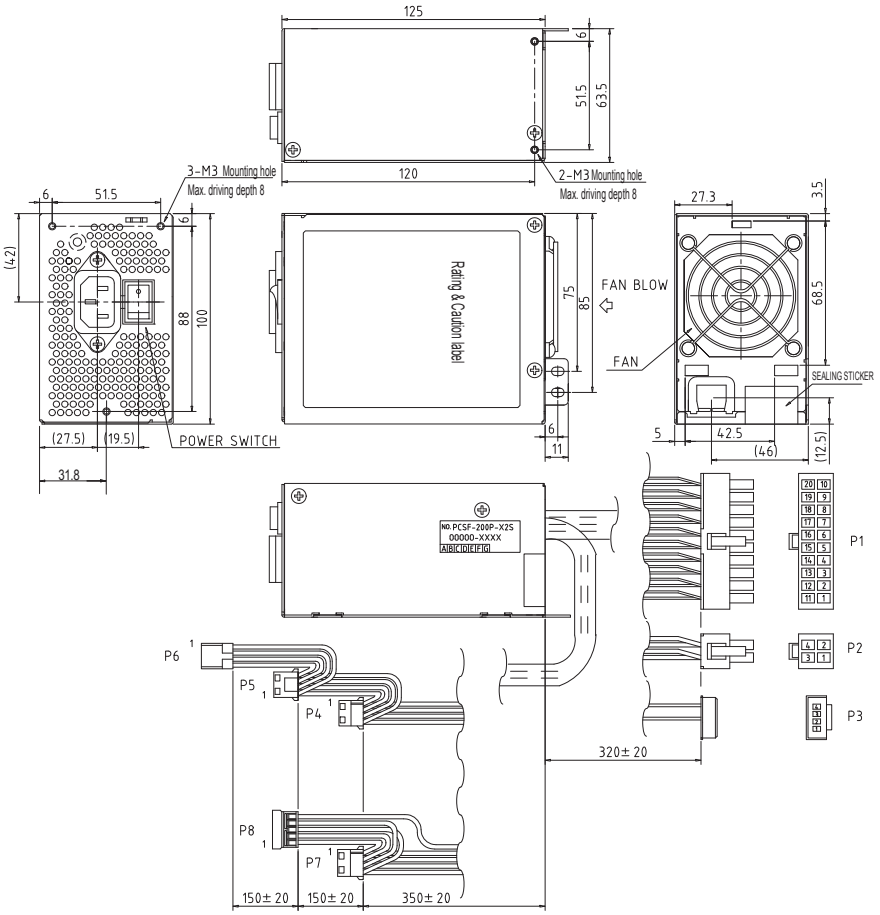


(1) All outputs start up by being supplied AC input under the condition of PS_ON# 'L'. PWR_OK 'H' is delivered at 100 - 500ms after +5V output has risen.
(2) At PS_ON# 'H' input, outputs except for +5VSB shut down.
(3) PWR_OK turns to 'L' after 16ms or longer from blackout. 1ms later than this event, the +5V output shuts down.

Block Diagram



Outline Drawing / Output Harness



CN NAME	PIN No.	FUNCTION	WIRE COLOR	WIRE TYPE UL1007	CONNECTOR TYPE
P1	1	+3.3VDC	ORANGE	AWG#18	Housing:CP-01120030(CviLux) Terminal:CP-01100102(CviLux) or equivalent
	2	+3.3VDC	ORANGE		
	3	COM	BLACK		
	4	+5VDC	RED		
	5	COM	BLACK		
	6	+5VDC	RED		
	7	COM	BLACK		
	8	PWR-OK	GRAY	AWG#22	
	9	+5V SB	PURPLE	AWG#18	
	10	+12VDC	YELLOW		
	11	+3.3VDC	ORANGE	AWG#18	Terminal:CP-01100105 (CviLux)
		3.3V Sense	BROWN	AWG#22	
	12	-12VDC	BLUE	AWG#18	
	13	COM	BLACK		
	14	PS-ON#	GREEN	AWG#22	
	15	COM	BLACK	AWG#18	
	16	COM	BLACK		
	17	COM	BLACK		
	18	NC	—		
	19	+5VDC	RED		
	20	+5VDC	RED		
P2	1	COM	BLACK	AWG#20	Housing:CP-0114030(CviLux) Contact:CP-01100102(CviLux) or equivalent
	2	COM	BLACK		
	3	+12VDC	YELLOW		
	4	+12VDC	YELLOW		
P3	1	NC	—	AWG#22	Housing:XAP-04V-1 (JST) Contact:SXA-001T-P0.6(JST) or equivalent
	2	COM	BLACK		
	3	NC	—		
	4	FAN M	BROWN		
P4 P5 P7	1	+12VDC	YELLOW	AWG#18	Housing:LCP-04(JST) Contact:SLC22T-2.0(JST) or equivalent
	2	COM	BLACK		
	3	COM	BLACK		
	4	+5VDC	RED		
P6	1	+5VDC	RED	AWG#22	Housing:171822-4(AMP) Contact:170204-1(AMP) or equivalent
	2	COM	BLACK		
	3	COM	BLACK		
	4	+12VDC	YELLOW		
P8	Wire 1	+12VDC	YELLOW	AWG#18	Housing:675820000(Molex) Contact:675810000(Molex) or equivalent
	Wire 2	COM	BLACK		
	Wire 3	+5VDC	RED		
	Wire 4	COM	BLACK		
	Wire 5	+3.3VDC	ORANGE		

Mounting portion tolerance: ± 0.5
Dimensional tolerance shall be ± 1 unless otherwise specified.

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

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
	ACC2837	Attachment panel	Attachment panel to ATX power supply mounting surface (W×H [mm] =150×86)
	ACC2838	Attachment panel	Attachment panel to SFX12V APPENDIX C size mounting surface (W×H [mm] =125×63.5)

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

ACC2838 Mounting Example

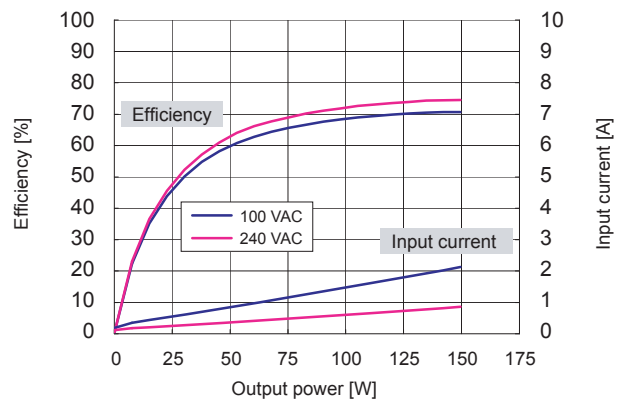
With ACC2838 attached, the unit can be mounted on PC case with SFX12V APPENDIX C mounting size.

ACC2837 Mounting Example

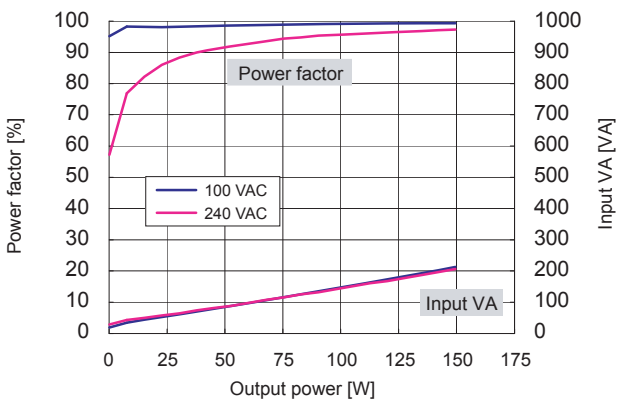
With ACC2837 attached, the unit can be mounted on PC case with ATX power supply mounting size.

Characteristics Data (Examples of actual measurement)

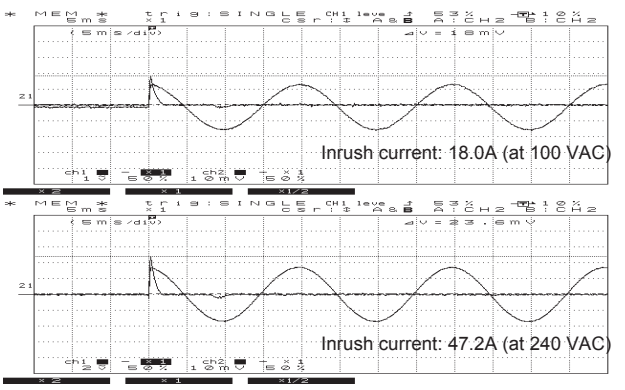
● Fig.3 Efficiency / Input Current vs. Output Power



● Fig.4 Power Factor / Input VA vs. Output Power



● Fig.5 Inrush Current



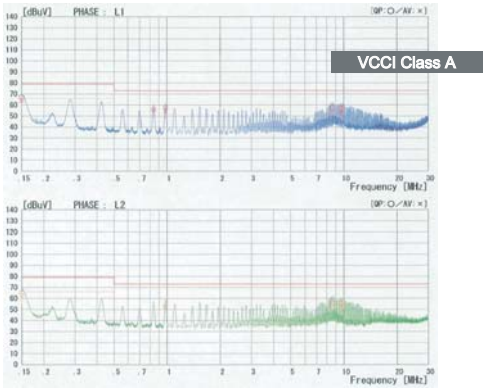
● Fig.6 Leakage Current

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

	Rated load	Min. load
100 VAC	0.31mA	0.29mA
240 VAC	0.76mA	0.75mA

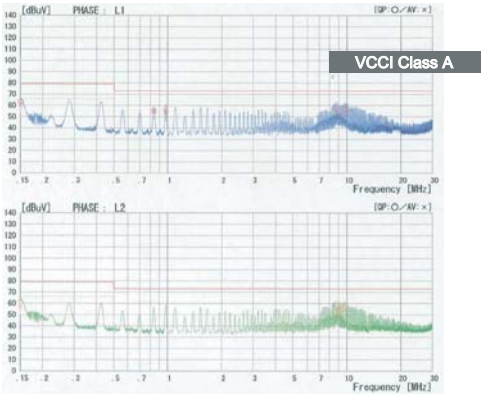
● Fig.7 Conducted Emission at 100 VAC

Input: 100 VAC
Load: Rated
Mode: Peak



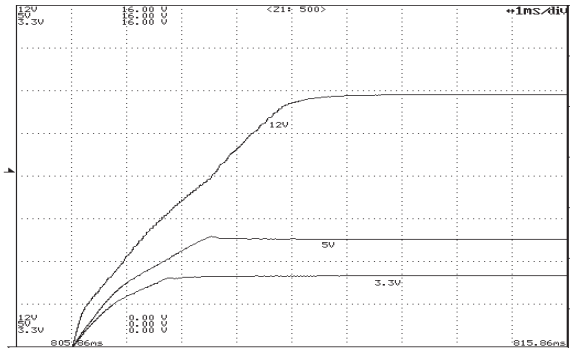
● Fig.8 Conducted Emission at 240 VAC

Input: 240 VAC
Load: Rated
Mode: Peak



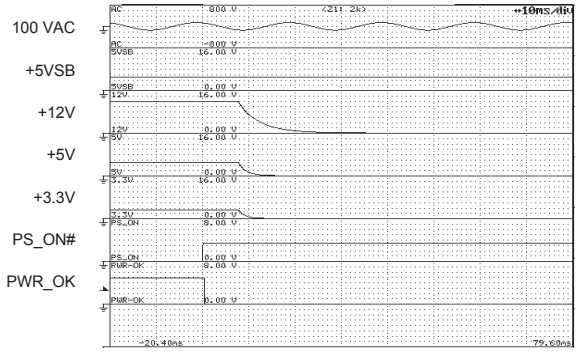
● Fig.9 Rising Characteristics at 100 VAC

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



● Fig.10 Falling Characteristics at 100 VAC when REMOTE goes Off

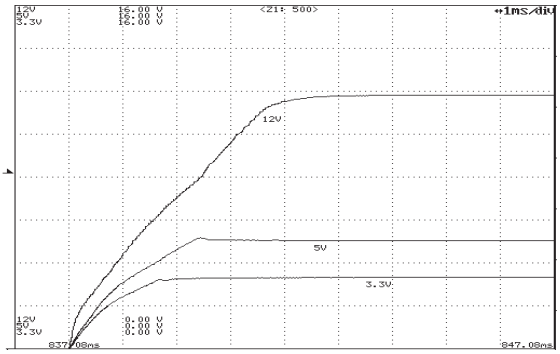
Input: 100 VAC
Load: Rated
Time axis: 10ms/DIV



Characteristics Data (Examples of actual measurement)

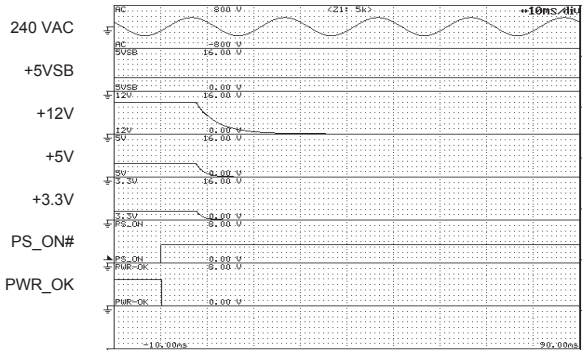
● Fig.11 Rising Characteristics at 240 VAC

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



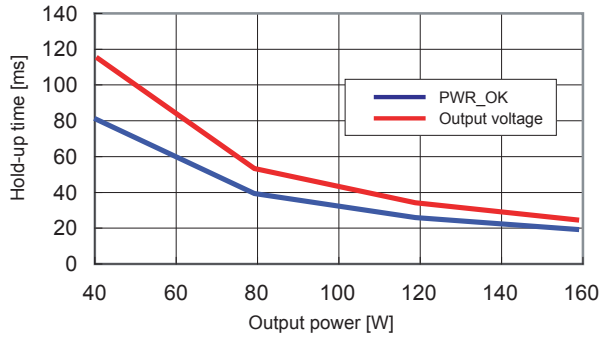
● Fig.12 Falling Characteristics at 240 VAC when REMOTE goes Off

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



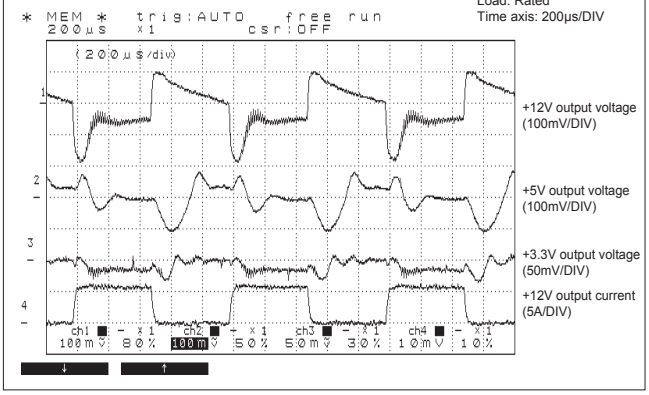
● Fig.13 Output Hold-up Time vs. Output Power

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



● Fig.14 Dynamic Load Fluctuation Characteristics at 1kHz

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



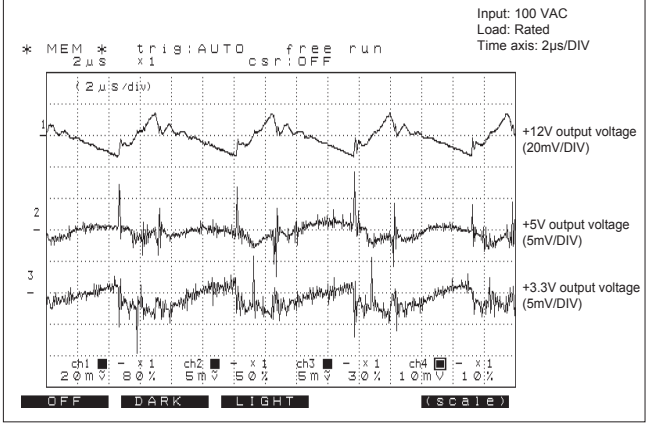
● Fig.15 Output Voltage Regulation

Output	Min. load	Rated load	Peak load
+12V output	0.5A	6A	10A
+5V output	0.3A	10A	12A
+3.3V output	0.3A	6A	16A

AC input voltage	85 VAC	100 VAC	132 VAC	176 VAC	240 VAC	264 VAC
+12V output (min. load)	11.920 V	11.922 V	11.923 V	11.924 V	11.925 V	11.925 V
+12V output (rated load)	11.806 V	11.807 V	11.809 V	11.810 V	11.811 V	11.812 V
+12V output (peak load)	11.765 V	11.767 V	11.768 V	11.769 V	11.771 V	11.771 V
+5V output (min. load)	5.135 V	5.135 V	5.135 V	5.135 V	5.135 V	5.135 V
+5V output (rated load)	5.026 V	5.026 V	5.026 V	5.027 V	5.027 V	5.027 V
+5V output (peak load)	5.021 V	5.022 V	5.022 V	5.023 V	5.023 V	5.024 V
+3.3V output (min. load)	3.387 V	3.386 V	3.386 V	3.386 V	3.386 V	3.386 V
+3.3V output (rated load)	3.308 V	3.307 V	3.307 V	3.307 V	3.307 V	3.307 V
+3.3V output (peak load)	3.266 V	3.265 V	3.265 V	3.265 V	3.265 V	3.265 V

● Fig.16 Ripple and Spike Voltage

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



● Fig.17 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. 62	approx. 31	approx. 15

※ 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. 7.8	approx. 7.8	approx. 7.8

● Fig.18 Over Current Protection (V-I Characteristic)

Input: 100 VAC