

Desktop PC Power Supply PCSA-300P Series

Silent Computer Power Supply with Great Achievements



PCSA-300P-X2S

RoHS
Directive

ATX
Continuous Max. **260W** Peak Power **300W**

Model	Description	Stock
PCSA-300P-X2S	No 12V 4-pin connector	Standard stock
PCSA-300P-X2V	With 12V 4-pin connector	Standard stock

■ Model Name Coding
PCSA - 300 P - X 2 *
 ① ② ③ ④ ⑤ ⑥

1. Series name	4. ATX output
2. Output power	5. +3.3V output
3. Peak output compliant	6. S: No 12V 4-pin connector
	V: With 12 4-pin connector

Features

- By building in the thermal-sensing variable speed fan, noise reduction can be realized. Heat-related issue for CPU can be settled with fan changeover switch.
- This unit endures 2kV lightning surge

Over 300,000 of this model of ATX power supplies have been sold as of 2013; it has gained the trust from the customers and yet continues to develop.

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
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Input

AC input	85 - 264V (worldwide range)
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Output

Refer to [] only for PCSA-300P-X2V

Output voltage	+3.3V	+5V	+12V	-5V	-12V	+5VSB
Max. current / max. power (continuous)	15A	25A	10A	0.5A	0.5A	1.0A
	Total 25A / 125W					
	Total 258.5W					
Peak current / peak power (5 sec max.)	20A	25A [30A]	12A [15A]	0.5A	0.5A	1.2A [1.5A]
	[Total 30A]					
	Total 280W					
	Total 296W					
Min. current	0A	2A	0.5A [0A]	0A	0A	0A

Dimensions

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

PCSA-300P-X2S											
Main 20+4pin	Main 24pin	Main 20pin	AT	AUX	12V 4pin	12V 8pin	PCI-E 6pin	PCI-E 6+2pin	HDD	S-ATA	FDD
PCSA-300P-X2V											
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

Refer to [] only for PCSA-300P-X2V

Items		Specification						Measurement conditions, etc.
AC Input	Rated Voltage	100 - 240 VAC (85 - 264 VAC)						Worldwide range 253V max. for harmonic current regulation 90V min. if the output power exceeds 200W
	Input Frequency	50 / 60Hz						47-63Hz
	Efficiency	68% typ. [68% min. (73% typ.)] *Characteristic data: Fig.3						At rated output
	Power Factor	[90% min.] *Characteristic data: Fig.4						
	Inrush Current	50A peak *Characteristic data: Fig.5						At 240 VAC input/rated output Reclosing interval: 10 sec min.
Input VA	At Operation	380VA typ. *Characteristic data: Fig.4						At rated input
	At Standby	30VA typ. (100 VAC) / 60VA typ. (240 VAC)						At PS_ON# signal 'H'(OPEN)', +5VSB rated output
Output	Rated Voltage	+3.3V	+5V	+12	-5V	-12V	+5VSB	
	Rated Current	5A	20A	10A	0.5A	0.5A	1.0A	
	Max. Current / Power	15A	25A	10A	0.5A	0.5A	1.0A	Max. output power: 258.5W [*Refer to Fig.1]
		25A / 125W max.						
	Peak Current / Power	258.5W						Peak output power: 294.5W [296W] Time: 5 sec or less [*Refer to Fig.1]
		20A	25A [30A]	12A [15A]	0.5A	0.5A	1.2A [1.5A]	
		280W max.						
	Min. Current	294.5W [296W]						
		0A	2A	0.5A [0A]	0A	0A	0A	
	Total Voltage Accuracy (%)	±5 max.	±5 max.	±5 max.	±6 max.	±6 max.	±5 max.	Total accuracy of temperature, input, and load fluctuations
Max. Ripple Voltage (mVp-p)	50 max.	50 max.	120 max.	50 max.	120 max.	50 max.	Measured on the test board with a capacitor (47µF) connected. The test board shall be separated from the load wires and within 150mm from the output terminal. *Characteristic data: Fig.16	
Max. Spike Voltage (mVp-p)	100 max.	100 max.	170 max.	100 max.	170 max.	100 max.		
Protection	Overcurrent Protection	OCP Point (A)	21 min.	-	-	-	-	At min. output current, except measured output
			-	26 min. [31 min.]	13 min. [15.1 min.]	0.53 min.	1.3 min. [1.6 min.]	At max. output current, except measured output with no load of +3.3V
		Method	+3.3V, +5V, +12V, -5V, -12V output shutdown			Foldback current limiting	Blocking oscillation	All outputs shutdown when +5VSB is shorted (automatic recovery)
	Recovery	Reclosing of input (10 sec min. interval) or switching PS_ON# signal from 'H' to 'L'			Automatic recovery			
Overvoltage Protection	OVP Point (V)	3.7 - 4.3	5.6 - 7.0	[13.8 - 15.6]	-	-	-	
	Method	+3.3V, +5V, +12V, -5V, -12V output shutdown						
	Recovery	Reclosing of input (10 sec min. interval) or switching PS_ON# signal from 'H' to 'L'						
Environment	Operating Temp. / Humidity	0 to 60°C / 20 to 90%						*Refer to Fig.2 No condensation
	Storage Temp. / Humidity	-20 to 70°C / 10 to 95%						No condensation
	Vibration	Displacement amplitude: 0.15mm (10-55Hz), Sweep cycles: 10, Test duration: 30 minutes each axis [Displacement amplitude: 0.075mm (10-55Hz), Sweep cycles: 10, Test duration: 45 minutes each axis]						At no operation [JIS-C-0040-1999]
	Mechanical Shock	Acceleration of 98ms ² for 20ms one time each in the X, Y and Z directions. No malfunction, damage, lessening or coming-off [Lift one bottom edge up to 50mm and let it fall. Number of bumps: 3 each of 4 edges]						At no operation [JIS-C-0043-1995]
Insulation	Dielectric Strength	AC input - DC output/FG: 1500 VAC for 1 minute						Cut-off current: 20mA max., At normal temp. / humidity
	Insulation Resistance	AC input - DC output/FG, DC output - FG: 50MΩ min.						At 500 VDC, At normal temp. / humidity
	Leakage Current	0.5mA max. (100 VAC) / 1mA max. (200 VAC) *Characteristic data: Fig.6						YEW. TYPE3226 (1kΩ) or equivalent
EMC	Line Noise Immunity	± 2000V min. (pulse width: 50-1000ns, repetitive cycle: 30-100Hz) [± 2000V min. (pulse width: 100/1000ns, repetitive cycle: 30-100Hz, normal/common mode with pos./neg. polarity for 1 minute)]						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						Measured by single unit
	Harmonic Current Regulation	IEC1000-3-2 compliant						At rated input/output
Others	Safety Standard	UL1950, CSA 950 (c-UL), EN60950-1						Class 1 equipment embedded type power supply
	Cooling System	Forced air cooling: thermal-sensing variable speed fan embedded						Fan speed changes by temperature and load.
	Output Grounding	Capacitor grounding						
	Output Hold-up Time	PWR_OK holds up 20ms min. after AC failure *Characteristic data: Fig.13						At rated output
	Reliability Grade	HOA						Follow our standard
	MTBF	100,000 H min.						Based on EIAJ RCR-9102
	Weight	1.8 kg 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	

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Non-backup power supply

Fig.1 Output Power Cross Regulation

When the input voltage is 90 VAC or less, follow the graph below for the power distribution of the total power of +3.3V and +5V vs. +12V output power.
* only PCSA-300V-X2V

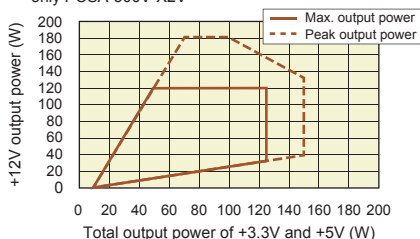
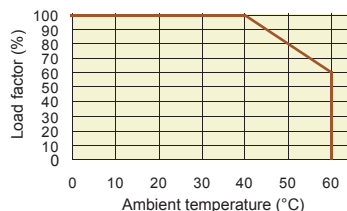


Fig.2 Temperature Derating

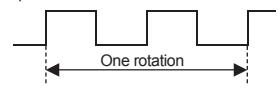
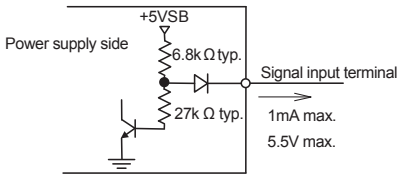
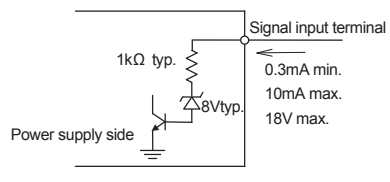
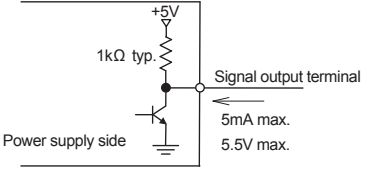
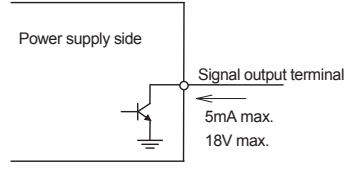
When the ambient temperature (near the airflow inlet) exceeds 40°C, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.



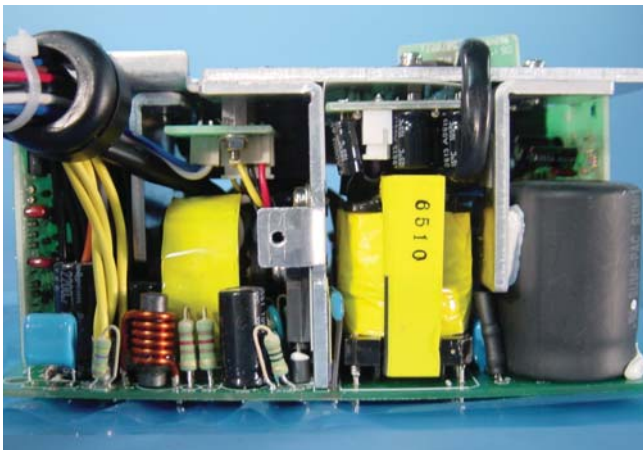
Signal Input / Output Specification Condition: at normal temperature and humidity unless otherwise specified

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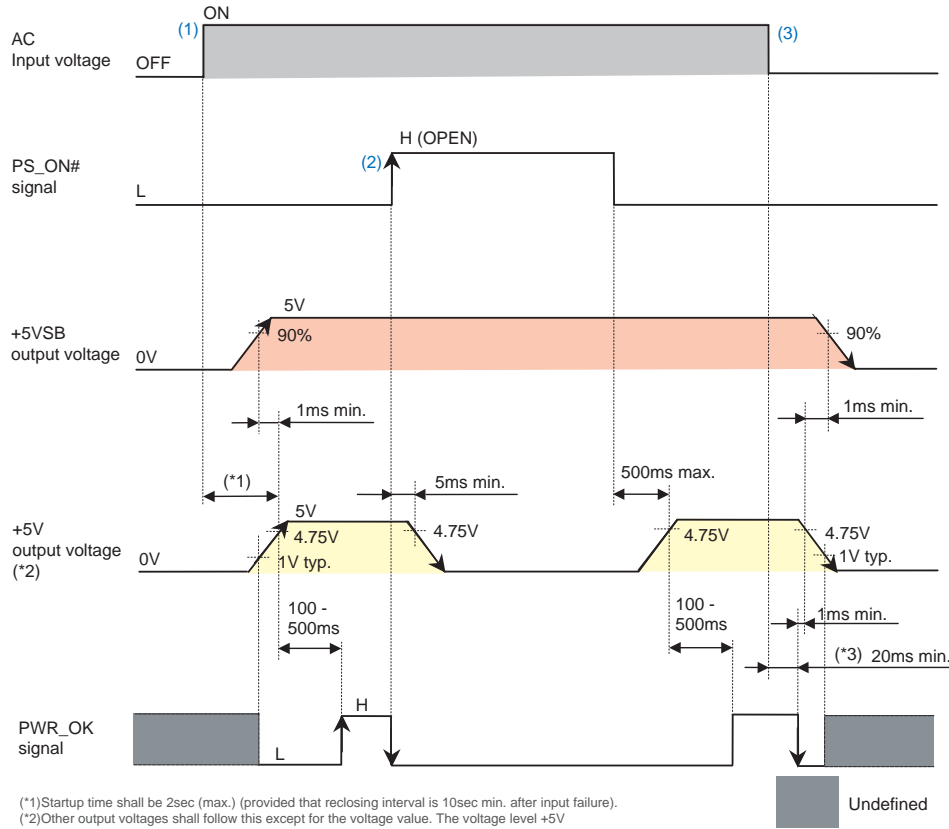
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Items	Specification	Note	
Input Signal	Output ON / OFF Control Signal (PS_ON#)	+3.3V, +5V, +12V, -5V, and -12V outputs are delivered with 'L' input. +3.3V, +5V, +12V, -5V, and -12V outputs shutdown with 'H' or 'OPEN' input and, protection circuit is activated to reset locked latch circuit at output shutdown status.	Signal input between the pin 14 of P1 connector and COM pin
	+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
	FAN C	Fan motor is rotated at full speed at input voltage of 9V±5% or higher. Speed control inside the power supply comes first when input voltage is lower than that or open.	The pin 2 of P7 connector
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). The signal remains 'L' or 'OPEN' when the fan stops caused by any failure or malfunction.	The pin 1 of P7 connector 
Signal Circuit			
Input Signal Circuit	(PS_ON#)	(FAN C)	
			
Output Signal Circuit	(PWR_OK)	(FAN M)	
			

Internal Structure

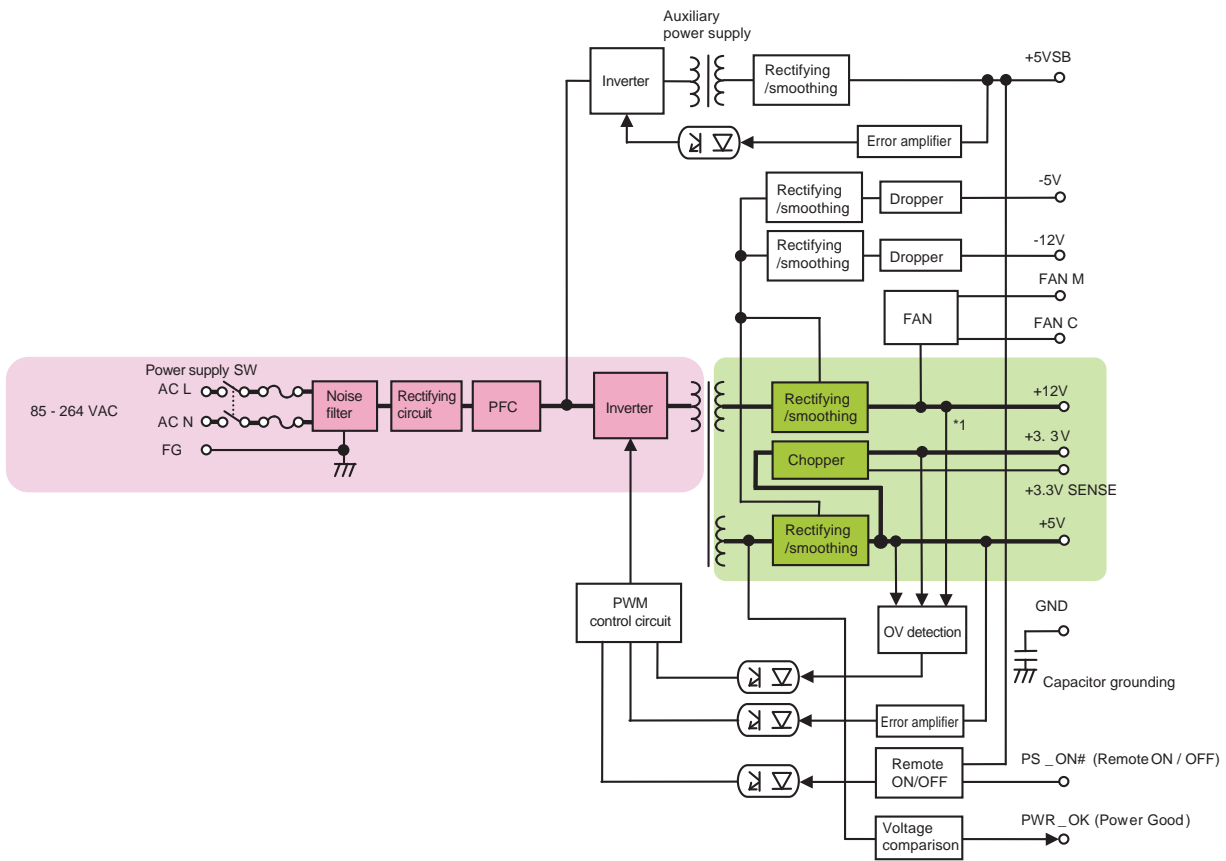


Sequence Diagram



(1) With PS_ON# 'L', all outputs start up at AC input. When +5V start up, PWR_OK goes 'H' after 100 - 500ms.
 (2) With PS_ON# 'H (OPEN)' input, all outputs except for +5VSB shutdown.
 (3) At blackout, PWR_OK goes 'L' after at least (*3): 1ms min. after that, +5V and +5VSB outputs shutdown.

Block Diagram

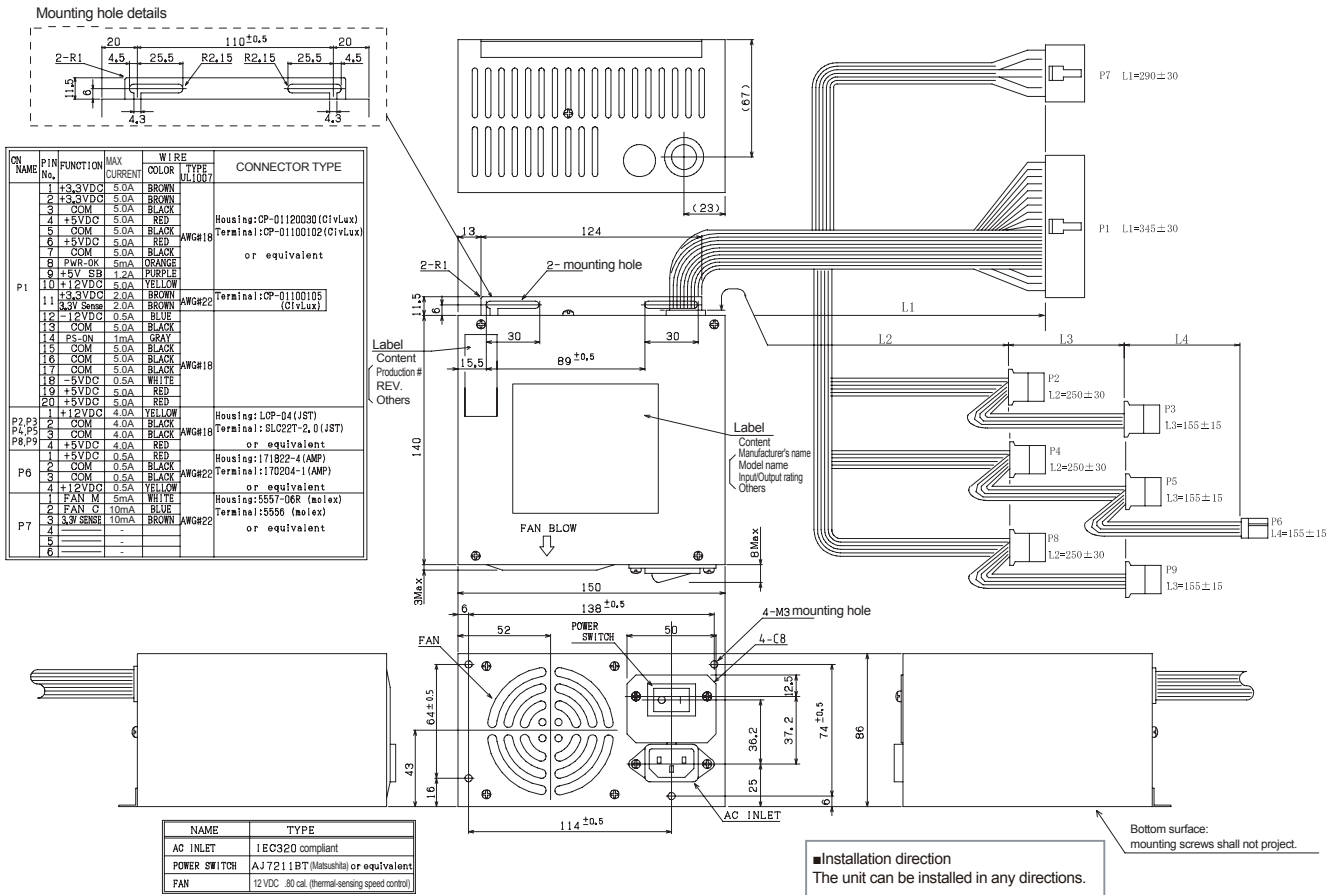


Outline Drawing / Output Harness

PCSA-300P-X2S

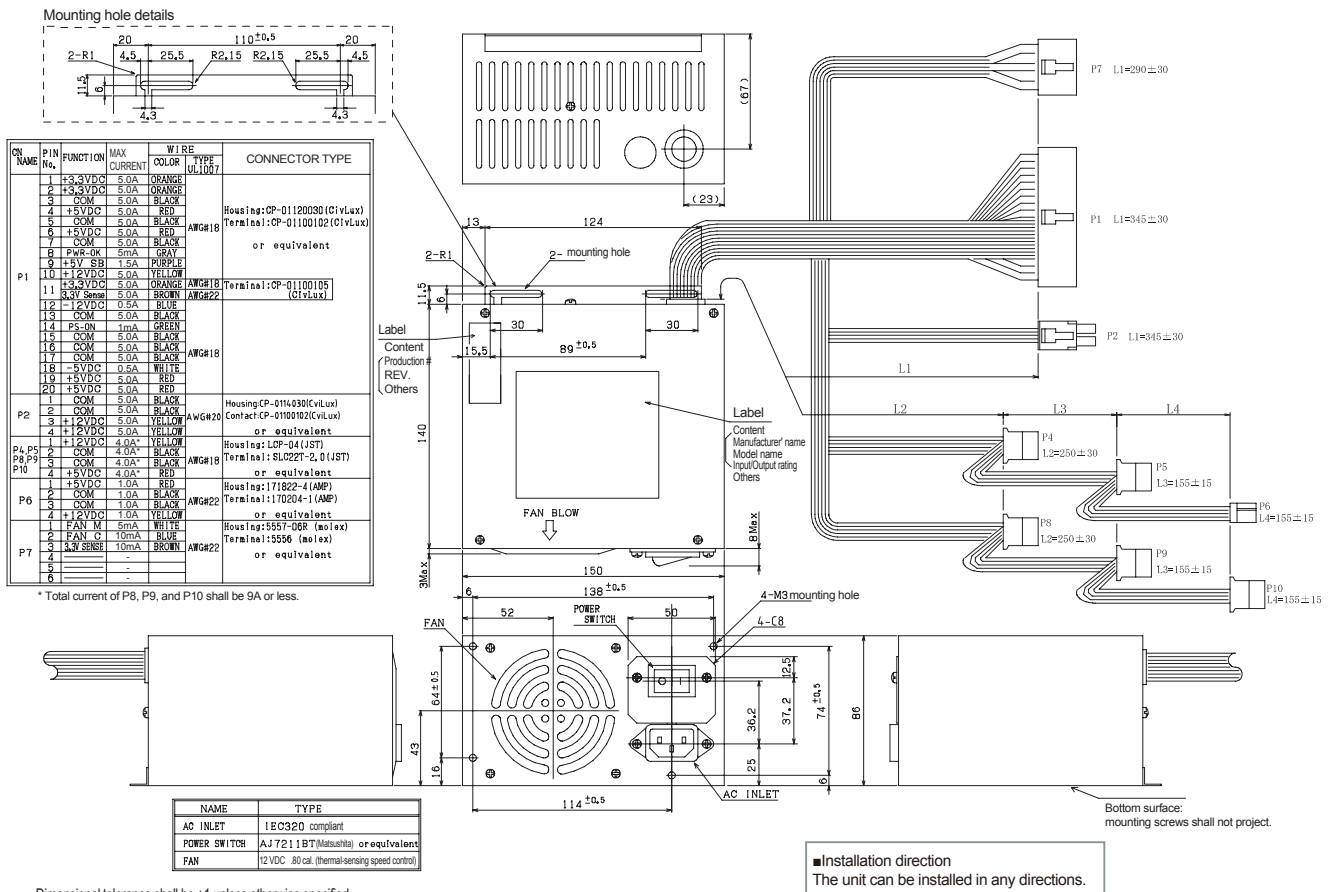
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Dimensional tolerance shall be ±1 unless otherwise specified.



PCSA-300P-X2V



Dimensional tolerance shall be ±1 unless otherwise specified.

* Total current of P8, P9, and P10 shall be 9A or less.

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

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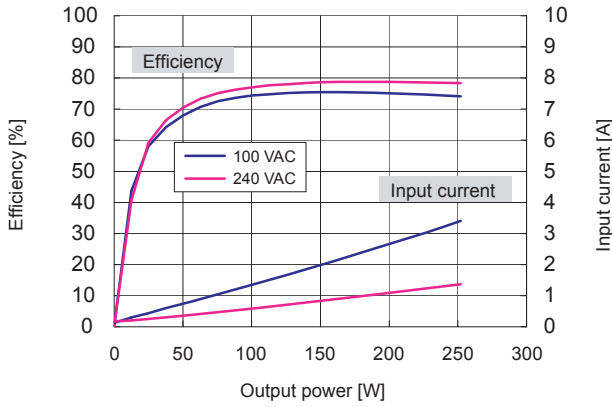
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Characteristics Data PCSA-300P-X2S (Examples of actual measurement)

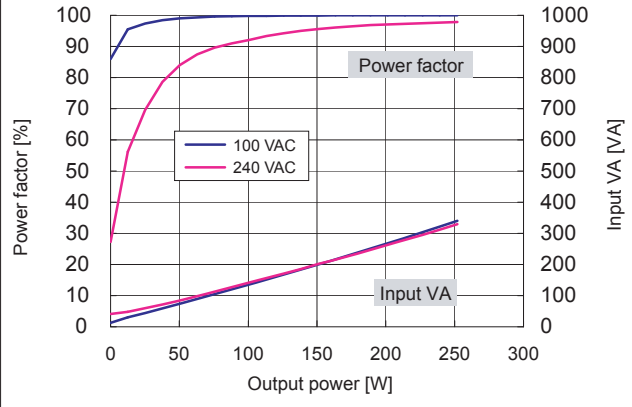
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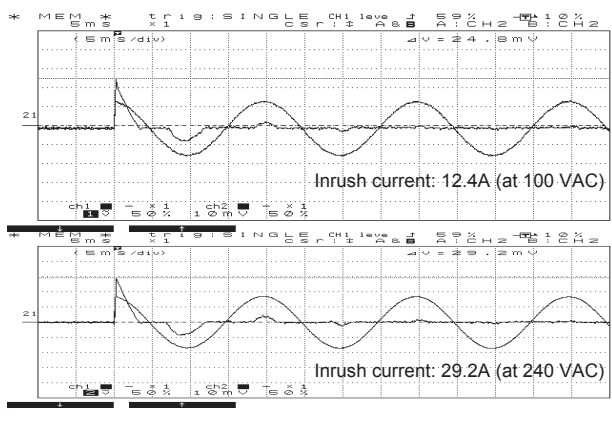
• Fig.3 Efficiency / Input Current vs. Output Power



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



• Fig.5 Inrush Current



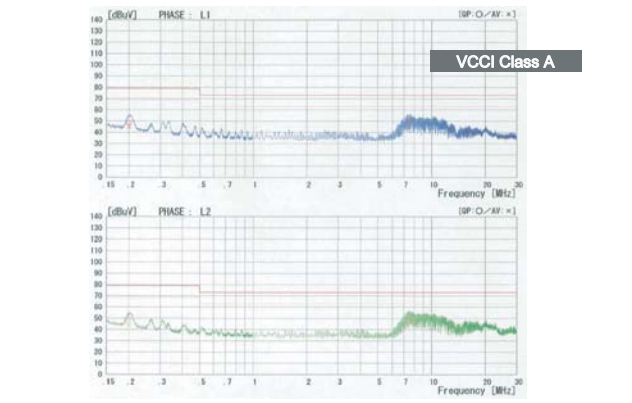
• Fig.6 Leakage Current

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

	Rated load	Min. load
100 VAC	0.24mA	0.21mA
240 VAC	0.53mA	0.45mA

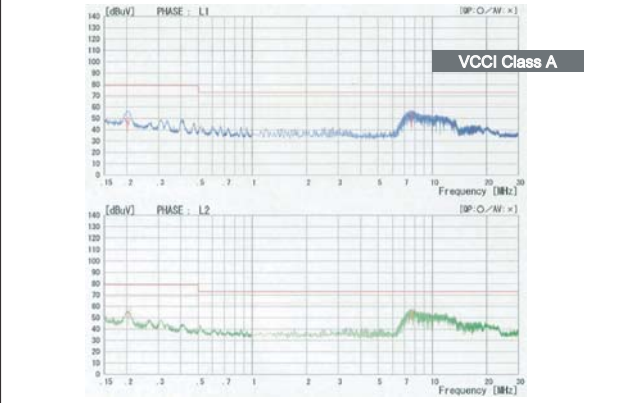
• Fig.7 Conducted Emission at 100 VAC

Input: 100 VAC
Load: Rated
Mode: Peak



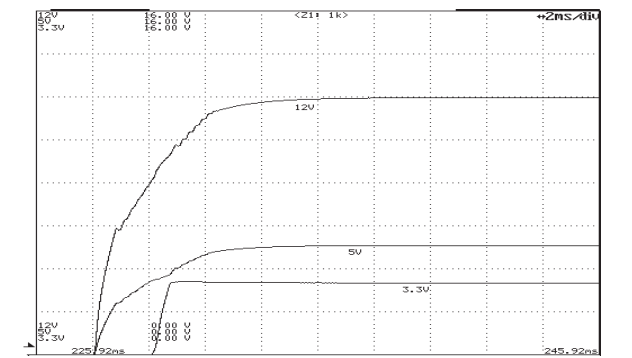
• Fig.8 Conducted Emission at 240 VAC

Input: 240 VAC
Load: Rated
Mode: Peak



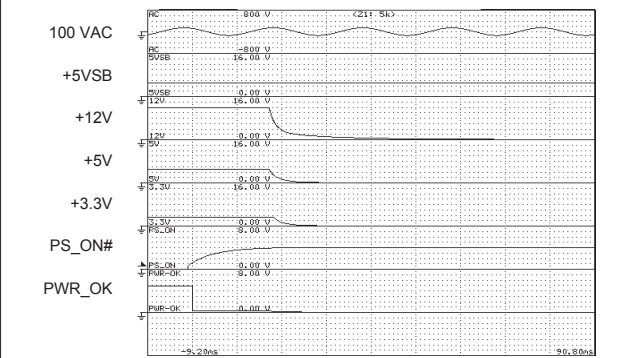
• Fig.9 Rising Characteristics at 100 VAC

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



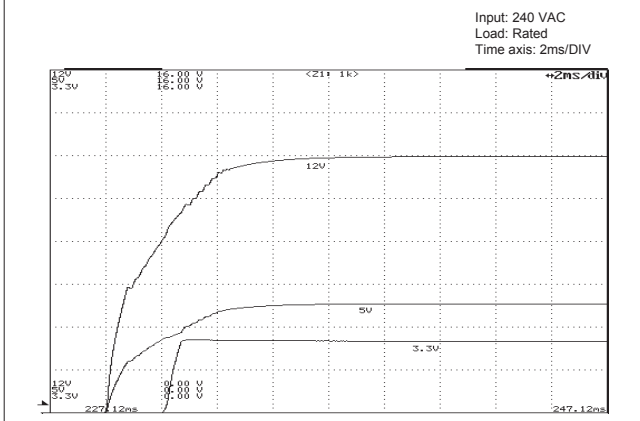
• Fig.10 Falling Characteristics at 100 VAC when REMOTE goes Off

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

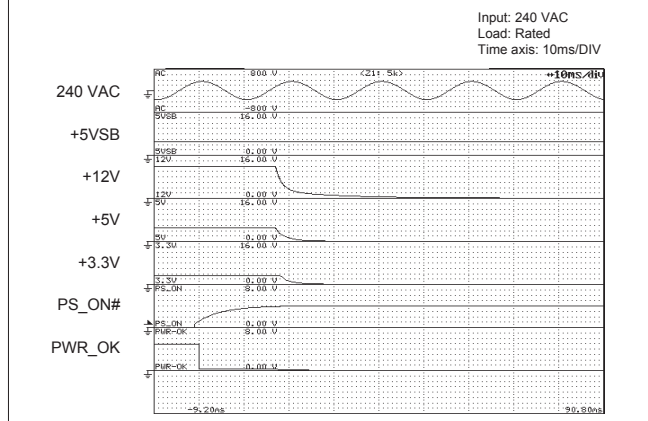


Characteristics Data PCSA-300P-X2S (Examples of actual measurement)

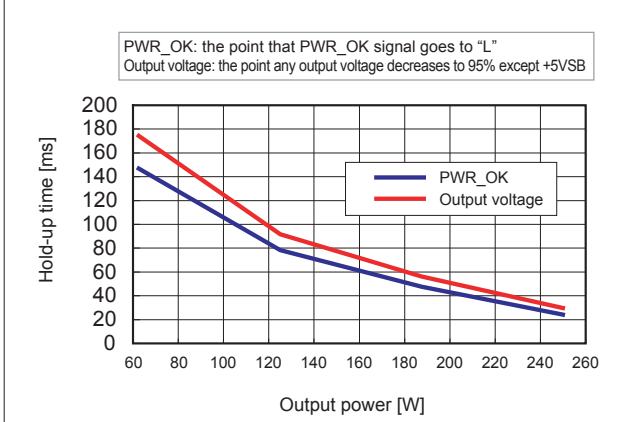
● Fig.11 Rising Characteristics at 240 VAC



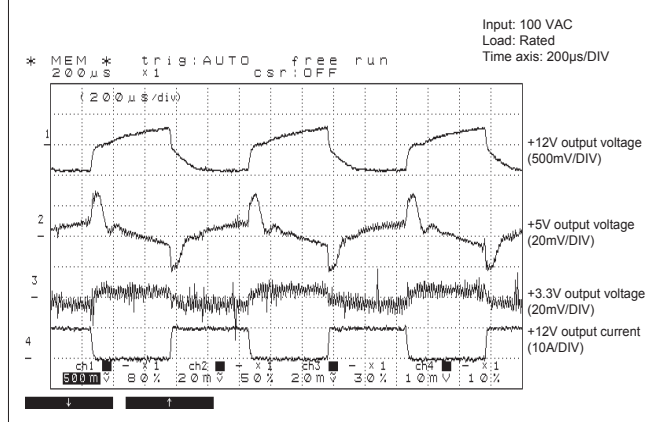
● Fig.12 Falling Characteristics at 240 VAC when REMOTE goes Off



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



● Fig.14 Dynamic Load Fluctuation Characteristics at 1kHz

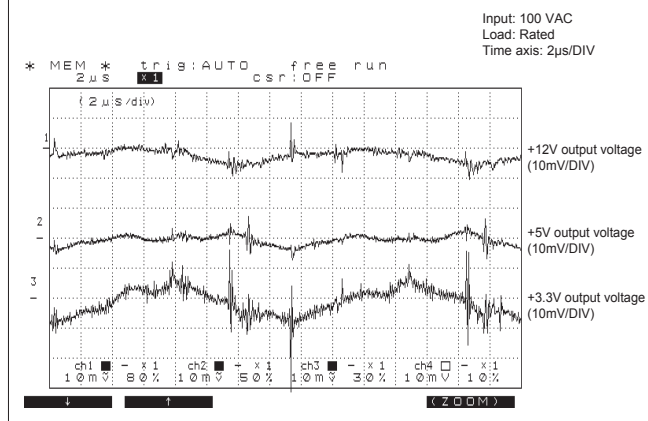


● Fig.15 Output Voltage Regulation

Output	Min. load	Rated load	Peak load
+12V output	0.5A	10A	12A
+5V output	2A	20A	25A
+3.3V output	0A	5A	20A

	85 VAC	100 VAC	132 VAC	176 VAC	240 VAC	264 VAC
+12V output (min. load)	11.850 V	11.853 V	11.853 V	11.852 V	11.852 V	11.853 V
+12V output (rated load)	12.017 V	12.010 V	12.007 V	12.006 V	12.003 V	12.005 V
+12V output (peak load)	12.069 V	12.066 V	12.063 V	12.062 V	12.061 V	12.061 V
+5V output (min. load)	5.166 V	5.166 V	5.166 V	5.166 V	5.166 V	5.166 V
+5V output (rated load)	5.076 V	5.077 V	5.077 V	5.077 V	5.077 V	5.077 V
+5V output (peak load)	5.023 V	5.024 V	5.024 V	5.025 V	5.025 V	5.025 V
+3.3V output (min. load)	3.381 V	3.382 V	3.382 V	3.382 V	3.382 V	3.382 V
+3.3V output (rated load)	3.339 V	3.339 V	3.339 V	3.339 V	3.339 V	3.339 V
+3.3V output (peak load)	3.284 V	3.284 V	3.284 V	3.285 V	3.285 V	3.285 V

● Fig.16 Ripple and Spike Voltage



● 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. 47	approx. 23	approx. 12

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

■ Fan

Ambient temp.	40°C	50°C	60°C
Expected service life (yr)	approx. 7.4	approx. 6.4	approx. 4.6

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

