

# Product Specification

June 23, 2006

This specification applies to Embedded type DC stabilized power supply, PCSA-370P-X2S.

General Specification Provided at normal Temperature and Humidity unless otherwise specified.

Items		Specification	Measurement, etc.
AC Input	Rated Voltage	100V AC and 240V AC	
	Voltage Range	90V AC to 264V AC	
	Rated Frequency	50Hz and 60 Hz	Range: 47Hz to 63Hz
	Inrush Current	40Apeak max. at 100V AC 80Apeak max. at 240V AC	With Rated Input/Output at 25°C and Cold start
	Apparent Power	450VA max.	at Rated Input/Output
	Reclosing period	10 seconds min. (Inrush current shall be omitted from the specification).	
	Efficiency	70% typical	at Rated Input/Output
	Power Factor	90% min.	
Environment	Operating Temperature	0 to 50°C (Derating is required at 40°C or higher).	Refer to Derating chart in Items 3
	Storage Temperature	-25 to 70°C	
	Relative Humidity	10 to 90% at operation, 10 to 95% at no operation	No condensation
	Vibration	To endure for 45 minutes in each direction of X, Y, and Z under the condition of Displacement amplitude: 0.15 mm, Frequency: 10 to 55Hz, and Sweep cycle: 10.	JIS-C-60068-2-6 compliant at no operation
	Surface Dropping	Lifting one bottom edge up to 50 mm high with the opposite edge placed on the test bench, and let it fall. Repeat 3 times for each of four bottom edges, and no malfunction shall be observed.	JIS-C-60068-2-31 compliant at no operation
Insulation	Dielectric Strength	1500V AC for one minute between AC Input and FG/DC outputs	Cut-off current: 10mA
	Insulation Resistance	50MΩ min. between AC Input and FG/DC outputs	with 500V DC Megger
	Leakage Current	1mA max. at 240V AC	YEW. TYPE3226 or equivalent (1kΩ)
Others	Line Noise Test	±2000V min. (Pulse width of 100/1000ns, Cycle period of 30 to 100Hz, Normal/Common mode with both of Positive/Negative polarity for 10 minutes)	To be measured with INS-410 There shall be no DC-factor voltage fluctuation and no malfunction.
	Impulse Voltage Immunity	There shall be no malfunction when the following condition is applied. Common mode: ±2kV, Normal mode: ±1kV, Pulse width: 1.2×50 us, 5 times for each	IEC-61000-4-5 (Installation environment Class 3) compliant
	Conducted Emission	VCCI Class B compliant	
	Electrostatic Discharge	Aerial discharge: ±8kV, Contact discharge: ±4kV	No malfunction with the single unit
	Harmonic Current Regulation	IEC61000-3-2 Class D and EN61000-3-2 Class D	
	MTBF	100000 hours min.	Based on EIAJ recommended calculation criteria
	Safety Standard	UL60950-1, c-UL, CCC(S&E)	
	Cooling System	Forced Air Cooling	Fan speed depends on operating temperature and Load Factor.
	Reliability Grade	HOA	To follow our standard
	Wight	1.7kg typical	
	Warranty	One year after delivery. However, if any faults belong to us, the defective unit shall be repaired or replaced at our cost.	

Note:

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Drawn by	Yodo	Checked by	Yamada	Approved by	Yamamoto	Model	PCSA-370P-X2S	Drawing No.	2822-01-4-520
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Due to the technical improvement, the specifications and functions are subject to change without notice.

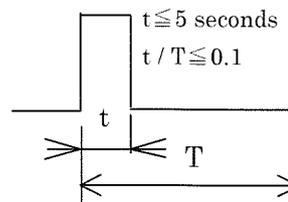
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Output Specification		Provided at normal Temperature and Humidity unless otherwise specified.						
Items	CH1	CH2	CH3	CH4	CH5 (5VSB)	Measurement, etc.		
Output rating	Rated Voltage (V)	5	3.3	12	-12	5		
	Rated Current (A)	20	15	10	0.5	1.5	at Factory Inspection	
	Continuous max. current (A)	21	17	18	0.5	1.5	Certified total max current of CH1 and 2 shall be under 30A on safety standard.	
		Total 35 A max.						
	Peak Current (A)	25	20	18	0.5	2.5	Peak current width in time shall be 5 seconds max.	
		Total 35 A max.						
Min Load (A)	2 (1)	0	0	0	0	When the load of CH1 is 1 to 2 A, all other loads shall be 50% or less. of rated load.		
Continuous/Peak Power (W)	Total Power Continuous Total: 268.5W max. Peak Total: 352W max.			6.0	Continuous: 7.5 Peak: 12.5	Continuous total power: 280.5W max. Peak total power: 370.5W max. However, peak power period shall be 5 seconds max. and Cycle period shall be 10% max. of duty ratio (Refer to the note below).		
Output Characteristics	Total Voltage Regulation (%)	±5 max.	±5 max.	±5 max.	±10 max.	±5 max.	Sum of temperature, Input and Load fluctuation	
	Overshoot voltage (mV)	500 max.	330 max.	1200 max.	1200 max.	500 max.	at Startup	
	Max. Ripple Voltage (mV p-p)	50 max.	50 max.	120 max.	120 max.	50 max.	Connect wires to the output connector with a 10uF electrolytic capacitor and a 0.1uF ceramic capacitor to the opposite end to measure with 100MHz oscilloscope.	
	Max. Spike Voltage (mV p-p)	100 max.	100 max.	120 max.	120 max.	100 max.		
	Dynamic Load Fluctuation	All outputs shall be within total voltage regulation.						To fluctuate each load individually within the rated load as below. CH1 & 2: 30% of rated load, CH3: 50% of rated load, CH4: 0.1A and CH5: 0.5A
	Overcurrent Protection (A)	26 min.	21 min.	19 min.	Short Circuit Protection		All outputs other than CH5 shut down when CH1 to CH3 are in overcurrent. CH2 shall be 10A during measurement of CH1. CH1 shall be 15A during measurement of CH2.	
	Recovery (OCP)	Reclosing of Input voltage (Reclosing period shall be 10 seconds min.)			Automatic Recovery			
	Ovevoltage Protection (V)	5.7 to 7.0	3.7 to 4.3	13.4 to 15.6	-	-	All outputs other than CH5 shut down when CH1 to CH3 are in over voltage. Turn on AC input for recovery. (Reclosing period shall be 10 seconds min.)	
	Insulation of Output GND	All output GNDs are in common and connected to Chassis (FG).						

NOTE:

Duty Ratio for Peak Current and Power

Duty ratio of Peak Output Current and Power shall be 10% max. providing that they are within 5 seconds when operate frequently.



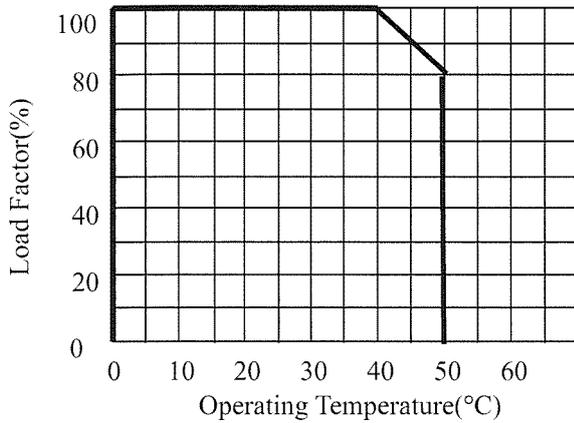
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Output Specification		Provided at normal Temperature and Humidity unless otherwise specified.	
Hold-up Time	16ms min. at Rated Load	Time for output voltage to fall down to 95% when AC input turns off.	
Instantaneous Blackout Period	16ms max. at Rated Load	All outputs shall not fall down when the instantaneous blackout period is within 16mS.	
Startup Time	2000ms max. at 100V AC and Rated Load.	Time for PWR_OK signal is delivered after AC is turned on.	
Rise Time	20ms max. at 100V AC and Rated Load	Time for output voltages to rise from 10% to 95%.	

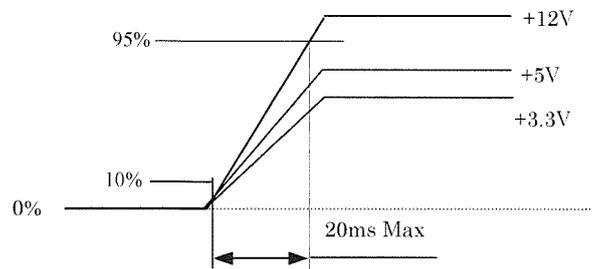
Output Power Derating in accordance with ambient temperature

Follow the derating chart below when ambient temperature is 40°C or higher. Load factor is 100% for Rated Load, and 80% at 50°C.



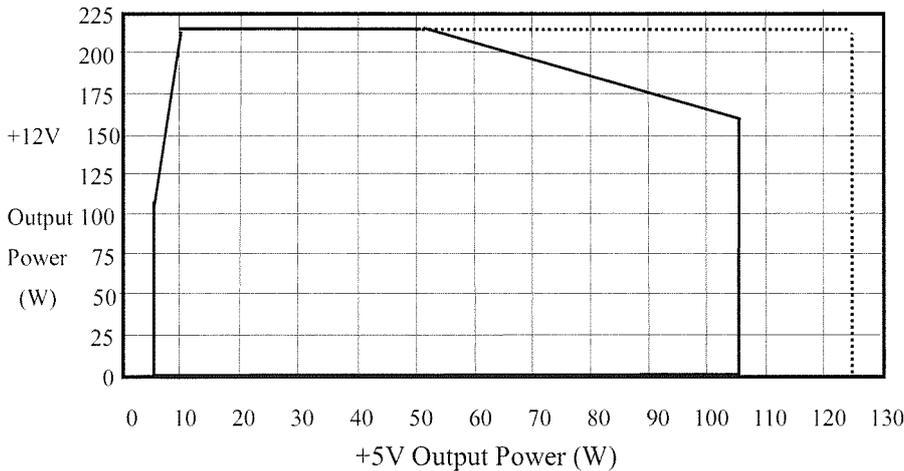
Output Rising Order

+3.3 output voltage level shall never ever be ahead of +5V and +12V output during startup.



Power Distribution Chart

Follow the chart below for +5V and +12V power distribution.



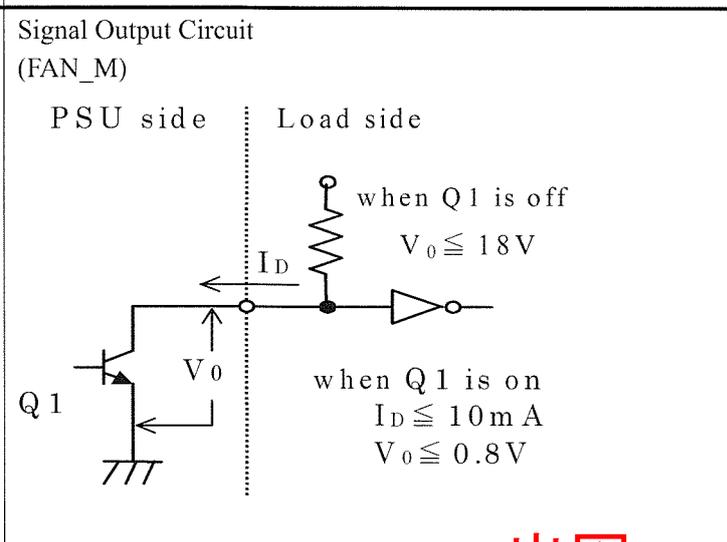
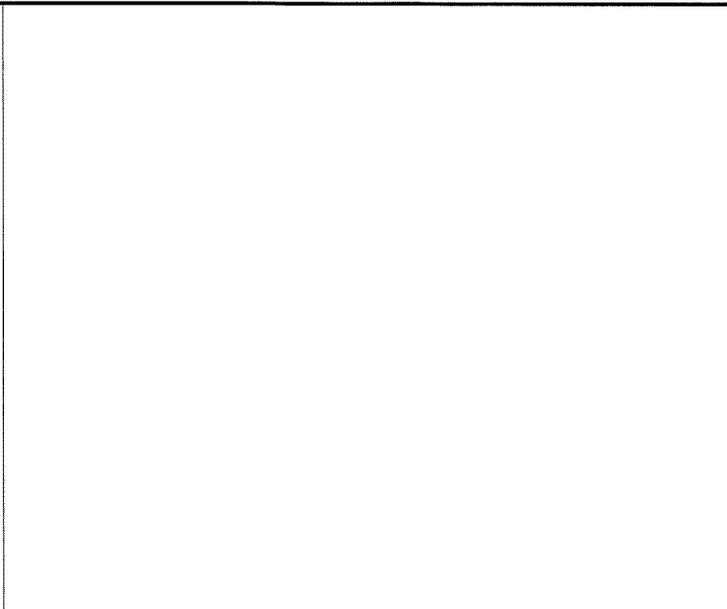
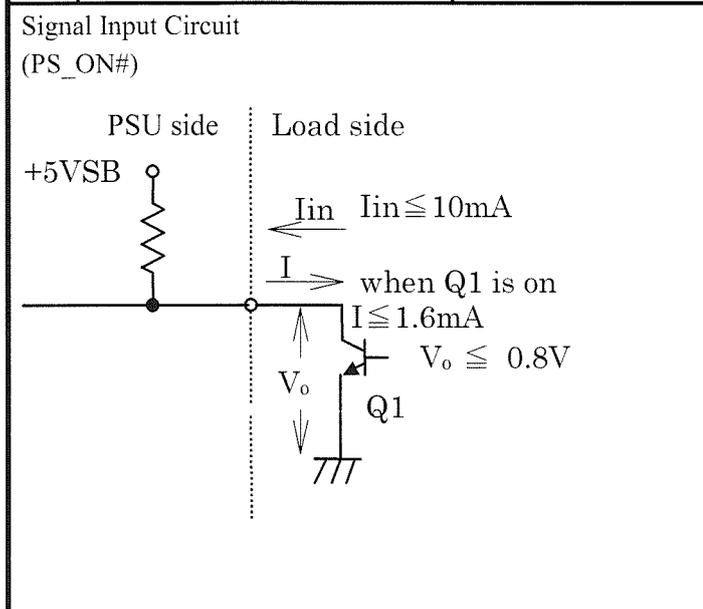
— Continuous max. output power  
 ..... Peak output power

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Signal Input/Output Specification		Provided at normal Temperature and Humidity unless otherwise specified.
Items		Specification
Input	Output ON/OFF control (PS_ON#)	Upon receipt of 'H' or 'OPEN', CH1 to CH4 shut down.
	Normal Output Signal (PWR_OK)	'H' is delivered 100ms to 500ms after CH1 (+5V) output reaches 95% or higher.
Output	Fan Monitor Signal (FAN_M)	2-cycle pulse per one rotation of fan motor is delivered. 'OPEN' or 'L' is delivered when fan is locked.



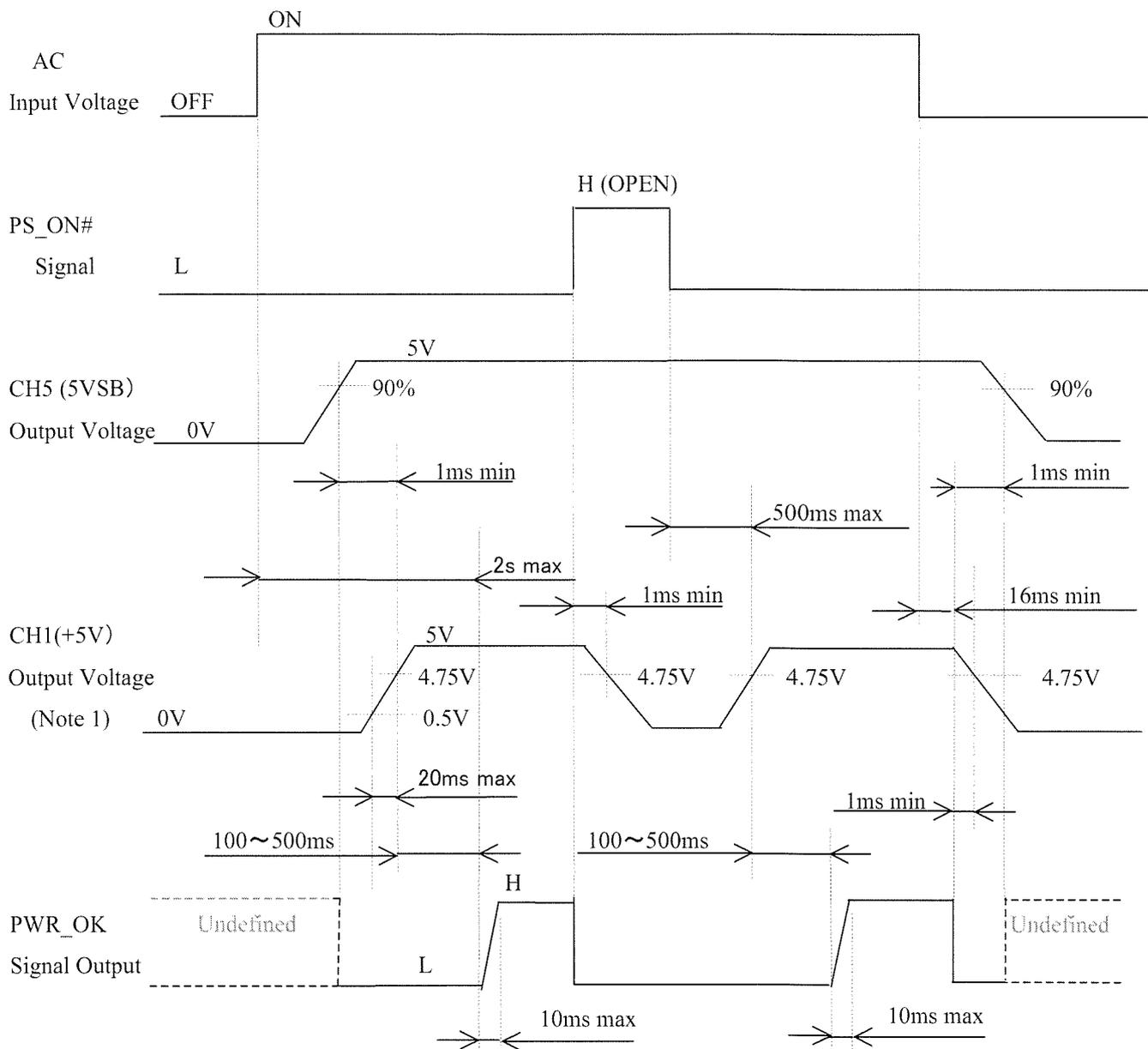
NOTE:  
 'L' signal level is 0 to 0.8V for both of Input and Output.

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## Time Chart

Provided at normal Temperature, Humidity and Rated Input/Output unless otherwise specified.



Note 1: All other outputs shall follow this chart except voltage values.

NOTE:

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## Output Connector Specification

P1	Housing: CP-01120030 (CviLUX) Contact: 11PIN CP-01100105 other CP-01100102 (CviLUX)  or Equivalent	1	Orange	+3.3V	
		2	Orange	+3.3V	
		3	Black	GND	
		4	Red	+5V	
		5	Black	GND	
		6	Red	+5V	
		7	Black	GND	
		8	Gray	PWR_OK	Signal Output
		9	Purple	+5VSB	
		10	Yellow	+12V	
		11	Orange Orange	+3.3V +3.3VSENSE	
		12	Blue	-12V	
		13	Black	GND	
		14	Green	PS_ON#	Signal Input
		15	Black	GND	
		16	Black	GND	
		17	Black	GND	
		18	-	NC	
		19	Red	+5V	
		20	Red	+5V	
P3 P4 P6 P7	Housing: LCP-04(JST) Contact: SLC22T-2.0(JST) or Equivalent	1	Yellow	+12V	
		2	Black	GND	
		3	Black	GND	
		4	Red	+5V	
P5	Housing: 171822-4(AMP) Contact: 170204-1(AMP) or Equivalent	1	Red	+5V	
		2	Black	GND	
		3	Black	GND	
		4	Yellow	+12V	
P2	Housing: CP-01104030 (CviLUX) Contact: CP-01100102 (CviLUX) or Equivalent	1	Black	GND	
		2	Black	GND	
		3	Yellow	+12V	
		4	Yellow	+12V	
P8 P9	Housing: 675820000 (Molex) Contact: 675810000 (Molex) or Equivalent	Wire 1	Yellow	+12V	
		Wire 2	Black	GND	
		Wire 3	Red	+5V	
		Wire 4	Black	GND	
		Wire 5	Orange	+3.3V	
P10	Housing: XAP-02V-1(JST) Contact: SXA-001T-P0.6(JST) or Equivalent	1	Brown	FAN M	Signal Output
		2	Black	GND	

NOTE:

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Others

Precaution before use

1. Grounding

The unit is designed and manufactured as Class I equipment. For safety, make sure to connect the chassis to ground in a proper way.

2. Electrical Shock

The unit is designed and manufactured as embedded type equipment. Make sure to install into the system to prevent electrical shock as it has high voltage part inside.

3. Output Short Circuit

Do not short the output terminals as capacitors inside rapidly discharge and may cause spark to lead to fire and adverse impact on lifetime.

4. Inrush Current Limiting Circuit

A power thermistor is equipped to limit Inrush current into smoothing capacitor(s) when AC input is turned on. Input reclosing cycle is specified as 10 seconds or longer in the specification. If the cycle is short in time, the power thermistor remains high in temperature and may cause excessive Inrush current.

5. Fan Motor

Fan motor equipped in the unit detects the temperature inside to change its speed. When ambient temperature goes high or the loads are heavy, the motor speed increases and vice versa.

NOTE:

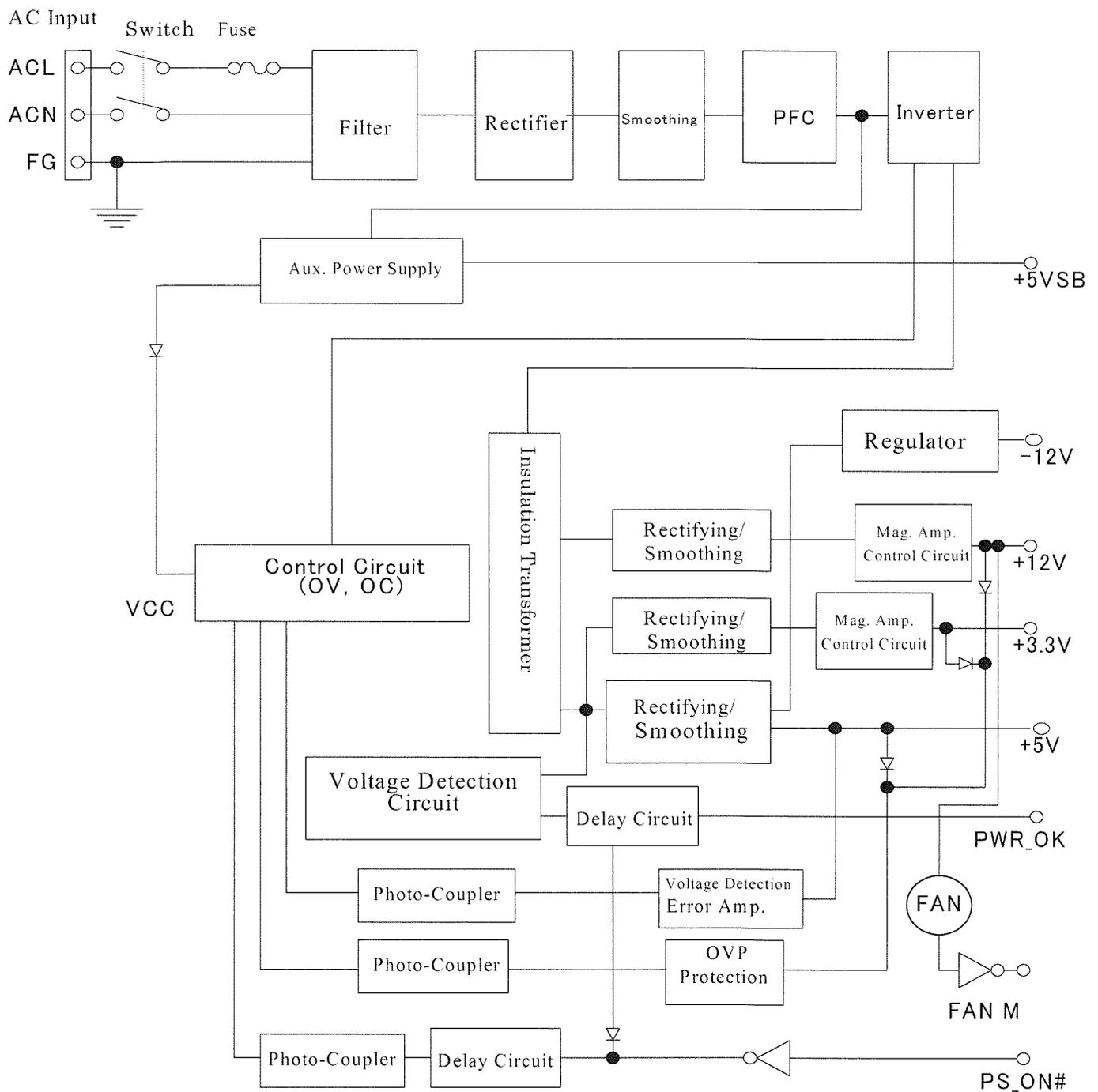
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## Circuit Block Diagram

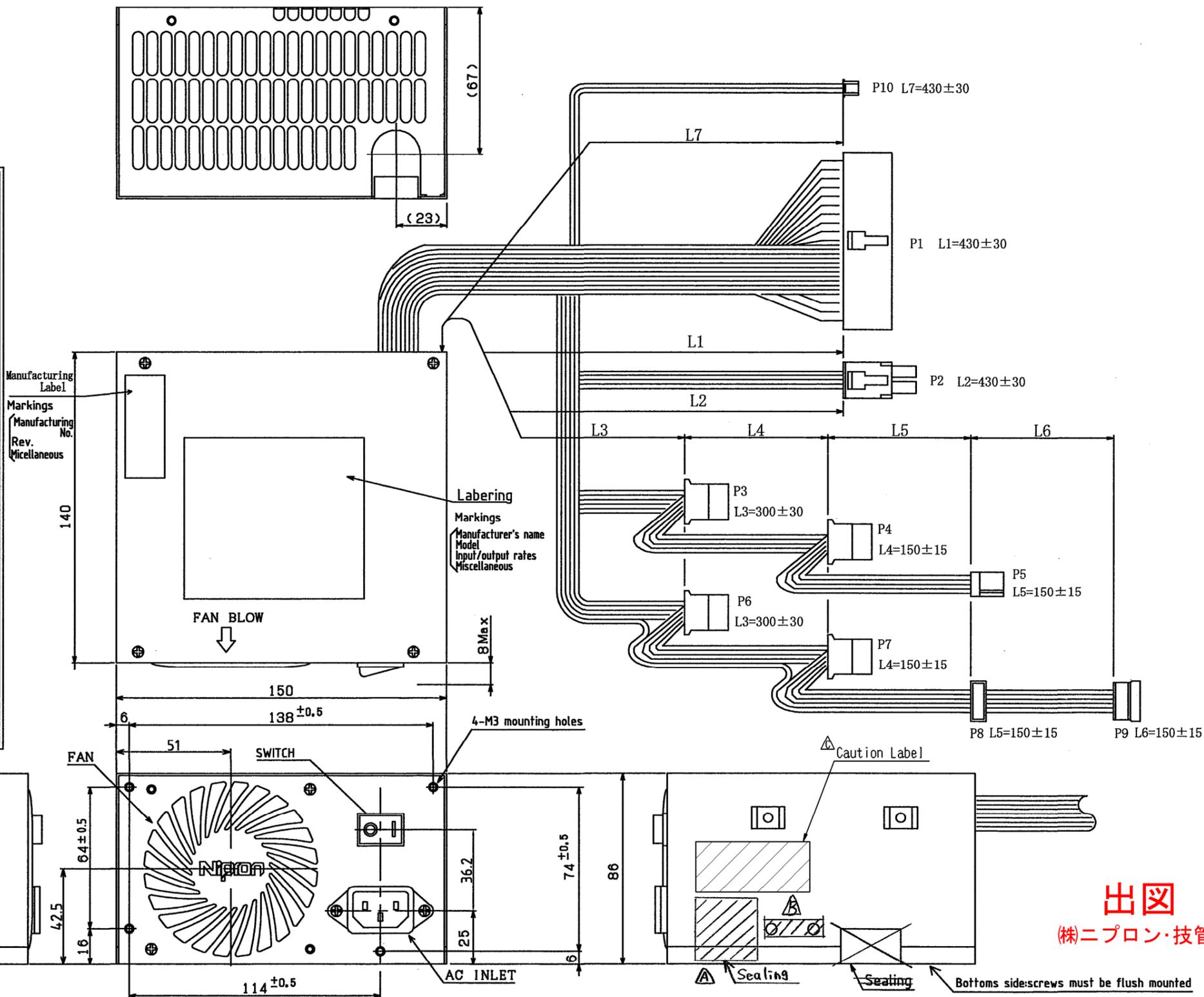


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CN NAME	PIN No.	FUNCTION	WIRE		CONNECTOR TYPE
			COLOR	TYPE UL1007	
P1	1	+3.3VDC	ORANGE		Housing:CP-01120030(CviLux) Contact:CP-01100102(CviLux)  or equivalent  Terminal:CP-01100105 (CviLux)
	2	+3.3VDC	ORANGE		
	3	COM	BLACK	AWG#18	
	4	+5VDC	RED		
	5	COM	BLACK		
	6	+5VDC	RED		
	7	COM	BLACK		
	8	PWR-OK	GRAY	AWG#20	
	9	+5V SB	VIOLET	AWG#18	
	10	+12VDC	YELLOW		
	11	+3.3VDC	ORANGE	AWG#18	
		3.3V Sense	ORANGE	AWG#22	
	12	-12VDC	BLUE	AWG#18	
	13	COM	BLACK		
	14	PS-ON	GREEN	AWG#20	
	15	COM	BLACK		
	16	COM	BLACK	AWG#18	
	17	COM	BLACK		
	18	NC	-		
	19	+5VDC	RED		
20	+5VDC	RED			
P2	1	COM	BLACK	AWG#18	Housing:CP-0114030(CviLux) Contact:CP-01100102(CviLux)  or equivalent
	2	COM	BLACK		
	3	+12VDC	YELLOW		
	4	+12VDC	YELLOW		
P3	1	+12VDC	YELLOW	AWG#18	Housing:LCP-04(JST) Terminal:SLC22T-2.0(JST)  or equivalent
P4	2	COM	BLACK		
P6	3	COM	BLACK		
P7	4	+5VDC	RED		
P5	1	+5VDC	RED	AWG#22	Housing:171822-4 (AMP) Terminal:170204-1 (AMP)  or equivalent
	2	COM	BLACK		
	3	COM	BLACK		
	4	+12VDC	YELLOW		
PB	Wire 1	+12VDC	YELLOW	AWG#18	PB Housing:C194PFIA1A0 (CviLux) Cover:C194PFIC010 (CviLux) PG Housing:C194PF00100 (CviLux) Terminal:C194T03APP0 (CviLux) or equivalent
	Wire 2	COM	BLACK		
	Wire 3	+5VDC	RED		
	Wire 4	COM	BLACK		
	Wire 5	+3.3VDC	ORANGE		
P10	1	FAN M	BROWN	AWG#22	Housing:XAP-02V-1(JST) Contact:SCXA-001T-P0.6(JST)
	2	COM	BLACK		



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Tolerance: ±1 unless otherwise noted

C版 Δ×1:2011.05.18 淀 I-230514  
B版 Δ×1:2007.01.15 岩原 I-190107  
A版 Δ×1:2006.11.15 櫻井 I-181144

DROWN BY	CHECK BY	APPROVED BY	SCALE	MATERIALS	TITLE	PCSA-370P-X2S
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ISSUED 2005. 10. 28			UNITS	FINISH	DRAWING NO.	2822-01-3-050
			3RD ANGLE PROJECTION			