

**Series name: GPSA-600-24P series**

**Scope**

This specification applies to Embedded type DC stabilized power supply, GPSA-600-24P-\*\*.

**Model name coding**

Ex.: GPSA-600-24 P-T P

① ② ③④ ⑤⑥⑦

①Series name

②Continuous output power-600 : 24V output 606W Continuous, 1206W Peak(AC100V), 1446W Peak(AC200V)

③Output voltage---24:24V

④Peak power

⑤Signal Interface----- T : TTL signal N or 0: Not available

⑥Fan signal...P: Rotation pulse L: Fan lock N or 0: Not available

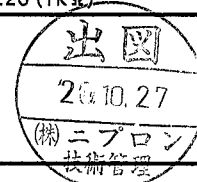
⑦Coating: C

**General specification (Provided at normal temperature and humidity unless otherwise specified)**

Items		Specifications	Measurement conditions, etc.
AC Input	Rated voltage	AC100-240V	Worldwide range
	Voltage range	AC 85~264V	*1
	Rated frequency	50/60 Hz	Frequency range: 47 to 63HZ
	Current	7.5A max. at AC100V, 3.2A max. at AC240V	at continuous max. output
		16.2A max. at AC100V, 8.1A max. at AC240V	at Peak output
	Inrush current	30Apeak Max	*2 with continuous rated output at cold start (25°C)
	Efficiency	80% min. at AC100V, 82% min. at AC240V	at continuous rated output
	Power factor	94% min. at AC100V, 90% min. at AC240V	
	Operating temp./ Humidity	-10 ~ 60°C/ 10 ~ 90%RH	*3 There shall be no condensation.
Storage temp./ Humidity	-25 ~ 75°C/ 10 ~ 95%RH	There shall be no condensation.	
Vibration	To endure in each direction of X, Y, and Z under the condition of a rate of acceleration 2G, 10 to 55Hz of vibration, and 10 sweep cycles for 10 min	To follow JIS-C-60068-2-6 at No operation	
Mechanical strength (surface dropping)	Lift one bottom edge 50 mm high with the opposite edge placed on a test bench, and let it fall. Repeat 3 times on other three edges as well and no malfunction shall be observed.	To follow JIS-C-60068-2-31 at No operation	
Insulation	Insulation resistance	50MΩ min. between Input and Output, Input and FG, and Output and FG for each	at DC 500V
	Dielectric strength	AC 3.0kV for one minute between Input and Output/AC 2.0kV for one minute between Input and FG	Cut-off current: 15mA
	Leakage current	0.5mA max. at AC100V, 1.0mA max. at AC240V	YEW, TYPE3226 (1kΩ)

**Note:**

- \*1: Follow the derating figure on page 4 for AC 85 to 90V input.
- \*2: Inrush current less than 100 μs in input filter section shall not be specified.
- \*3: Follow the derating figure on page 4 for ambient temperature over 50 °C.



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# Product Specification

Created: June 29<sup>th</sup>, 2010

Items	Specifications	Measurement conditions, etc.
EMS / EMI	Line noise Immunity	±2000V (Pulse width: 100/1000nS, Cycle period: 30 to 100Hz, Normal/Common mode: Positive/Negative 10 minutes for each) <span style="float: right;">△</span>
	Surge immunity	IEC-61000-4-5 installation environment class 3 compliant Common mode: ±2kV, Normal mode: ±1kV 5 times for each
	Conducted emission	VCCI, FCC, CISPR22, and EN55022 Class B compliant
	Electrostatic discharge immunity	IEC61000-4-2 test level 3 compliant Contact discharge: 10 times at ±6kV
	Harmonic current regulation	IEC61000-3-2 (Ed. 2.1) Class D To meet EN61000-3-2 (A14) Class D
Others	Safety standard	UL60950-1, CSA22.2 No60950-1(c-UL) CCC Class A, CE marking(IEC62368-1) <span style="float: right;">△</span>
	Cooling system	Forced air cooling with thermal sensing fan equipped
	Dimensions/Weight	128(W) × 61(H) × 240(D) 1.95kg/typ.
	Reliability grade	FA
	Lifetime expectancy	Ten years min. (Short lifetime components: Electrolytic capacitors and fan motors)
	MTBF	70,000 hours
	Environment	RoHS compliant
	Warranty	Three years after delivery. However, if defects belong to us, the defective unit shall be repaired or replaced at our cost.

Note



△ X2 I-320912 Sept. 17 th, 2020

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Output Specification					
Items		Specification		Measurement conditions, etc.	
		GPSA-600-24P	12VSB		
Output rating	Rated voltage	24V	12V	at rated output power 606W Refer to the ambient temperature derating Number in () is for back up.  Duty ratio is 35% for repetitive rating. Refer to the figure below for duty ratio.	
	MIn. load (A)	0A	0A		
	Continu ous rating	Current	25A		0.5A(0.3A)
		Power	600W		6W
	Peak rating 5sec. max.	Current (AC100V)	50A		-
		Power (AC100V)	1200W		-
		Current (AC200V)	60A		-
Power (AC200V)		1440W	-		
Output characteristics	Voltage setup at factory	24V±2%	12V±5%	At continuous rated output	
	Voltage adjustable range	24V±10%	-		
	Static input fluctuation	96mV max.	120mV max.	Measurement point shall be output block terminal or connector.	
	Static load fluctuation	150mV max.	600mV max.		
	Time-lapse drift	96mV max.(at 25°C)	120mV max.		
	Total fluctuation	±5%max.			
	Ripple voltage	0~+60°C	120mVmax.	Connect two wires of 100cm max in length with a 47 μF electrolytic capacitor and a 0.1 μF ceramic capacitor connected to the other ends to the output connector to measure with a 100MHz oscilloscope.	
		-10~0°C	160mVmax.		
Spike/ Noise voltage	0~+60°C	150mVmax.			
	-10~0°C	180mVmax.			
Protection	Over current protection	OCP point	101% min. of rated peak current		Automatically shuts down with more than 5 sec of peak rated current. (Recovery: Recycling of AC input)
		Method	Hold-down	Hold-down	24V recovery at 12VSB over current at 24V load factor 1% max. : Recycling of AC Input or recycling of PS_ON signal
		Recovery	Automatic recovery	Automatic recovery	
	Over Voltage protection	OVP point	Vout(settled output voltage) * 1.1 ~ 1.3		Output voltage follow-up type
		Method	Output shutdown		
		Recovery	Recycling of AC input		



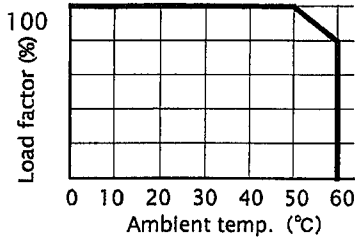
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# Product Specification

Date : June 29<sup>th</sup>, 2010

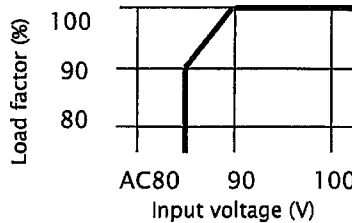
## Ambient Temperature Derating

When the ambient temp. near the airflow Inlet exceeds 50°C follow the curve below to derate rated current/power, continuous max. current/power, and momentary peak current/power.



## Low Input Voltage Derating

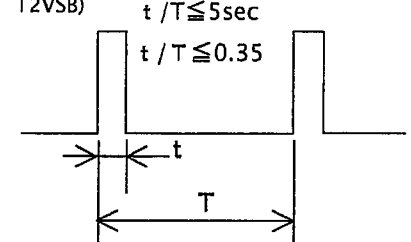
When the input voltage is AC 90V or less, follow the derating curve below to derate rated current/power, continuous max. current/power, and momentary peak current/power.



## Duty ratio of momentary peak current and power

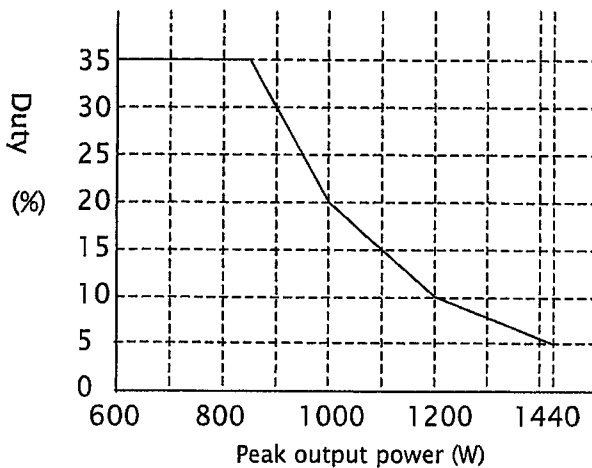
The duration of momentary peak current/power shall be 5 sec. max, and the duty ratio at repetitive use shall be 35% or less.

550W max for peak load.(except 12VSB)



## Peak output power condition

### Duty VS Peak output power



Please refer to the chart in left, and Duty ratio on above. Please keep average output power under 550W when in use of peak output power, which exceeds continuous rating power, (600W).

Note:



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									4/11

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Signal Input/Output specification		
Items	Specification	Signal Input/Output circuit
Input signal	Output ON/OFF control signal (PS_ON) Operation mode; Power supply starts up at ' L ' input. Power supply shuts down at ' H ' or ' OPEN ' input. (except 12VSB)	<p>(<math>'L' \leq 0.8V, 2.0V \leq 'H'</math>)</p>
Output signal	PWR_OK signal 'H' is delivered when output is normal. (Detection delay time: 100 to 500ms) Detection voltage: 19.9V min. for 24V output)	
	Fan monitoring signal (FAN_M) Two pulses per rotation of individual fans are delivered in square wave. This output is Open-Collector.	
	Blackout detection signal (AC FAIL) This signal goes to "OPEN" when AC input lowers or power failure is detected.  Detection voltage: AC 80V or less Detection delay time: 20 to 40ms after AC failure. *At rated input / output	
	Low Battery voltage signal (BATT LOW)  <u>*Available only when the special battery package is connected</u>	The low battery voltage signal from the special battery package to the power supply is forwarded. In addition, this signal goes to "OPEN" if the battery package is not connected. Detailed specification shall follow the specification of the battery package to be connected.



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						GPSA-600-24P series	6166-01-4-520
							5/11

Signal connector pinout table

Connector name	Pin No.	Output (signal) name	Max. current per pin	Note
SIG	1	COM	0.6A	Common use with output GND
	2	FAN_M	10mA	
	3	N.C	10mA	
	4	PS_ON	10mA	
	5	PWR_OK	10mA	
	6	AC FAIL	4mA	
	7	Batt Low	10mA	Available only when the special battery package is connected
	8	12VSB	0.5A	0.3A max at backup operation

Note 1:

When Pin 1 (COM) of SIG connector is used, main output current shall not flow into this pin.

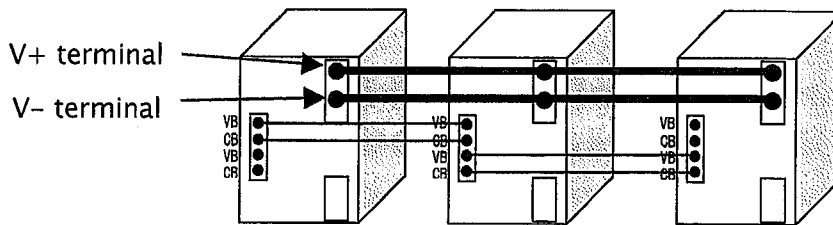


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							6/11

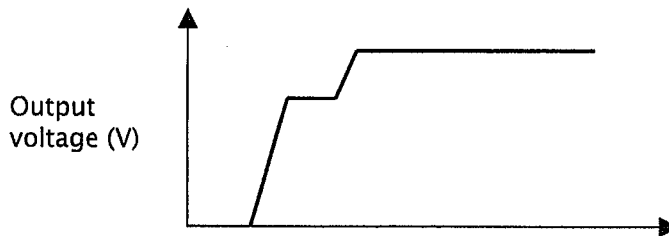
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Parallel operation

- Can be used with 3 in parallel
- Parallel operation is not available for 12VSB.
- Please wire power supply with same impedance of load wire which connects each power supply. (Recommended: Thickness min 1mm, width min 8mm cupric bar to connect V+ terminal and V- terminal of each power supply).
- Connect each output terminal --output voltage balance (VB), and output current balance (CB) signal. (Refer to the appearance diagram for each output terminal)
- Please set the voltage adjustment volume(s) of sub power supply(-ies) maximum to the left (min. voltage) in order to set the voltage of whole with the master power supply voltage adjustment volume.



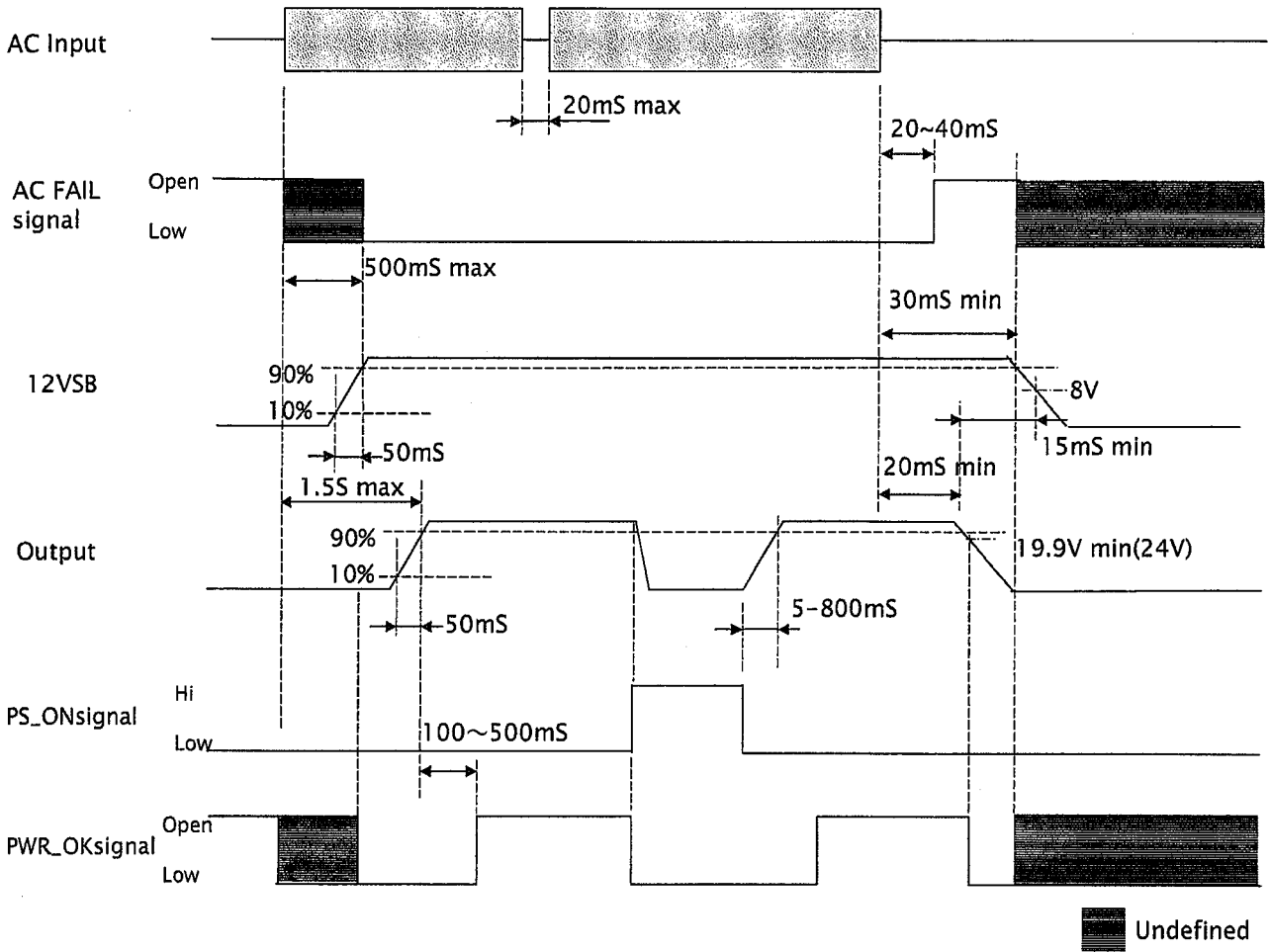
- Max output current at parallel operation calculated with the formula below.  
"Rated current for each output terminal\*number of connectionterminal x 90%"
- Starting output voltage can be stepping up at parallel operation, as the output CHs start up in erratic pattern.
- Please connect power supplies with AC input shut-down condition.
- Please turn ON/OFF AC voltage or input PS\_ON signal at a same time for all parallel power supplies.
- Please set min. output current following the formula below.  
"More than 5% of number of units connected x rated current". (Ex. More than 2.5A at connect 2 in parallel.)



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						GPSA-600-24P series	6166-01-4-520
							7/11

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● Sequence timing diagram



Note:



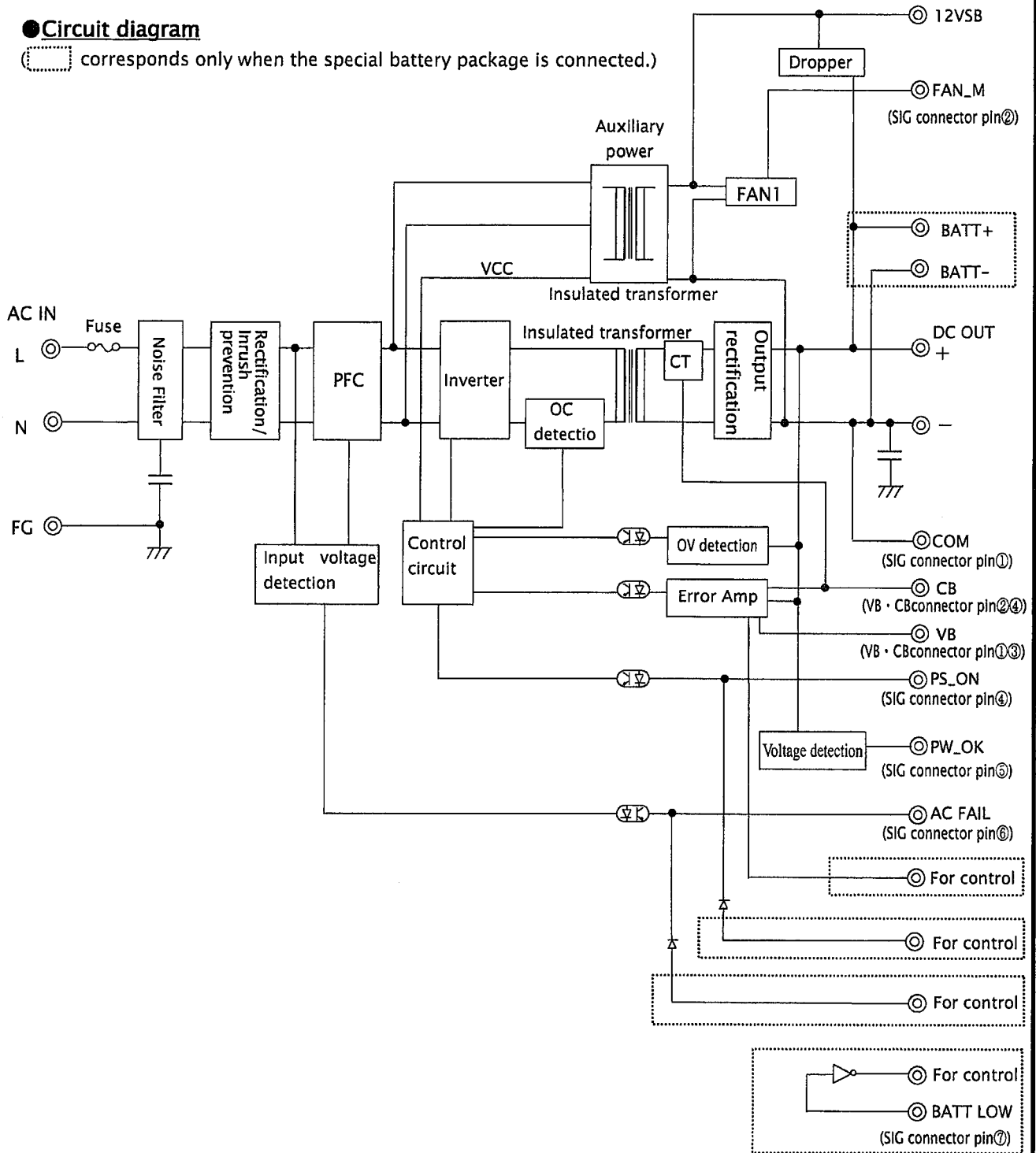
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									8/11

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● **Circuit diagram**

(   corresponds only when the special battery package is connected.)



Note



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									9/11

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**Precaution before use**

1. Grounding ⚠ Warning

This unit is designed and manufactured as Class I equipment. For safety, make sure to connect the grounding terminal to the ground in a proper way before use.

2. Electrical Shock ⚠ Warning

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 portion inside.

3. Output shortage circuit ⚠ Caution

When the output connectors are shorted, capacitors inside the power supply may discharge instantaneously leading to serious accidents such as sparks or fire, and shortened the lifetime of the unit. Prevent the output connector from being shorted.

4. Inrush current limiting circuit ⚠ Caution

Thermal fusing resistor is used in the unit to limit the surge current into smoothing capacitors when AC input is turned on. If input voltage is turned on and off repetitively in a short period of time, the fuse may be broken. Make sure to keep 60 seconds or more before recycling the input voltage.

5. Output energy ⚠ Caution


Operators shall not touch the unit as the output energy level of the unit is regarded as dangerous (240VA or more).

Also, pay attention to prevent service engineers or tools at maintenance from accidentally touching the output connectors of this unit after installation into the system. Make sure to turn off the input voltage and confirm that the output voltages have lowered enough after the input is turned off before maintenance.

● **Mounting screws of the unit and grounding**

- Use 4mm diameter screws in mounting the power supply.
- Make sure to connect FG terminal of the input terminal to the safety grounding of the chassis.

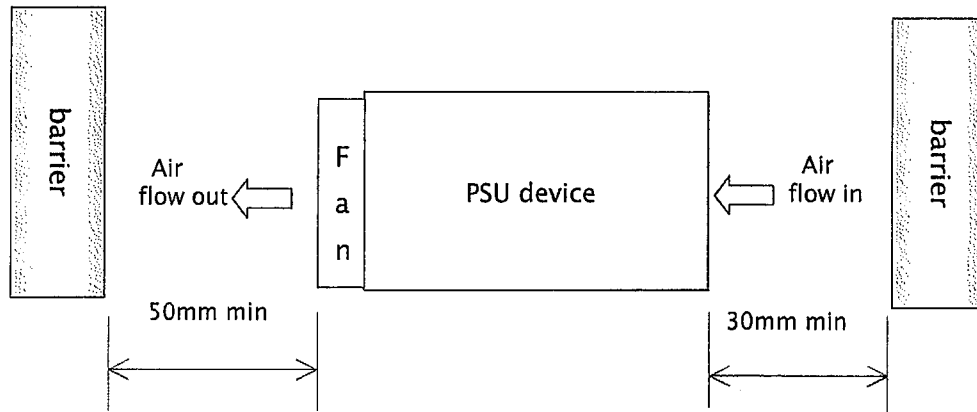


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**Installation requirements**

1. Install PSU device to keep more than the measurement that shows the below away for keeping the Air flow space from the barriers.
2. Install PSU device at the certain environment where air flow in/out space should be kept the temperature not more than max. operating temperature.

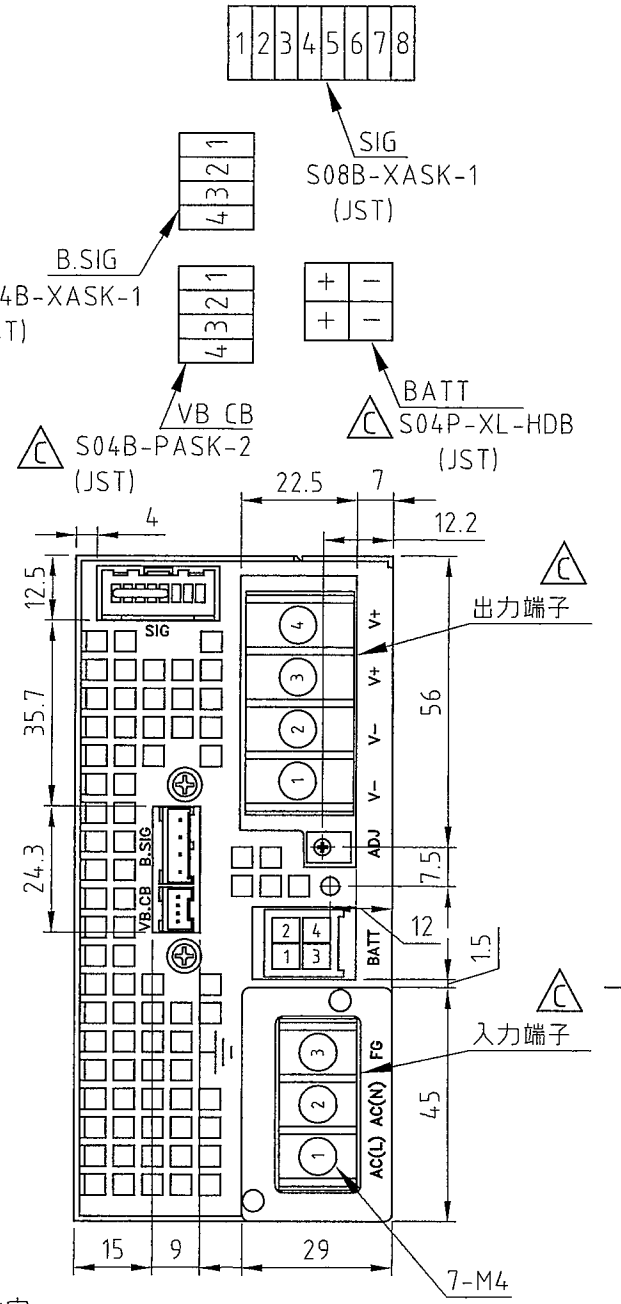
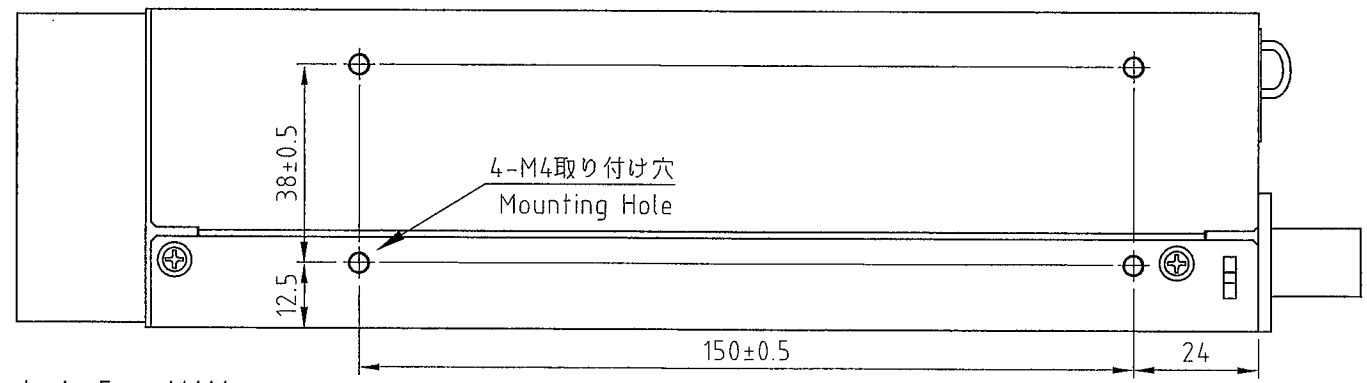
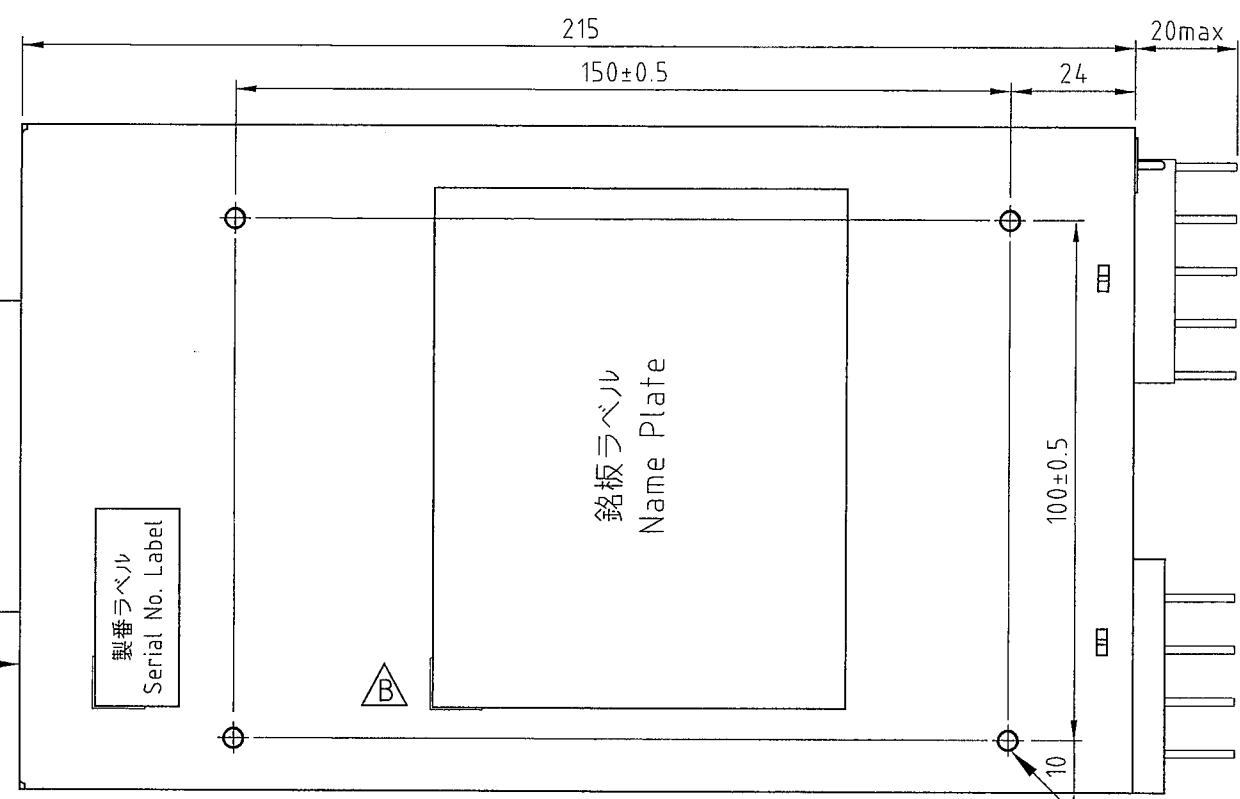
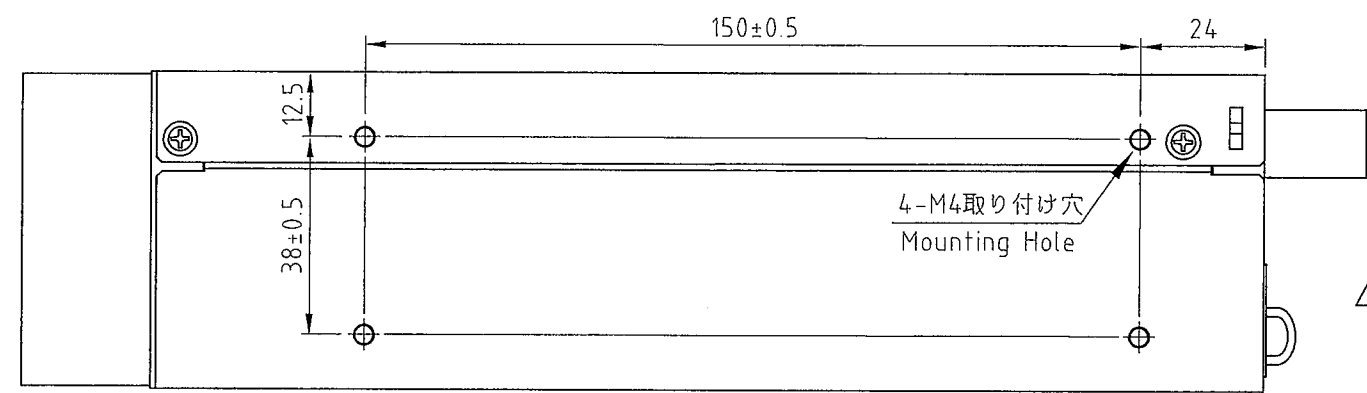
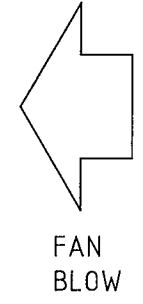
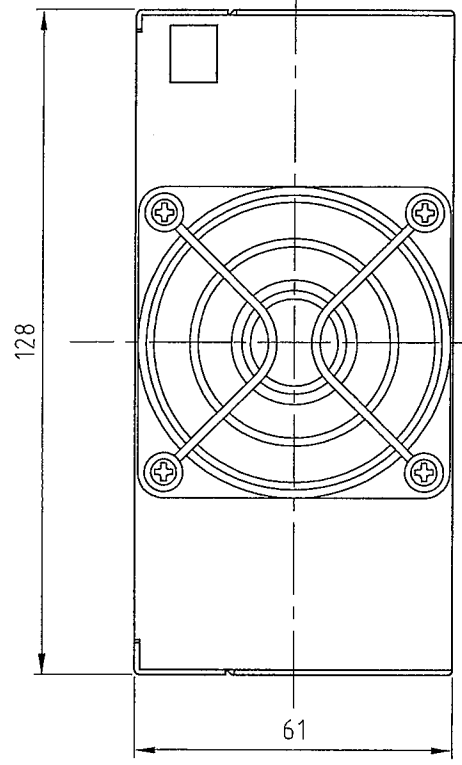


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							11/11

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Nipron 1 2 3 4 5 6 7 8

A  
B  
C  
D  
E  
F



注1: 指示なき寸法公差は ±1mm とする  
 注2: 取り付けビスの電源内部長さは 5mm MAX.  
 Note 1: Design tolerance of dimensions is ±1mm .  
 Note 2: The screw depth of penetration into power supply is 5mm MAX.



- △×5 コネクタの型式追加・修正 2020.11.10 辰巳(由) I-321105
- △×1 銘板サイズ変更 2020.09.17 辰巳(由) I-320912
- △×1 タイトルの変更 2012.07.09 橋本 I-240712

DRAWN BY	CHECKED BY	CHECKED BY	APPROVED BY	SCALE	MATERIALS	TITLE	DRAWING NO.
西	西	—	唇	UNITS m/m			
ISSUED 2011.04.05				3RD ANGLE PROJECTION	FINISH	—	6166-01-3-050

Due to the technical improvement, the specifications and functions are subject to change without notice.