

Series name: GPSA-360 series

Scope

This specification applies to Embedded type DC stabilized power supply, GPSA-360-**-**. This unit provides DC output at AC failure with special battery package connected. Also, all items in the specification shall be provided at normal temperature and humidity without battery package connection unless otherwise specified.

Model name coding

Ex.: **GPSA-360-24-TP**

- ① Series name
- ② Continuous output power----- 360: 361.2W (409.2W peak) for 24V, 361.2W (409.2W peak) for 12V
- ③ Output voltage.....24: 24V 12: 12V
- ④ Signal Interface..... T: TTL signal N: Not available
- ⑤ Fan signal.....P: Rotation pulse L: Fan lock N: Not available

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

Items	Specifications	Measurement conditions, etc.	
AC Input	Nominal voltage	AC100-240V	Worldwide range
	Voltage range	AC 85~264V	*1
	Rated frequency	50/60 Hz	Frequency range: 47 to 63Hz
	Current	4.5 A typical at AC 100V/1.8 A typical at AC 240V	at continuous max. output
		5.1 A typical at AC 100V/2.1 A typical at AC 240V	at Peak output
	Inrush current	31A peak max. at AC 100V/75A peak max. at AC 240V	*2 with continuous rated output at cold start (25°C)
	Efficiency	80% typical at AC 100V/83% typical at AC 240V	at continuous rated output
	Power factor	96% min. at AC 100V/90% min. at AC 240V	
	Operating temp./ Humidity	-10 to 60°C/ 10 to 90%HR	*3 There shall be no condensation.
	Storage temp./ Humidity	-25 to 75°C/10 to 95%HR	There shall be no condensation.
Vibration	To endure following conditions: 2G of acceleration, 10 to 55Hz of vibration frequency, and 10 minutes of sweep in X-, Y-, and Z direction for each	To follow JIS-C-60068-2-6 at No operation	
Mechanical strength (surface dropping)	Lift one bottom edge 50cm 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*4 between Input and Output/AC 2.0kV for one minute between Input and FG	Cut-off current: 10mA
	Leakage current	0.21 mA max. at AC 100V/0.5 mA max. at AC 240V	YEW. TYPE3226 (1kΩ) or equivalent

Note:

- *1 Follow the derating figure on page 3 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 3 when ambient temperature exceeds 40°C.
- *4 Actual dielectric strength between Input and Output is over AC 4kV, but the voltage to be applied between them of the final product shall be 3kV to prevent the basic insulator from overstress.



Drawn by		Reviewed by		Approved by		Series name: GPSA-360 series	Drawing No.: 6137-01-4-520
							1/8

Product Specification

Created: March 10, 2008

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)	To be measure with INS-410 There shall be no fluctuation in DC-component of output or no malfunction.
	Surge immunity	IEC-61000-4-5 Installation Environment Class 3 compliant Common mode: ±2kV, Normal mode: ±1kV 5 times for each	There shall be no malfunction or no failure.
	Conducted emission	VCCI, FCC, CISPR22, and EN55022 Class B compliant	To be measured with power supply single body
	Electrostatic discharge immunity	IEC61000-4-2 test level 3 compliant Contact discharge: 10 times at ±6kV	There shall be no malfunction or no failure
	Harmonic current regulation	IEC61000-3-2 (Ed. 2.1) Class D To meet EN61000-3-2 (A14) Class D	at Rated input and continuous output power
Others	Safety standard	UL60950-1, CSA60950-1 (c-UL), EN60950-1 EN60601-1, and EN50178 scheduled to acquire CE marking (Low Voltage Directive), DENAN (Ministerial ordinance, Item 2) compliant	
	Cooling system	Forced air cooling with fan equipped	
	Dimensions/Weight	128 (W) × 41 (H) × 230 (D) /1.4kg typical	Except protrusions Refer to an outline drawing in another sheet.
	Reliability grade	FA	To follow our standard
	Lifetime expectancy	Ten years min. (Short life expectancy components: Electrolytic capacitors and fan motors)	Lifetime expectancy when the unit continuously operates with rated input voltage and load at 25 °C of ambient temperature
	MTBF	70,000 hours	Calculation is based on EIAJ RCR-9102.
	Warranty	Three years after delivery. If defects belong to us, the defective unit shall be repaired or replaced at our cost.	The unit shall be operated at normal temperature and humidity.
Note:			



Drawn by		Reviewed by		Approved by		Series name: GPSA-360 series	Drawing No.: 6137-01-4-520 2/8
----------	--	-------------	--	-------------	--	---------------------------------	--------------------------------------

Nipron Co., Ltd.

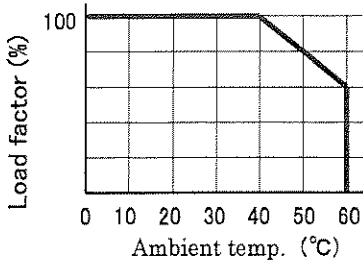
Due to the technical improvement, the specifications and functions are subject to change without notice.

Output specification (The output characteristics at backup operation by a special battery package shall follow the battery package specification.)

Items		Specification (12VSB is in common for individual models.)			Measurement conditions, etc.	
		GPSA-360-12	GPSA-360-24	12VSB		
Output rating	Rated voltage	12V	24V	12V		
	Min. load (A)	0A	0A	0A		
	Continuous rating	Current	30A	15A	0.1A	at rated input Refer to the ambient temperature derating
		Power	360W	360W	1.2W	
Peak rating 5 sec. max.	Current	34A	17A	-	Duty ratio is 10% for repetitive rating. Refer to the figure below for duty ratio.	
	Power	408W	408W	-		
Output characteristics	Voltage setup at factory		12V±2%	24V±2%	12±10%	at continuous rated output
	Voltage adjustable range		12V±10%	24V-5%,+20%	-	
	Static input fluctuation		48mV max.	96mV max.	120mV max.	Measurement point shall be output block terminal or connector.
	Static load fluctuation		100mV max.	150mV max.	600mV max.	
	Time-lapse drift		48mV max.	96mV max.	120mV max.	
	Temperature fluctuation		0.02%/°C max.			
	Ripple voltage	0 to +60°C	120mV max.			Connect two wires of 100cm max in length with a 47μF electrolytic capacitor and a 0.1μF ceramic capacitor connected to the other ends to the output connector to measure with a 100MHz oscilloscope.
-10 to 0°C		160mV max.				
Spike/ Noise voltage	0 to +60°C	150mV max.				
	-10 to 0°C	180mV max.				
Protection	Overcurrent protection	OCP point	101% min. of rated peak current			
		Method	Hold-down → Latched output	Hold-down		
		Recovery	Recycling of AC input	Automatic recovery		
	Overvoltage protection	OVP point	13.8 to 16V	29.2 to 35V	-	
		Method	Output shutdown			
		Recovery	Recycling of AC input			

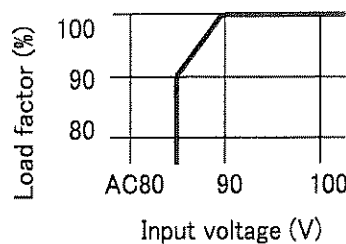
Ambient Temperature Derating

When the ambient temp. near the airflow inlet exceeds 40°C follow the curve below to derate rated current/power, continuous max. current/power, and momentary peak current/power.



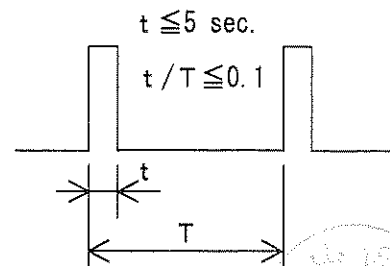
Low Input Voltage Derating

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.

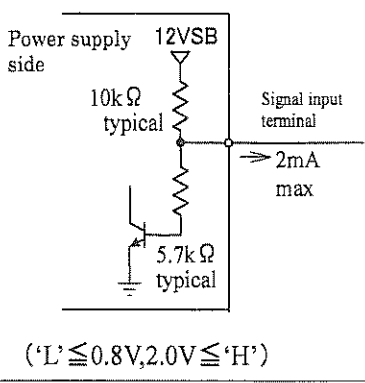
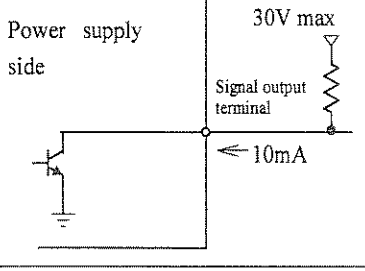
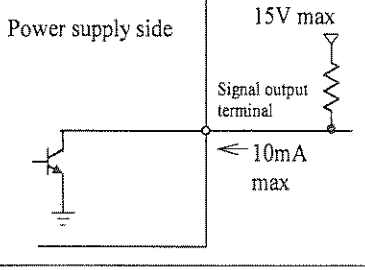
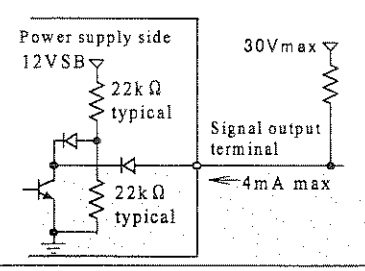
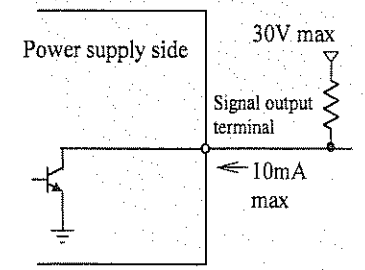





Duty ratio of momentary peak current and power

The duration of momentary peak current/power shall be 5 sec. max, and the duty ratio at repetitive use shall be 10% or less.



Drawn by		Reviewed by		Approved by		Series name: GPSA-360 series	Drawing No.: 6137-01-4-520
							3/8

Signal Input/Output specification			
Items	Specification	Signal Input/Output circuit	
Input signal	Output ON/OFF control signal (PS_ON)	<p>Operation mode; Power supply starts up at ' L ' input. Power supply shuts down at ' H ' or ' OPEN ' input.</p> <p>※ During backup operation by the special battery package at blackout, when PS_ON signal goes to 'H' (OFF), the power supply also shuts down. In this case, 12VSB shuts down as well.</p>	
	PWR_OK signal	<p>'H' is delivered when output is normal. (Detection delay time: 100 to 500ms) Detection voltage: 19.9V min. for 24V output Detection voltage: 9.4V min. for 12V output</p>	
Output signal	Fan monitoring signal (FAN_M1, FAN_M2)	<p>Two pulses per rotation of individual fans are delivered in square wave. This output is Open-Collector.</p>	
	Blackout detection signal (AC FAIL)	<p>This signal goes to "OPEN" when AC input lowers or power failure is detected.</p> <p>Detection voltage: AC 80V or less Detection delay time: 20 to 40ms after AC failure</p>	
	Low Battery voltage signal (BATT LOW)	<p>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.</p> <p>※ Available only when the special battery package is connected</p> <p>Detailed specification shall follow the specification of the battery package to be connected.</p>	

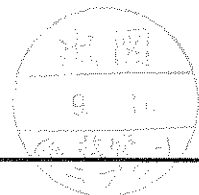
Drawn by		Reviewed by		Approved by		Series name: GPSA-360 series	Drawing No.: 6137-01-4-520
							4/8

Signal connector pinout table

Connector name	Pin No.	Output (signal) name	Max. current per pin	Note
SIG	1	COM	0.5A	Common use with output GND
	2	FAN_M1	10mA	
	3	FAN_M2	10mA	
	4	PS_ON	10mA	
	5	PWR_OK	10mA	
	6	AC FAIL	4mA	
	7	BATT LOW	10mA	Only when the special battery package is connected
	8	12VSB	0.1A	

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

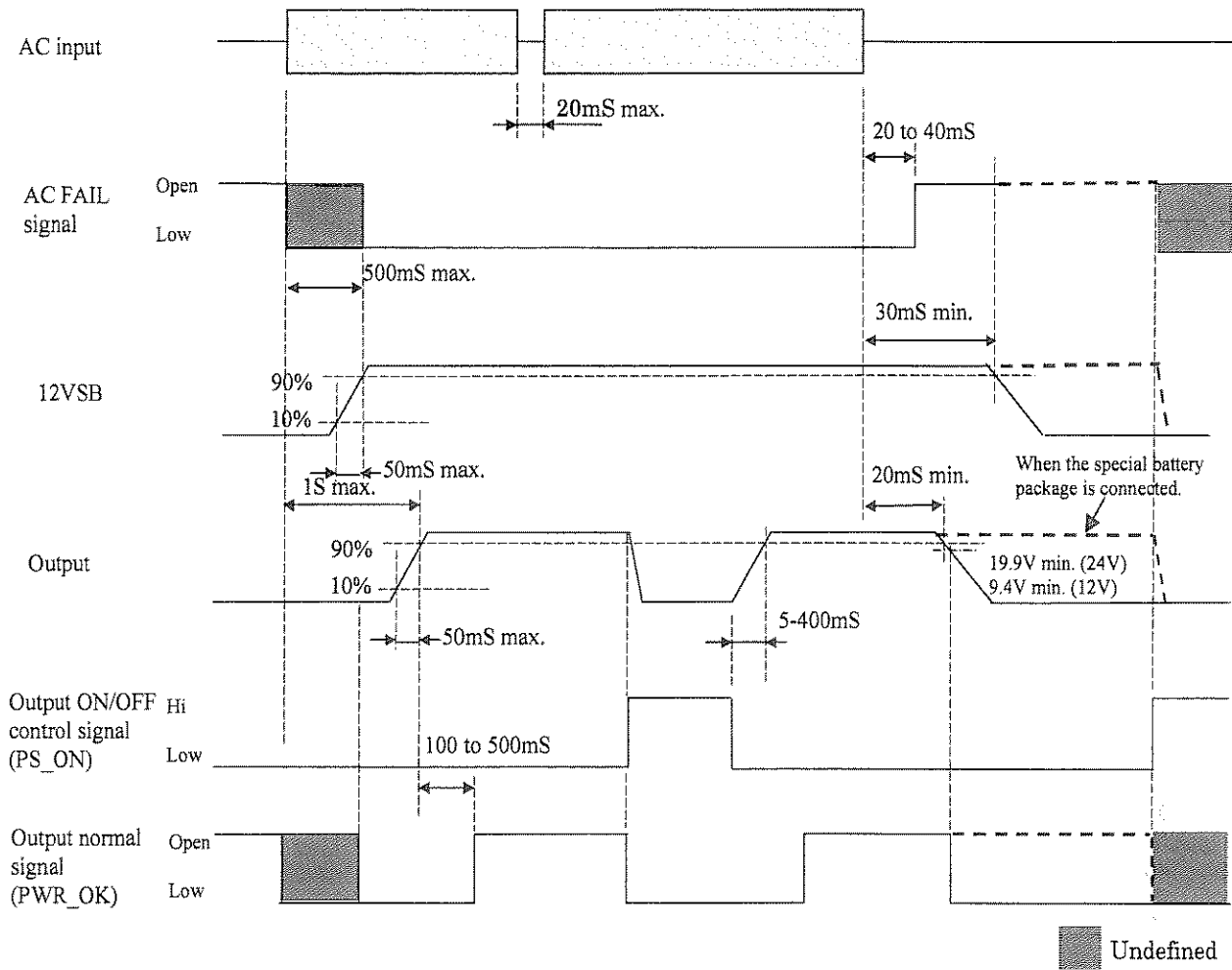
Note:



Drawn by		Reviewed by		Approved by		Series name: GPSA-360 series	Drawing No.: 6137-01-4-520 5/8
----------	--	-------------	--	-------------	--	---------------------------------	--------------------------------------

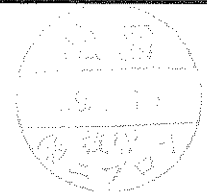
Nipron Co., Ltd.

● **Sequence timing diagram**



- ※ Bold dotted line is applied when the special battery package is connected.
- ※ All outputs shut down including 12VSB during backup operation when PS_ON signal is "Hi."

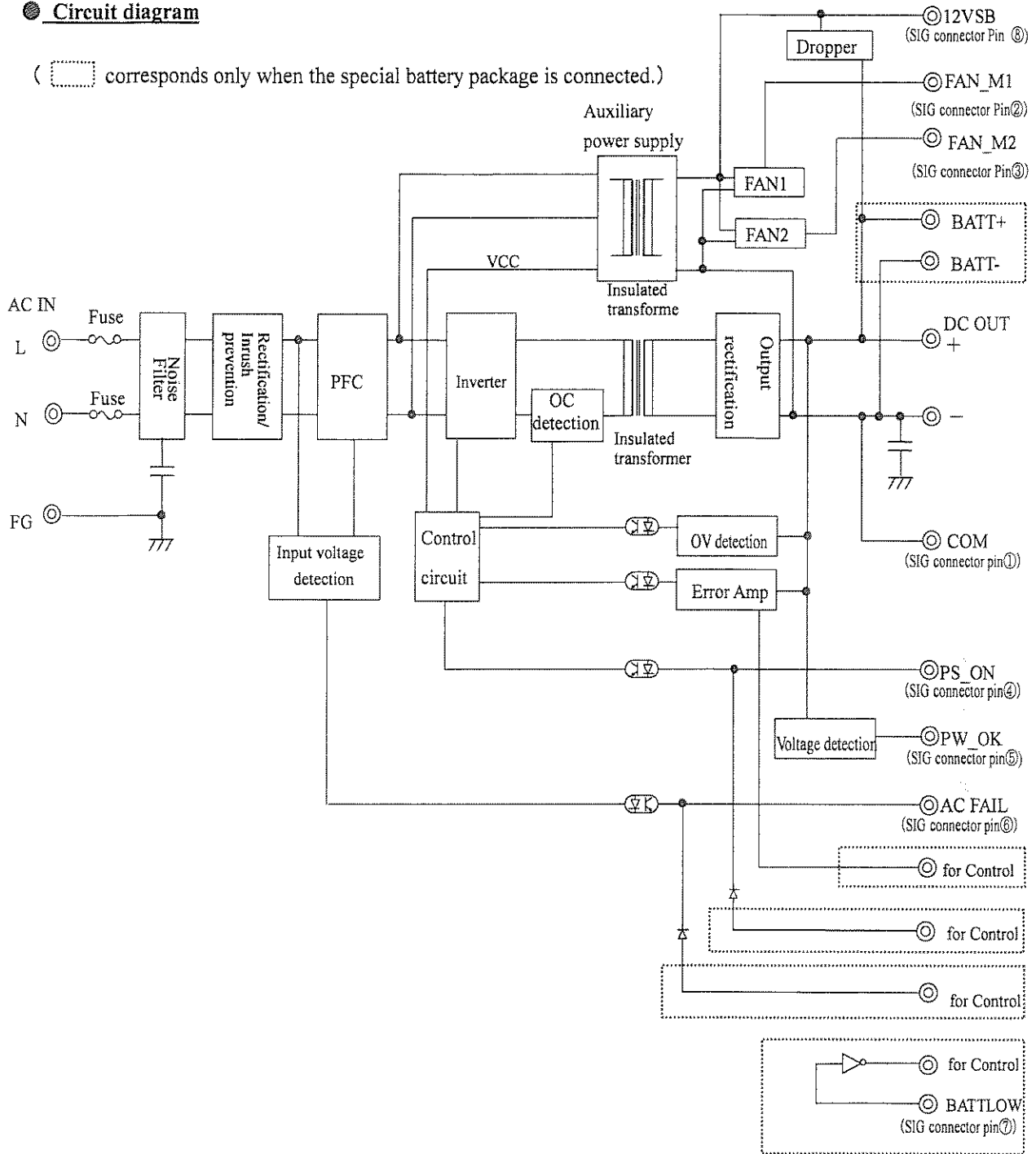
Note:



Drawn by		Reviewed by		Approved by		Series name: GPSA-360 series	Drawing No.: 6137-01-4-520
----------	--	-------------	--	-------------	--	---------------------------------	-------------------------------

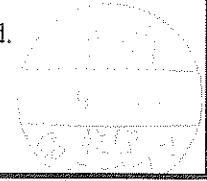
● Circuit diagram

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



Note:


1. BATT+ and BATT- connectors can be used as DC OUT connectors when the battery is not connected.




Drawn by	(西)	Reviewed by	(有)	Approved by	(尾)	Series name: GPSA-360 series	Drawing No.: 6137-01-4-520 7/8
----------	-----	-------------	-----	-------------	-----	---------------------------------	--------------------------------------

Nipron Co., Ltd.


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 shorten the lifetime of the unit. Prevent the output connector from being shorted.

4. Inrush current limiting circuit  Caution

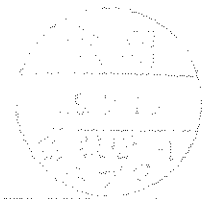
Thermal fusing resistor is used in the unit to limit the surge current into smoothing capacitors when AC input is turned on. If input voltage is turned on and off repetitively in a short period of time, the fuse may be broken. Make sure to keep 60 seconds or more before recycling the input voltage.




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.

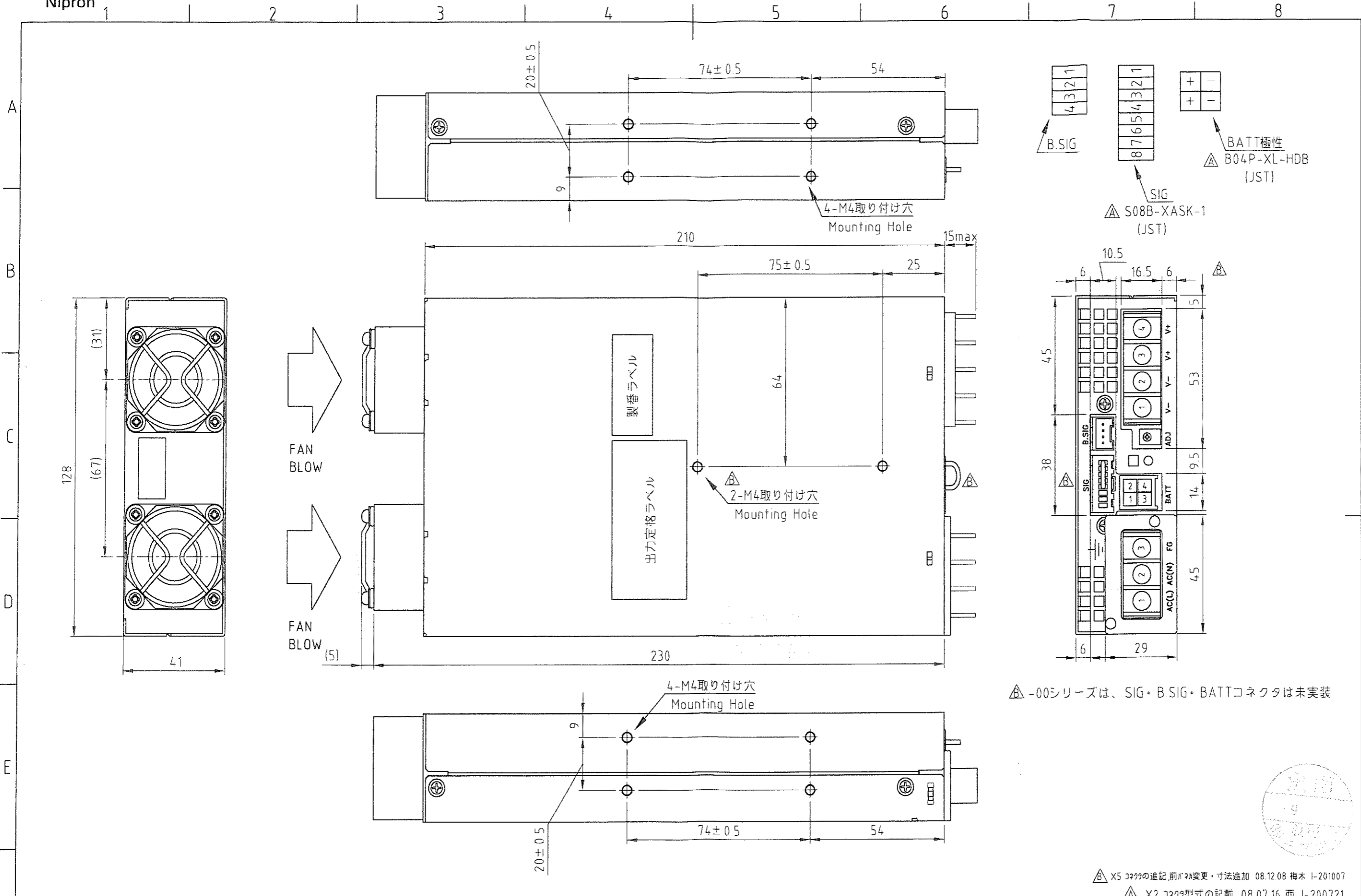
● Mounting screws of the unit and grounding

- 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.



Drawn by		Reviewed by		Approved by		Series name: GPSA-360 series	Drawing No.: 6137-01-4-520 8/8
----------	---	-------------	---	-------------	---	---------------------------------	--------------------------------------

Nipron Co., Ltd.



△-00シリーズは、SIG・B.SIG・BATTコネクタは未実装

△ X5 コネクタの追記,前が変更・寸法追加 08.12.08 梅木 I-201007
 △ X2 コネクタ型式の記載 08.07.16 西 I-200721

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.

DRAWN BY	CHECKED BY	CHECKED BY	APPROVED BY	SCALE	MATERIALS	GP3A-360シリーズ	
西	有野	—	西	UNITS m/m	—	TITLE	外觀図
ISSUED 2008.03.07				3RD ANGLE PROJECTION	FINISH	DRAWING NO.	6137-01-3-050