Nipron
GAZE into the future

2026 May

Unit Type AC-DC Switching-Mode Power Supply GPSA/mGPSA Series Catalog

(Medical standard approved model)

GPSA-360 series

GPSA-600 series

GPSA-1500 series

GPSA-1000 series

GPSA-5000 series

Nipron Guard

Nipron Co.,Ltd.

Cost-effective, advanced type single output power supply

GPSA Series

mGPSA Series

GPSA series is unit type single output power supply with excellent performance, functionality, and reliability than other general "high-end" power supplies. Various modifications are available and flexibly fulfill your needs.

Large capacity & High peak power

+

Instantaneous power failure measure

Longtime power failure measure

+

Low noise

Low leakage current

+

+12V standby output

Products design based on considering "Total Cost of Ownership (TCO)".

- Keep providing power supplies which never break down and never stop to market

- Significant added value

Long lifetime
Less power supply replacement for maintenance

High reliability
Margins of derating

Designed / made in Japan
Safe, Reliable, and High quality

High-grade customer support
Online support / Failure analysis

Long-term stable supplying
Stable supplying of models, basically 10 years from release

Modifying service
Flexible modifying service upon customers needs

GPSA 360 series

24V Backup available ▶ P13

Model name	GPSA-360-12	GPSA-360-24	Common spec.
Output voltage	**+12V**	**+24V**	**+12VSB**
Continuous	30A 360W	15A 360W	0.3A 3.6W
Peak (5sec.) 100VAC	40A 480W	20.8A 499.2W	-
Peak (5sec.) 200VAC	40A 480W	25A 600W	-
Min. load current	0A	0A	0A

GPSA 600 series

24V Backup available ▶ P21

Model name	GPSA-600-12P	GPSA-600-24P	GPSA-600-36P	GPSA-600-48P	Common spec.
Output voltage	**+12V**	**+24V**	**+36V**	**+48V**	**+12VSB**
Continuous	50A 600W	25A 600W	16.7A 601.2W	12.5A 600W	0.5A(0.3A) 6W(3.6W)
Peak (5sec.) 100VAC	80A 960W	50A 1200W	33.3A 1198.8W	25A 1200W	-
Peak (5sec.) 200VAC	100A 1200W	60A 1440W	40A 1440W	30A 1440W	-
Min. load current	0A	0A	0A	0A	0A

* Values in (): During backup operation

GPSA 1000 series

▶ P29

Model name	GPSA-1000-24P	GPSA-1000-48P	Common spec.
Output voltage	**+24V**	**+48V**	**+12VSB**
Continuous 100VAC	37.8A 907.2W	18.9A 907.2W	0.5A 5W
Continuous 115-240VAC	42A 1008W	21A 1008W	0.5A 5W
Peak (5sec.) 100VAC	49.5A 1188W	25A 1200W	-
Peak (5sec.) 115VAC	55A 1320W	27.5A 1320W	-
Peak (5sec.) 240VAC	84A 2016W	42A 2016W	-
Min. load current	0A	0A	0A

GPSA 1500 series

▶ P29

Model name	GPSA-1500-24P	GPSA-1500-48P	Common spec.
Output voltage	**+24V**	**+48V**	**+12VSB**
Continuous 100VAC	44A 1056W	23A 1104W	0.5A 6W
Continuous 200VAC	63A 1512W	34A 1632W	0.5A 6W
Peak (5sec.) 100VAC	55A 1320W	27.5A 1320W	-
Peak (5sec.) 200VAC	85A 2040W	44A 2112W	-
Min. load current	0A	0A	0A

GPSA 5000 series

Model name	GPSA-5000-48P	GPSA-5000-96P	Common spec.
Output voltage	**+48V**	**+96V**	**+12VSB**
Continuous 200VAC	100A 4800W	52A 4992W	0.5A 6W
Peak (5sec.) 200VAC	125A 6000W	62.5A 6000W	-
Min. load current	0A	0A	0A

mGPSA 360 series

24V Backup available ▶ P45

Model name	GPSA-360-12	GPSA-360-24	Common spec.
Output voltage	**+12V**	**+24V**	**+12VSB**
Continuous	30A 360W	15A 360W	0.3A 3.6W
Peak (5sec.) 100VAC	40A 480W	20.8A 499.2W	-
Peak (5sec.) 200VAC	40A 480W	25A 600W	-
Min. load current	0A	0A	0A

INDEX

GPSA

GPSA-360 series ····· P13-
Connecting Diagram ····· P18-
Characteristics Data ····· P19-

GPSA-600 series ····· P21-
Connecting Diagram ····· P26-
Characteristics Data ····· P27-

GPSA-1000 series ····· P29-
Connecting Diagram ····· P34-
Characteristics Data ····· P35-

GPSA-1500 series ····· P37-
Connecting Diagram ····· P42-
Characteristics Data ····· P43-

mGPSA

mGPSA-360 series ····· P45-
Connecting Diagram ····· P48-
Characteristics Data ····· P51-

Battery package

BS14A-H24/2.5L ····· P53-

GPSA-360 series

Cost-effective, unit type general purpose power supply

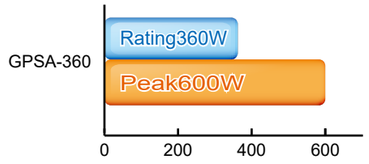
Continuous max. 360W
Peak max. 600W

Output Voltage: 12V 24V

High Peak Power

High peak power available for large capacity load

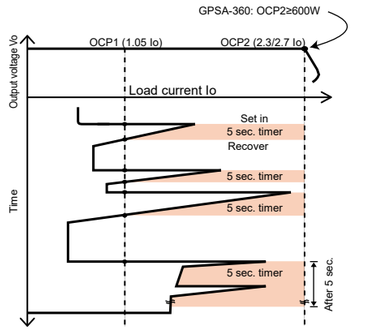
GPSA-360 series can output max. 1.7 times higher peak power than the rated output.



GPSA series has two stages of over current protection (OCP1, OCP2) best for induction motor load

GPSA has two stages of over current protection of 5 sec. timer shutdown and hold down, best for induction motor load.

- If the load current exceeds OCP2, the output voltage will start to go down and if it continues more than 300ms, it shuts off.
- When the load current exceeds OCP1, the 5 sec. timer will be set. If the load current become less than OCP1 within 5 sec., it will be reset, but if it exceeds 5 sec., the output power will shut off.
- How to recover the PSU after shut off: reclosing AC after 10 sec. from AC shut down. Any factors that cause over current conditions more than 5 sec. must be fixed.
- GPSA series can stand for repetitive pulse loads if the peak current is less than 5 sec. and OCP2 with the 5 sec. timer. In that case, please keep it in your mind that the actual output current calculated by root-mean-square value shall be less than 100% of the rated current.
  The GPSA series, however, has a safety design feature such as internal over heat protection that prevents its damage from a miss use due to over powered pulse loads.



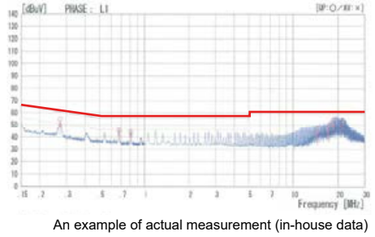
Conducted Emission Class B Compliant & Low Leakage Current Specification

Conducted emission class B compliant

GPSA series meets conducted emission class B requirement even with low leakage current specification unlike other power supplies that achieve low leakage current while victimizing conducted emission (or inviting large noise).

Input voltage: 100 VAC
Output power: Rated load (360W)
Mode: Peak

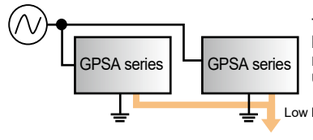
GPSA-360-24-TP



An example of actual measurement (in-house data)

Low leakage current specification

GPSA series meets leakage current 0.5mA or less. If you use GPSA series for the system requires number of PSUs, leakage current as whole system will be kept low.



Total leakage current can be kept low even when multiple power supplies are used for 1 system.

Leakage current (an example of actual measurement)

At rated load

Input voltage	*GPSA-360-24*	*Competitor's (600W)*
100VAC	0.10mA	0.25mA
200VAC	0.19mA	0.46mA

Standby Output Equipped as Standard

+12VSB output available. It can be used as remote ON/OFF power supply etc.

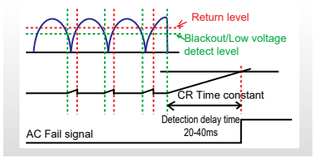
Standby output	
+12VSB(auxiliary power)	
GPSA-360	**0.3A**

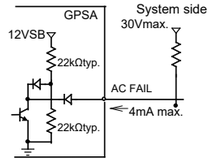
Backup at Blackout

Blackout detection signal

All models in GPSA series are equipped with blackout detection signal. Cost to produce detection unit can be eliminated.

Signal	*Detection voltage level*	*Detection delay time*	*Output*
Blackout detection signal	80 VAC or less	20 to 40ms	Open collector





Backup at blackout available

Battery backup operation during blackout is available for 24V output type (GPSA-***-24) with the battery pack (BS14*-H24/2.5L) connected.

- Switches from AC operation to DC battery operation without instantaneous stop.
- Max. cont. output 170W, Peak output 240W (10sec. max.)
- Parallel battery backup operation is available with current balance circuit.
- Battery low signal equipped.
- Battery discharging will be terminated by stop timer with DIP switch or inputting remote ON/OFF (PS_ON#) signal to GPSA.
- If the load is PC, OS can be automatically shut down with "NSP Pro 2" software. (Harness is optional)

LED lighting pattern changes when the BATT is charging or discharging.

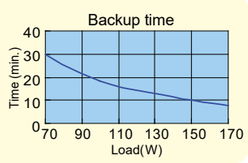
Automatic shut down possible by NSP Pro 2 (Software)

Set battery discharging time with DIP switch.
■Setting available time
[BS14A-H24/2.5L]:1min./5min./10min./15min./20min./25min./30min./35min.

Battery package

Model: BS14A-H24/2.5L
Battery: Ni-MH battery
Output: 24V 170W (Peak 240W 10s max.)
Backup time: See the graph on the right

* Backup time is just a guideline at first use, not guaranteed.



19-inch Rack Mount

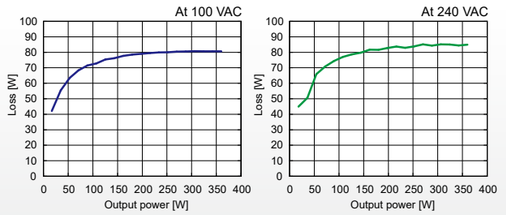
Convenient size for rack mounting

1U width, 3U height for GPSA-360
In addition, 1U width, 3U height for battery package.
They are all mountable into 1U, 2U, and 3U racks.

Other Features

Achieves a maximum efficiency of 85% typ.

High efficiency reduces heat generation, contributing to longer power supply and system life



[GPSA-360-24-TP]

Silent

With built-in thermal-sensing variable speed fan, sound reduction can be achieved. Heat-related issues for CPU can be settled with fan speed changeover switch.

Potentiometer equipped

More stable operation will be achieved by correcting line drop. 24V output type can be adjusted up to 29V, and can be used as charging voltage source for lead acid battery. With this function, 36V output type can be used as 30V, and 48V output type can be used as 42V output power supply.

Fan monitoring signals equipped

Fan monitoring signals for two fans are available. Those signals allow you to monitor fan speed of each fan.

PWR_OK signal equipped

"H"signal is delivered when the output is normal.

Remote ON/OFF function equipped

Output ON/OFF control is available with Remote ON/OFF signal (PS_ON#).

Application Example (countermeasure against salt damage)

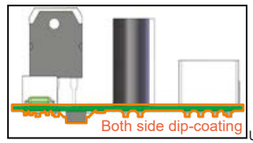
Both side dip-coating to resist neutral salt spray test

As a power supply for motor-roller conveyors

This is an example of GPSA modification as a power supply for motor-roller conveyors. Many of motor-roller conveyers are installed in factories and warehouses near the coast where suffer from not only dusts but also solty breeze. However, power supply stable operation is still required even under such environment. As a counter measure, we conducted:

- PCB coating (both side dip-coating)
- Protection of discrete components such as diodes against dusts by tubing

Most common brush-coating cannot cover all area even if it is recoated many times. However, Nipron's own "both side dip-coating" can certainly cover the narrow space where brush-coating cannot reach. It has brought continuous stable operation even under harsh neutral salt spray test! (Brush-coating proved poor operation to stop in several minutes.)


Both side dip-coating


Under harsh neutral salt spray test


Imaging

Regenerated voltage detect signal (HV signal) compliant

GPSA can be modified as with HV signal type, which detects regenerated voltage from low-voltage servo motor drivers and outputs signal. With this signal, regenerated energy can be discharged through an external discharging circuit.

GPSA-600 series

High efficiency/low standby power consumption Unit type general purpose power supply

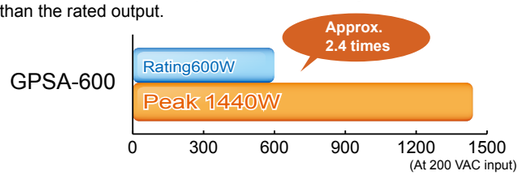
Continuous max. 600W
Peak max. 1440W

Output Voltage : 12V 24V 36V 48V

High Peak Power

Max. 2.4 times higher peak output than the rated output available

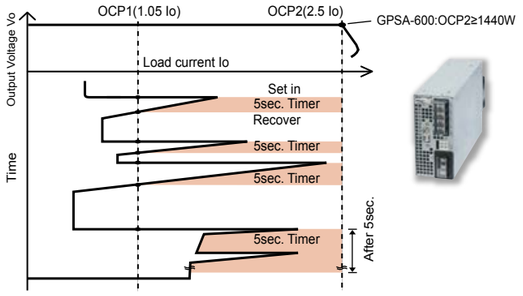
GPSA-600 series can output max. 2.4 times higher peak power than the rated output.



Rating	Peak Max.
600W	1200W (100 VAC)
	1440W (200 VAC)

GPSA series has two stages of over current protection (OCP1, OCP2) best for motor load

GPSA has two stages of overcurrent protection of 5 sec. timer shutdown and hold down, best for motor load.



- If the load current exceeds OCP2, the output voltage will start to go down and when the voltage returns under OCP2, the output will recover.
- When the load current exceeds OCP1, the 5 sec. timer will be set. If the load current become less than OCP1 within 5 sec., it will be reset, but if it exceeds 5 sec., the output power will shut off.
- How to recover the PSU after shut off: reclosing AC after 10 sec. from AC shut down. Any factors that cause over current conditions more than 5 sec. must be fixed.
- GPSA series can stand for repetitive pulse loads if the peak current is less than 5 sec. and OCP2 with the 5 sec. timer. In that case, please keep it in your mind, the actual output current calculated by root-mean-square value shall be less than 100% of the rated current.
  The GPSA series, however, has a safety design feature such as internal over heat protection that prevents its damage from a miss use due to over powered pulse loads.

+12V 0.5A Standby Output

+12VSB/0.5A output available as auxiliary (standby) output.

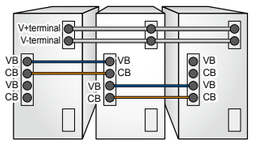
* 0.3A max. at backup operation

12V standby output
+12VSB (auxiliary power)
0.5A

3 Units in Parallel Operation

In case of power shortage, output power can be increased with parallel connection. Output voltage and current of each unit can be balanced to deliver stable power by connecting output balancing signal (VB) and output current balancing signal (CB).

*Output current at parallel operation must be "rated current × CHs connected × 90% " or less.



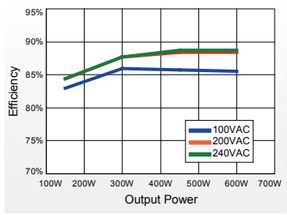
(Example)

High Efficiency

High efficiency 88.8% even with at 240VAC input and rated load

High efficiency 88.8% even with 240VAC input and rated load. This is the power supply fitting into the current times which can reduce CO_2 emission and save energy.

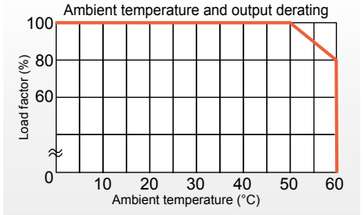
	Load factor 50% (Output 300W)	Load factor 100% (Output 600W)
100 VAC	85.9%	85.5%
200 VAC	87.7%	88.4%
240 VAC	87.7%	88.8%



100% Load Operation at 50 °C

100% load factor with ambient temperature of 50 °C

High power feeding available even under high temp. use.

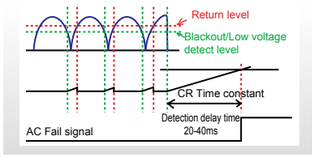


Backup at Blackout

Blackout detection signal

All models in GPSA series are equipped with blackout detection signal. Cost to produce detection unit can be eliminated.

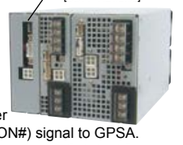
Signal	*Detection voltage level*	*Detection delay time*	*Output*
Blackout detection signal	80 VAC or less	20 to 40ms	Open collector



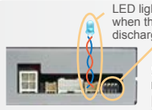
Backup at blackout available

Battery backup operation during blackout is available for 24V output type (GPSA-***-24) with the battery pack (BS14*-H24/2.5L) connected.

- Switches from AC operation to DC battery operation without instantaneous stop.
- Max. cont. output 170W, Peak output 240W (10sec. max.)
- Parallel battery backup operation is available with current balance circuit.
- Battery low signal equipped.
- Battery discharging will be terminated by stop timer with DIP switch or inputting remote ON/OFF (PS_ON#) signal to GPSA.
- If the load is PC, OS can be automatically shut down with "NSP Pro 2" software. (Harness is optional)



Automatic shut down possible by NSP Pro 2 (Software)

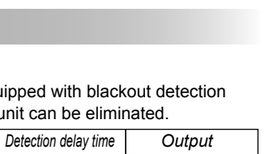


Set battery discharging time with DIP switch.
■Setting available time
[BS14A-H24/2.5L]:1min./5min./10min./15min./20min./25min./30min./35min.
[BS14P-H24/2.5L]:5sec./10sec./30sec./1min./2min./3min./5min./10min.

Battery package

Model: BS14A-H24/2.5L
Battery: Ni-MH battery
Output: 24V 170W (Peak 240W 10s max.)
Backup time: See the graph on the right

* Backup time is just a guideline at first use, not guaranteed.

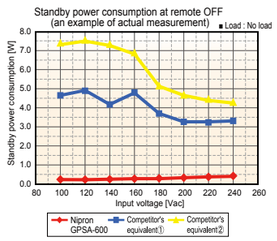


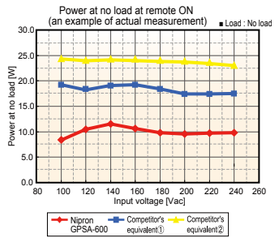
Complying with ErP Directive

0.5W max. standby power consumption, ErP directive compliant

Standby power consumption	*100VAC*	*230VAC*
	0.24W	0.35W

(an example of actual measurement)





About ErP

ErP directive is EU ecodesign requirements to promote reducing the energy consumption. It was issued on November 20th, 2009.

This directive is classified to each "Lot" and Lot6 defines standby power consumption. The standby power regulation (Lot6) requires the maximum power consumption of electronic devices in standby mode (at OFF mode or standby mode) to be less than 0.50W.

Other Features

Silent

With built-in thermal-sensing variable speed fan, sound reduction can be achieved. Heat-related issues for CPU can be settled with fan speed changeover switch.

Potentiometer equipped

More stable operation will be achieved by correcting line drop. 24V output type can be adjusted up to 29V, and can be used as charging voltage source for lead acid battery. With this function, 36V output type can be used as 30V, and 48V output type can be used as 42V output power supply.

Fan monitoring signal equipped

Fan monitoring signal for a fan is available. This signal allows you to monitor the fan speed of each fan.

PWR_OK signal equipped

"H"signal is delivered when the output is normal.

Remote ON/OFF function equipped

Output ON/OFF control is available with Remote ON/OFF signal (PS_ON#).

Application Example (countermeasure against salt damage)

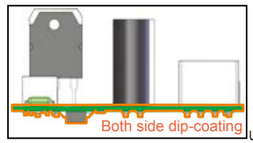
Both side dip-coating to resist neutral salt spray test

As a power supply for motor-roller conveyors

This is an example of GPSA modification as a power supply for motor-roller conveyors. Many of motor-roller conveyers are installed in factories and warehouses near the coast where suffer from not only dusts but also solty breeze. However, power supply stable operation is still required even under such environment. As a counter measure, we conducted:

- PCB coating (both side dip-coating)
- Protection of discrete components such as diodes against dusts by tubing

Most common brush-coating cannot cover all area even if it is recoated many times. However, Nipron's own "both side dip-coating" can certainly cover the narrow space where brush-coating cannot reach. It has brought continuous stable operation even under harsh neutral salt spray test! (Brush-coating proved poor operation to stop in several minutes.)



Under harsh neutral salt spray test

Imaging

SEMI F47 standard compliant

Enable to be compliant to the power supply voltage drop regulation, prescribed in SEMI standard.
(Optional. Please contact us for more details.)

As DC-DC charger with wide DC input range

GPSD38-700-54

DC-DC charger which has the wide input range 200-500 VDC is added to our lineup. It is a modified model from "GPSA-600 series", an unit type AC-DC switching power supply. DC input source batteries such as natural energies, solar/wind power or from HVDC (high-voltage, direct current) can be easily charged, by controlling constant voltage and constant current.

Specification example

Rated input voltage	380 VDC	
Input voltage range	200-500 VDC	
Output voltage	54.6 VDC	12 VDC
Control method	Constant voltage, constant current control (with thermal correction)	Constant voltage control
Max. current/Max. power (continuous)	12.8A	0.5A
	699W	6W
Peak current/Peak power	---	---
Min. current	0A	0A
Dimension (mm)	128×61×240 (W×H×D)	
Efficiency	82% min.	

*The specification can be modified depending on the project. Contact us for the detail.

GPSA-1000 series

High efficiency, small, large capacity Unit type general purpose power supply

Continuous max. 1000 W
Peak max. 2000 W

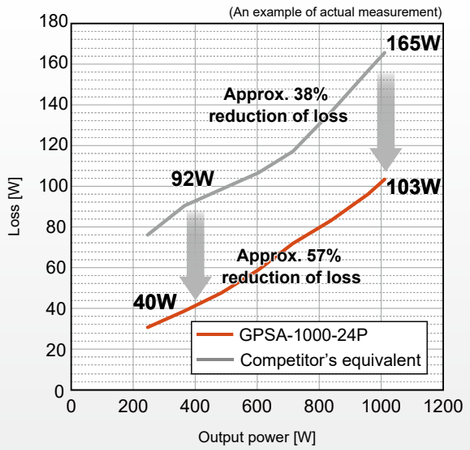
Output Voltage: 24 V 48 V

High efficiency

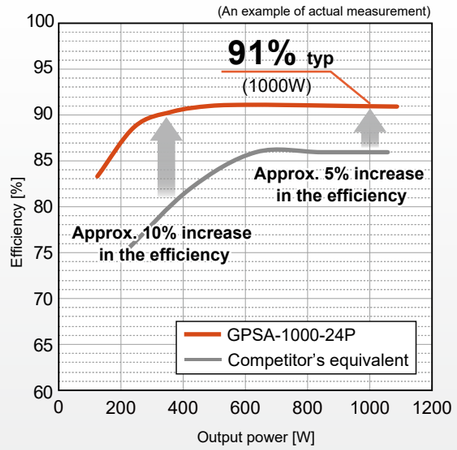
Compared to a competitor's equivalent model, the efficiency has been improved by about 5% and the power loss has been reduced by about 38%.

By limiting heat generation with its high efficiency, the power supply unit operates reliably under a high temperature.

☐ Loss comparison graph [at 230 VAC]



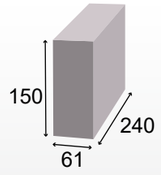
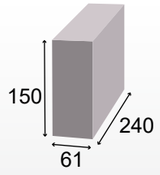
☐ Efficiency graph [at 230 VAC]



Small, large capacity

Miniaturization and a high peak output have been achieved in comparison with 1000 W class power supply units of competitors.

☐ Comparison with competitors' 1000 W power supply [for 200 VAC input, 24 V output]

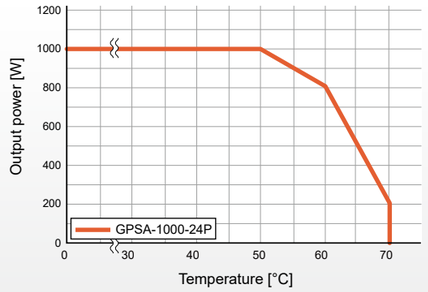
GPSA-1000 Series	Competitors' equivalent A	Competitors' equivalent B
		
Continuous output: 1008W Peak output: 2016W	Continuous output: 1056W Peak output: 1224W	Continuous output: 1008W Peak output: - W

Supports high temperature

Supports ambient temperature up to 70 °C

100% rated power is available until ambient temperature 50°C. Also, it is operational at ambient temperature up to 70°C

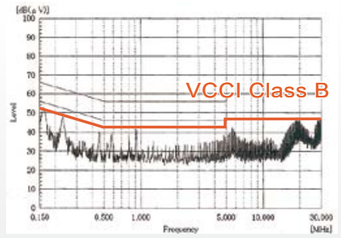
☐ Ambient temperature and output power



Achieved low leakage current and low noise

VCCI Class B compliant without a noise filter

Leakage current is reduced to 0.26 mA at 100 VAC and 0.57 mA at 240 VAC. Conducted eimission is complaint to VCCI Class B by the power supply itself. Since a noise filter is not neccsary, it contributes to reduction of cost and workload.

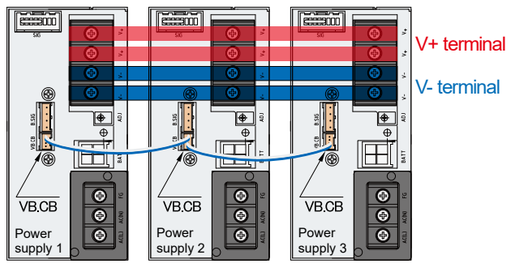


GPSA-1000-24P
Input: 115 VAC
Output: 1000 W

(An example of actual measurement)

Parallel operation available

If power capacity is not sufficient, it can be increased by connecting the power supply units in parallel.With the connection of the output Voltage Balance (VB) and output Current Balance (CB) signals, stable power is supplied.



(Conceptual drawing)

+12V 0.5A Standby Output

Equipped with +12 VSB/0.5 A output as auxiliary (standby) output.

Standby power supply output
+12 VSB (auxiliary power)
0.5A

ErP directive

0.5 W max. standby power consumption, ErP directive compliant

The power consumption of standby power is low at remote OFF status.

Standby power consumption	100 VAC	230 VAC
	0.30 W	0.43 W

(An example of actual measurement)

About ErP

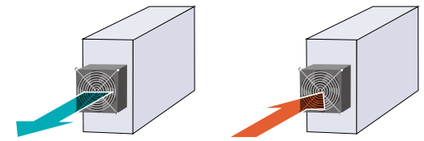
ErP directive is EU ecodesign requirements to promote reducing the energy consumption. It was issued on November 20th, 2009.

This directive is classified to each "Lot" and Lot6 defines standby power consumption. The standby power regulation (Lot6) requires the maximum power consumption of electronic devices in standby mode (at OFF mode or standby mode) to be less than 0.50 W.

Fan direction

Exhaust type and intake type are available

The fan direction can be chosen depending on equipments.



Exhaust type (TES) Intake type (TIS)

☐ Product lineup

Model	Output voltage	Output power	Fan direction
GPSA-1000-24P-TES	24V	Continuous: 1008W Peak(5s): 1320W (at 115VAC input) 2016W (at 200VAC input)	Exhaust
GPSA-1000-24P-TIS			Intake
GPSA-1000-48P-TES	48V		Exhaust
GPSA-1000-48P-TIS			Intake

Other features

Potentiometer equipped

Constant current output type optimum for a charger is available*

*Please contact us for details because it is optional modification.

PWR_OK signal equipped

"H" signal is delivered when the output is normal.

Fan monitoring signal equipped

Fan monitoring signal for a fan is available. This signal allows you to monitor the fan speed.

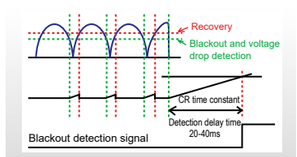
Remote ON/OFF function equipped

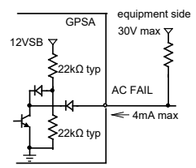
Output ON/OFF control is available with Remote ON/OFF signal (PS_ON#).

Blackout detection signal

The blackout detection signal is provided for all models of GPSA series as a standard feature and the customer can save the cost of preparing a detection board.

Signal	Blackout detection voltage	Detection delay time	Output
Blackout detection signal	80 VAC max.	20-40 ms	Open collector output





GPSA-1500 series

Efficiency 93% achieved
High capacity unit type general purpose power supply

Continuous max. 1630W Peak max. 2110W

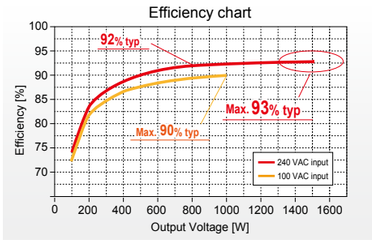
Various Functions

Output Voltage: 24V 48V

High Efficiency

High efficiency with full-bridge phase-shift circuit

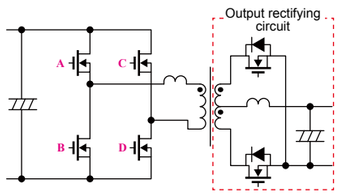
Efficiency 93% with 240VAC input achieved. Reducing the heat generation of power supply enables to achieve the long lifetime not only power supply itself but also as whole system.



What is "full-bridge phase-shift circuit"?

The full-bridge phase-shift circuit drives each FET (A,B,C, and D) by phase shifting which leads voltage resonance and soft switching. Resulting reducing the switching loss and noises.

Furthermore, GPSA-1500 achieves high efficiency by not taking the general diode circuit but synchronous rectifying method for output rectifying circuit.



+12V 0.5A Standby Output

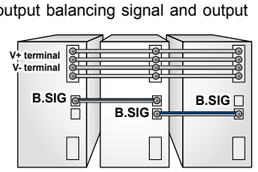
+12VSB/0.5A output available as auxiliary (standby) output.

12V standby output
+12VSB (auxiliary power)
0.5A

Parallel Operation Available

In case of power shortage, output power can be increased with parallel connection. Output voltage and current of each unit can be balanced to deliver stable power by connecting output balancing signal and output current balancing signal .

* Output current at parallel operation must be "rated current × CHs connected × 90% " or less.



(Example)

High Peak Power

Max. 2.1kW peak output available

GPSA-1500 series is large capacity power supply but both 24V and 48V type output peak power.

24V

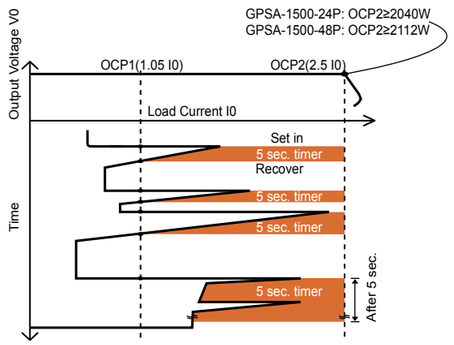
Rating	Peak Max.
1050W (100 VAC)	1320W (100 VAC) Approx. 270W UP
1510W (200 VAC)	2040W (200 VAC) Approx. 530W UP

48V

Rating	Peak Max.
1100W (100 VAC)	1320W (100 VAC) Approx. 220W UP
1630W (200 VAC)	2110W (200 VAC) Approx. 480W UP

GPSA series has two stages of overcurrent protection (OCP1, OCP2) best for motor load

GPSA has two stages of overcurrent protection of 5 sec. timer shutdown and hold down, best for motor load

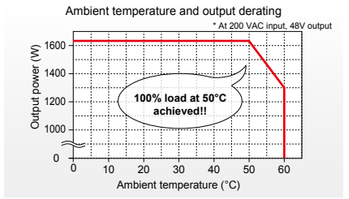


- If the output current exceeds OCP2, the output voltage will start to go down and when the voltage returns under OCP2, the output will recover.
- When the load current exceeds OCP1, the 5 sec. timer will be set. If the load current become less than OCP1 within 5 sec., it will be reset, but if it exceeds 5 sec., the output power will shut off.
- How to recover the PSU after shut off: reclosing AC after 10 sec. from AC shut down. Any factors that cause over current conditions more than 5 sec. must be fixed.
- GPSA series can stand for repetitive pulse loads if the peak current is less than 5 sec. and OCP2 with the 5 sec. timer. In that case, please keep it in your mind, the actual output current calculated by root-mean-square value shall be less than 100% of the rated current.
  The GPSA series, however, has a safety design feature such as internal over heat protection that prevents its damage from a miss use due to over powered pulse loads.

100% Load Operation at 50°C

100% load factor with ambient temperature of 50°C

High power feeding available even under high temp. use.

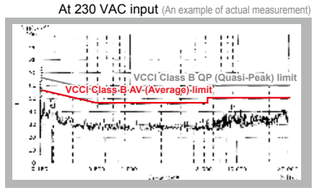


Low Noise and Low Leakage Current

Conducted emission VCCI Class B without an external noise filter

It enables cost reduction and reduces manhour at user's side. Furthermore, the leakage current achieved to be 0.19mA at 100 VAC and 0.46mA at 200 VAC even achieving low noise. (An example of actual measurement)

At 230 VAC input (An example of actual measurement)



Other Features

Silent

With built-in thermal-sensing variable speed fan, sound reduction can be achieved. Heat-related issues for CPU can be settled with fan speed changeover switch.

Potentiometer equipped

More stable operation will be achieved by correcting line drop. 24V output type can be adjusted up to 29V, and can be used as charging voltage source for lead acid battery. With this function, 36V output type can be used as 30V, and 48V output type can be used as 42V output power supply.

Fan monitoring signal equipped

Fan monitoring signal is available. This signal allows you to monitor the fan speed.

PWR_OK signal equipped

"H" signal is delivered when the output is normal.

Remote ON/OFF function equipped

Output ON/OFF control is available with remote ON/OFF signal (PS_ON#)

Modification Example

Both side dip-coating to resist neutral salt spray test

GPSA-1500 series can be applied "both side dip-coating". It can certainly cover the narrow space where brush-coating cannot reach. In addition, the protection of discrete components such as diodes against dusts by tubing brings continuous stable operation even under harsh neutral salt spray test. (Brush-coating proved poor operation to stop in several minutes.)

Low standby power consumption

Power consumption at remote OFF can be modified to comply with ErP directive.

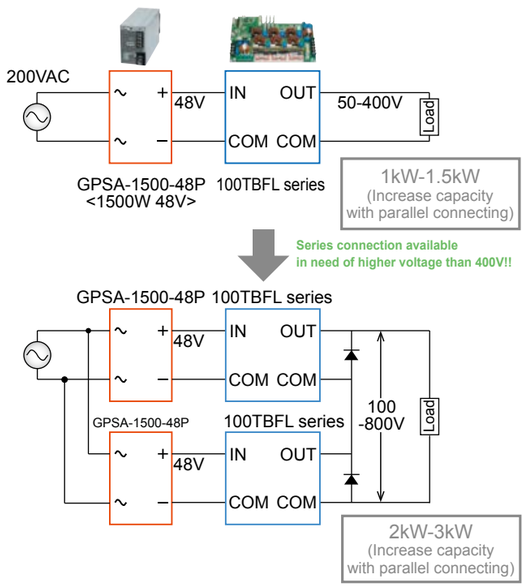
Backup functionality at blackout

Another model with backup functionality at blackout is also scheduled to be added in the lineup. (Please contact us for details.)

Application Example High Voltage, Large Capacity Output

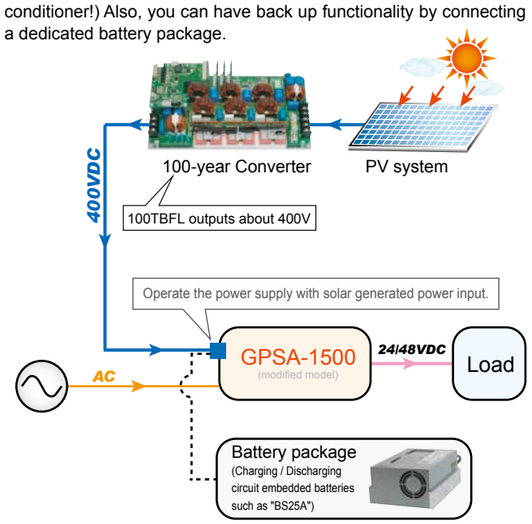
When high voltage and large capacity output is needed;

With the combination of 100TBFL series, high voltage and large capacity power supply can be constructed.



When you want to utilize natural energy efficiently;

With the combination of "100TBFL" and modified GPSA-1500, you can efficiently use natural energy such as solar-generated electricity. That system will take prior power feeding from solar-generated electricity, and if the solar-generated electricity is not high enough, AC will provide stable power to the loads. (Efficient without power conditioner!) Also, you can have back up functionality by connecting a dedicated battery package.



GPSA-5000 series

High efficiency, large capacity Unit type general purpose power supply

Continuous max. 5000 W
Peak max. 6000 W

Output Voltage: 48V 96V

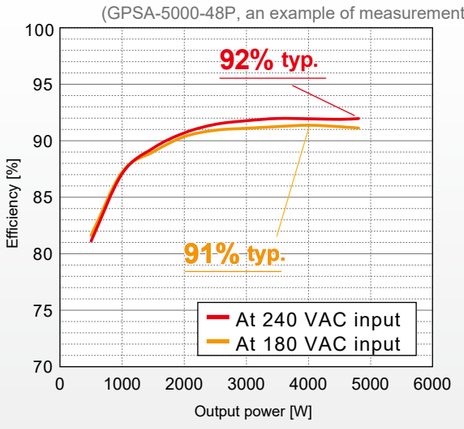
High efficiency

Achieved a maximum efficiency of 93% typ.

By adopting a high-efficiency circuit design and modularized internal power supplies, an outstanding maximum efficiency of 93% typ.

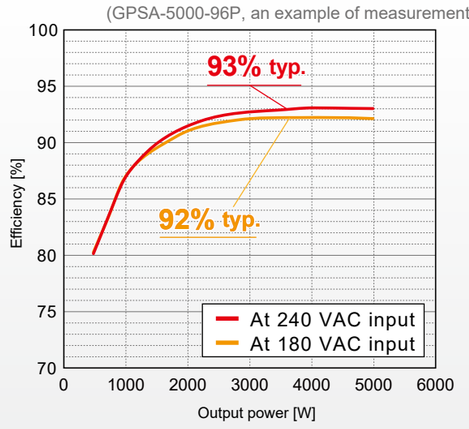
☐ Efficiency graph

(GPSA-5000-48P, an example of measurement)



☐ Efficiency graph

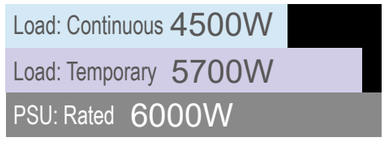
(GPSA-5000-96P, an example of measurement)



Supports peak power

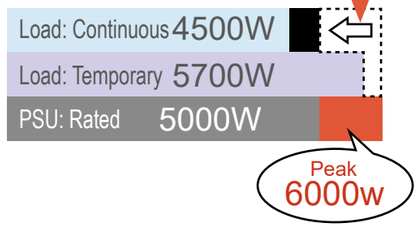
Applications with temporary high-current loads often require larger power supplies. The GPSA-5000 series supports peak output up to 120% of rated power (approx. 6,000 W). This reduces the size of the power supply, installation space, and system costs.

Without peak power



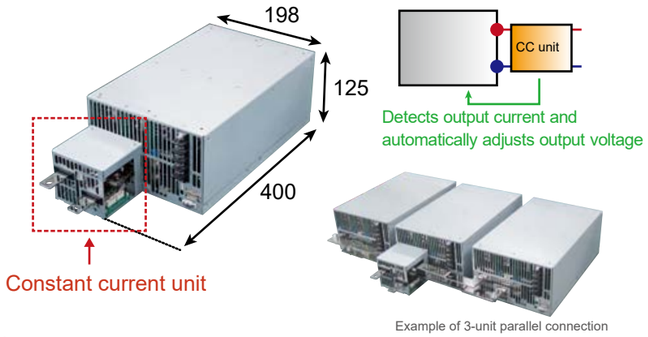
GPSA-**5000**

The peak output feature reduces power supply capacity, significantly lowering system costs.



Configurable as a contact current power supply with optional unit

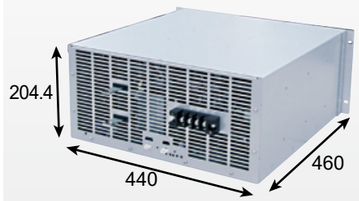
Enables a cost-effective high-capacity charger solution



Constant voltage setting: 60-96 V (96 V model)
Constant current setting: 50-150 A (3 units parallel connection)

A model with 3 GPSA-5000-96P units connected in parallel and an integrated CC unit is also available.

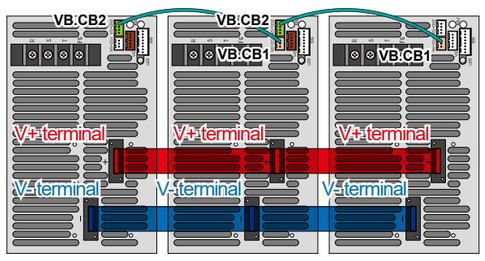
Customization is available depending on project requirements. Please feel free to contact us for details.



Parallel operation available

Expandable power capacity depending on the load

If power capacity is not sufficient, it can be increased by connecting the power supply units in parallel.With the connection of the output Voltage Balance (VB) and output Current Balance (CB) signals, stable power is supplied.



(Conceptual drawing)

Output voltage control signal available

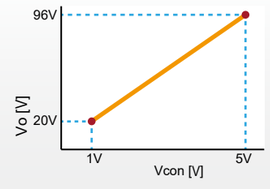
Able to adjust output voltage (Vo) by inputting voltage (Vcon), 1-5V.

Adjustable voltage range

96V type
20-96V

48V type
20-55V

Vcon-Vo description (96V type)



+12V 0.5A standby output

Equipped with +12 VSB/0.5 A output as auxiliary (standby) output.

Standby power supply output
+12 VSB (auxiliary power)
0.5A

*During backup operation for blackout, output current is limited to 0.3A.

100% load factor even at ambient temp. 50°C

100% load operation at 50°C ambient temperature

Stable power supply operation in high-temperature environments

Other features

Adjustable of output voltage volume available

Line drop can be compensated manually.

Remote sensing signal available

Compensates for positive-side line drop in the output cable by connecting the sensing signal at the load terminal

PWR_OK signal equipped

"H" signal is delivered when the output is normal.

Fan monitoring signal equipped

Fan monitoring signal for a fan is available. This signal allows you to monitor the fan speed.

Remote ON/OFF function equipped

Output ON/OFF control is available with Remote ON/OFF signal (PS_ON#).

Blackout detection signal

The blackout detection signal is provided for all models of GPSA series as a standard feature and the customer can save the cost of preparing a detection board.

Single Output High Capacity Power Supply GPSA-360 Series

Model	Description	Stock
GPSA-360-12-TP	+12V output	Standard stock
GPSA-360-24-TP	+24V output	Standard stock

■Model Name Coding

GPSA - 360 - ** - T P
① ② ③ ④ ⑤

1. Series name
2. Output power
3. 12: +12V output, 24: +24V output
4. Signal output: TTL signal
5. Fan signal: Rotation pulse signal

Features

- Industrial power supply with simple design for low price
- Power supply back-up functionality available at AC fail (+24V output only)
- Various safety standards (IEC/UL/CSA60950-1) are approved.
- Medical standard approved models are also added to our line-up (Refer to p.29 for details)
- High efficiency
- Width 1U, height 3U; easily fits into 19-inch racks
- External remote ON-OFF control signal available
- Worldwide range input (85-264 VAC), power factor 96% or higher with PFC circuit
- +12VSB output available

GPSA-360-24 Efficiency chart

GPSA-360-24		
Load	Input	Efficiency
Rated 24V 15A	85VAC	79.2%
	100VAC	80.6%
	132VAC	82.5%
	176VAC	83.9%
	200VAC	84.7%
	220VAC	84.8%
	264VAC	87.9%

Safety standard / Approval	UL	CSA	EN	CE	CCC
Reliability Grade	HFA	FA	HOA	OA	

Function

DC start | RS 232C | USB | TTL | PFC | Silence | SVSB FAN | TSFC FAN | Connection | RoHS

Input

Input	85-264VAC (worldwide range)
	120-370VDC*

*The rated input voltage range at the application of safety standard is "100-240 VAC (50/60Hz)".
In the case of DC input use, an external DC fuse shall be equipped to protect from power supply failure.

Output

Output voltage	+12V	+24V	+12VSB
Max. current/ max. power (continuous)	30A	15A	0.3A
	360W	360W	3.6W
Peak current / peak power (5 sec max.) 100VAC	40A	20.8A	–
	480W	499.2W	–
Peak current / peak power (5 sec. max.) 200VAC	40A	25A	–
	480W	600W	–
Min. current	0A	0A	0A

Dimensions

W×H×D (mm)	128×41×230 (Width 1U/Height 3U size)

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) DC120-370V*1			Worldwide range *Refer to Fig.1
	Input Frequency		50 / 60Hz			47 - 63Hz
	Efficiency		80% typ. (100 VAC),83% typ. (240 VAC) *Characteristic data: Fig.4			At rated output
	Power Factor		96% min. (100 VAC),90% min. (240 VAC) *Characteristic data: Fig.5			
	Inrush Current		31A peak (100 VAC), 75A peak (240 VAC) *Characteristic data: Fig.6			At rated input/output at cold start (25°C)*2
	Input Current		4.5A typ. (100 VAC),1.8A typ. (240 VAC)			At rated input and max. output
			6.3A typ. (100 VAC), 3.0A typ. (240 VAC:24V), 2.4A typ. (240VAC:12V)			At rated input and peak output
Output	Model		GPSA-360-12-TP	GPSA-360-24-TP	Common for all models	
	Rated Voltage		+12V	+24V	+12VSB	
	Rated Current / Power		30A	15A	0.3A	
			360W	360W	3.6W	
	Peak Current / Power	100VAC	40A	20.8A	–	Time: 5 sec. or less Duty ratio of repetitive load: 10% or less *Refer to Fig.2
			480W	499.2W	–	
		200VAC	40A	25A	–	
			480W	600W	–	
	Min. Current		0A	0A	0A	
	Setup voltage at factory		12V±2%	24V±2%	12V±10%	
	Voltage adjustable range		12V±10%	24V -5%,+20%	–	
	Static input fluctuation		48mV max.	96mV max.	120mV max.	The values shall be measured at output terminal block 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.	0.02%/°C max.	0.02%/°C max.	
	Max. Ripple Voltage (mVp-p)	-10 to 0°C	160 max.	160 max.	160 max.	Two wires are coming out from the output terminal block and connected into one at the edge of 100cm max. ong. 47μF electrolytic capacitor and 0.1μF ceramic capacitor are placed on it and it is measured by the 100MHz oscilloscope. *Characteristic data: Fig.17
		0 to 60°C	120 max.	120 max.	120 max.	
	Max. Spike Voltage (mVp-p)	-10 to 0°C	180 max.	180 max.	180 max.	
		0 to 60°C	150 max.	150 max.	150 max.	
Protection	Overcurrent Protection	OCP Point (A)	101% min. of peak current		101% min. of peak current	Applying peak current 5 sec. or more shutdowns PSU. (Recovery: AC input reclosing) *Characteristic data: Fig.19
		Method	Hold down current limiting → output shutdown		Hold down current limiting	
	Recovery(Overcurrent)	At AC Operation	Reclosing of AC input		Automatic recovery	
	Overvoltage Protection	OVP Point (V)	13.8 - 16	29.2 - 35.0	–	
		Method	Output shutdown		–	
	Recovery(Overvoltage)	At AC Operation	Reclosing of AC input		–	
Environment	Operating Temp. / Humidity		-10 to 60°C* / 10 to 90%			*Refer to Fig.3 No condensation
	Storage Temp. / Humidity		-25 to 75°C / 10 to 95%			No condensation
	Vibration		Acceleration amplitude: 2G (10 - 55Hz), Sweep cycles: 10, Test duration: 10 minutes each axis			JIS-C-60068-2-6, at no operation
	Mechanical Shock		Lift one bottom edge up to 50mm and let it fall. Number of bumps: 3 each of 4 edges			JIS-C-60068-2-31, at no operation
Insulation	Dielectric Strength		AC input - DC output: 4000 VAC for 1 minute AC input - FG: 2000 VAC for 1 minute			Cut-off current: 10mA Completion inspection: 3000 VAC/minutes between AC input-DC output
	Insulation Resistance		AC input - DC output: 50MΩ min. AC input - FG: 50MΩ min. DC output - FG: 50MΩ min.			At 500 VDC
	Leakage Current		0.21mA max. (100 VAC) / 0.5mA max. (240 VAC) *Characteristic data: Fig.7			YEW. TYPE3226 (1kΩ) or equivalent
EMC	Line Noise Immunity		± 2000V (pulse width: 100/1000ns, repetitive cycle: 30-100Hz, 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-B, FCC-B, EN55022-B, CISPR22-B compliant *Characteristic data: Fig.8,9			Measured by single unit
	Harmonic Current Regulation		IEC61000-3-2 (Ver.2.1) Class D, EN61000-3-2 (A14) Class D compliant			At rated input/output
Others	Safety Standard		UL60950-1,CSA60950-1 (c-UL) approved, PSE (ministerial ordinance) compliant			
	Cooling System		Forced air cooling			Thermal-sensing variable speed fan embedded
	Output Grounding		Capacitor grounding			
	Output Hold-up Time		PWR_OK holds up 20ms min. after AC failure *Characteristic data: Fig.14			At rated output
	Reliability Grade		FA (industrial equipment grade, double-sided through hole PCB)			Follow our standard
	MTBF		70,000 H min.			Based on EIAJ RCR-9102
	Weight		1.4 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 not listed

*1 The rated input voltage range at the application of safety standard is "100-240 VAC (50/60Hz)". If it is used with DC input, an external DC fuse shall be equipped in case of the power supply failure.
*2 The inrush current into input noise filter is not specified unless its period is more than 100μs.

Fig.1 Derating for Low Input Voltage

When the input voltage is 90 VAC or less, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

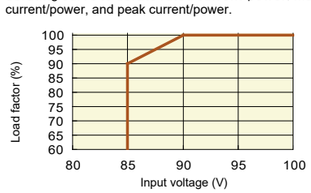


Fig.2 Duty Ratio

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

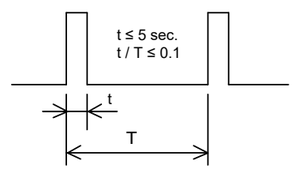
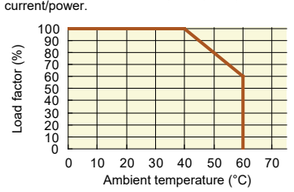


Fig.3 Temperature Derating

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#)	The power supply starts up with 'L' input and shuts down with 'H' or 'OPEN' input (except for 12VSB). *The output also shuts down if PS_ON signal is switched to OFF ('H') during backup operation with the dedicated battery package connected. If this is the case, 12VSB will shut down.	The pin 4 of SIG connector
Output Signal	Normal Output Signal (PWR_OK)	'H'signal is delivered at normal output (detection delay time: 100 - 500ms). Voltage detection: 19.9V or higher for 24V output, 9.4V or higher for 12V output	The pin 5 of SIG connector
	Fan Monitor Signal (FAN_M1,FAN_M2)	Two cycle pulses per one rotation of the fan motor are delivered (open collector output).	The pin 2 of SIG connector, the pin 3 of SIG connector
	Blackout Detection Signal (AC FAIL)	The signal goes 'OPEN' at low AC input voltage and blackout detection (open collector output). (detection voltage: 80 VAC typ., detection delay time: 20 - 40ms after AC input failure. In the case that the load factor is 5% or less: 20-60ms (no time limitation in standby mode))	The pin 6 of SIG connector
	Low Battery Voltage Signal (BATT LOW) *Only available when a dedicated battery package is connected.	The low battery voltage signal, "BATT_LOW" will be sent from the power supply after receiving from the dedicated battery package. If the battery package is not connected, the status shall be 'OPEN'. Detailed specifications shall be based on the specification of the battery package connected.	The pin 7 of SIG connector

Signal Circuit

Input Signal Circuit

(PS_ON#)

('L'≤0.8V, 2.0V≤'H')

Output Signal Circuit

(PWR_OK)

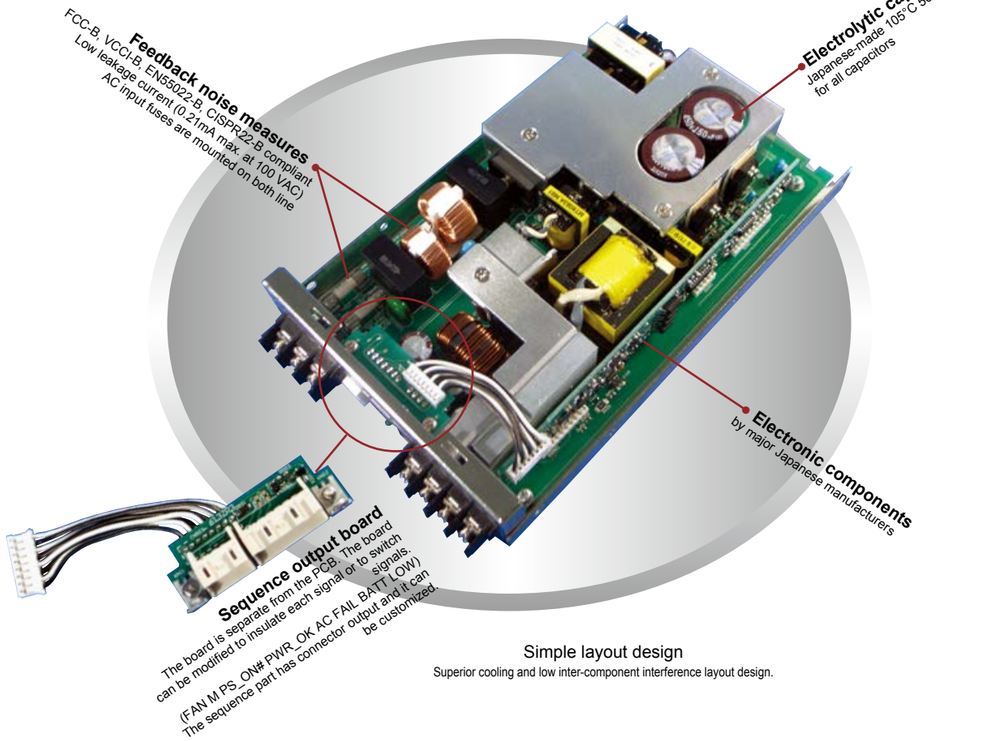
(FAN_M1,FAN_M2)

(AC FAIL)

(BATT LOW)

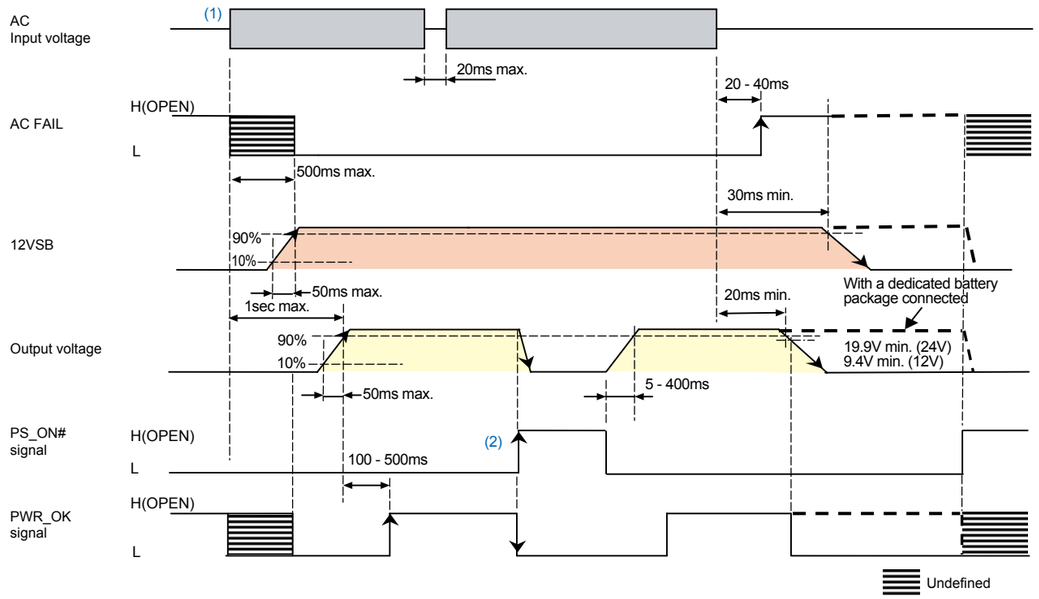
Internal Structure

RoHS fully compliant
Amount of hazardous materials in PWBs, wires, electronic components, coils, chassis, and labels specified by International standard is lower than acceptable level.



Simple layout design
Superior cooling and low inter-component interference layout design.

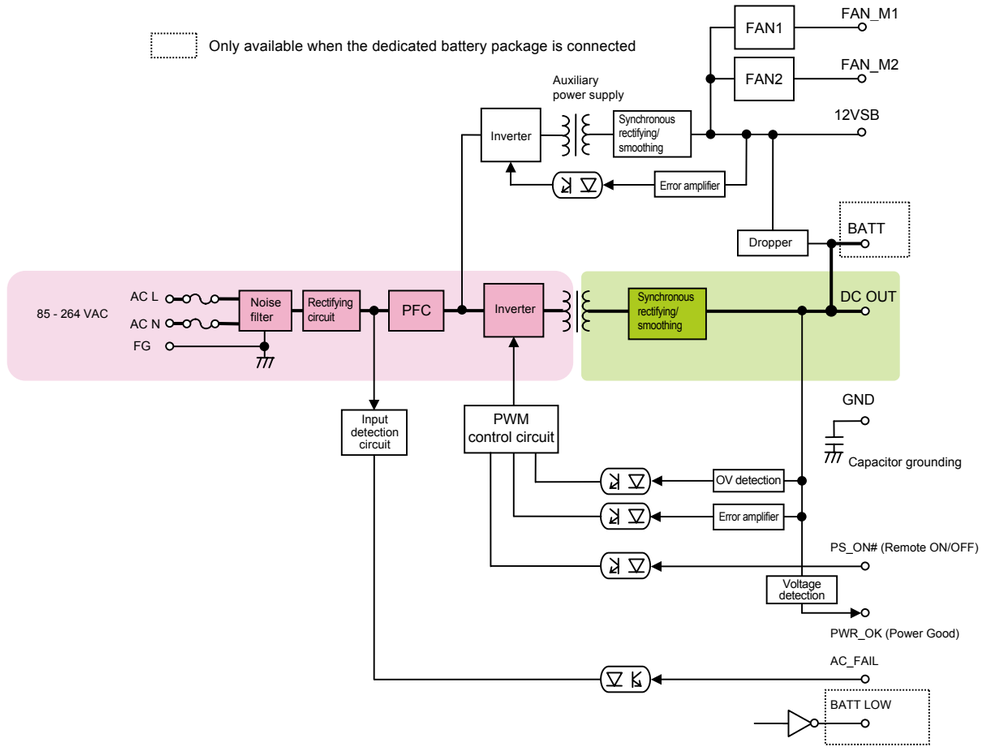
Sequence Diagram



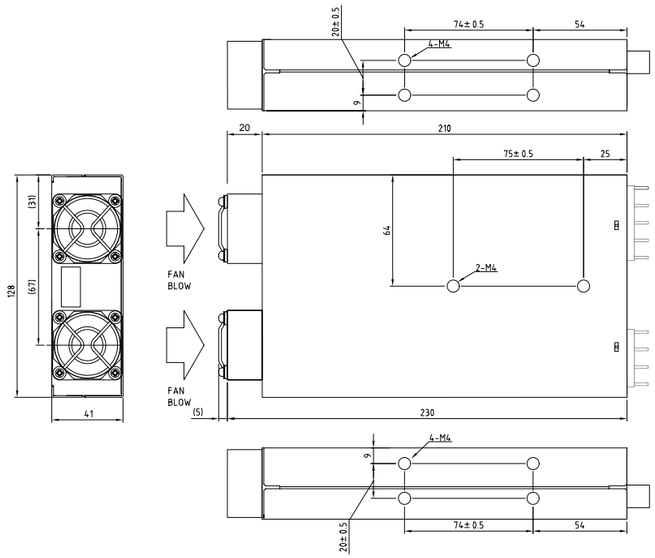
* The time chart for when a dedicated battery package is connected is shown with thick broken lines.

(1)All outputs start up by being supplied AC input under the condition of PS_ON# 'L'. PWR_OK 'H (OPEN)' is delivered at 100 - 500ms after the output has risen.
(2) At PS_ON# 'H'(OPEN) input, outputs except for +12VSB shut down (all outputs including 12VSB shut down at backup operation).

Block Diagram



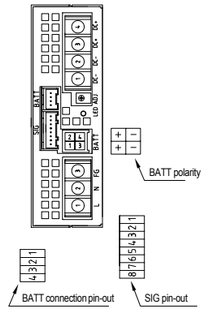
Outline Drawing



SIG Connector Pin assignments

Connector	Pin #	Signal Name	Max Current	Note
SIG	1	COM	0.5A	Common 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 if the battery is connected.
	8	+12VSB	0.3A	

Note: When using the pin 1 COM of the SIG connector, make sure that the current of main output will not be passed to the pin.

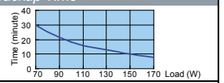


* Dimensional tolerance shall be ±1 mm unless otherwise specified.
* The screw depth of penetration into PSU is 5mm max..

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

Optional Components (Sold Separately)

Battery package

Picture	Model	Type	Shape (size)	Backup Time
	BS14A-H24/2.5L	Ni-MH	1U/3U size (W×D×H=128×211×41mm)	

* The backup time is a reference value at initial use; it is not a guaranteed value.
* The backup time can be extended with parallel connection.
* Battery package can be connected to GPSA-360-24-TP (backup type) only.

Cable

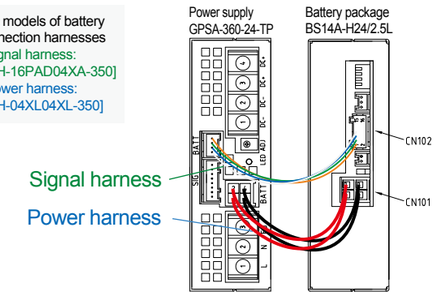
Picture	Model	Type	Description
	WH-08XA08XA-500	Signal harness	For BATT_LOW, AC_FAIL, FAN_M, PS_ON, PWR_OK, and +12VSB
	WH-16PAD04XA-350	Signal harness for connecting the battery pack	Signal harness to connect one battery package (BS14A-H24/2.5L)*
	WH-16PAD04XA-350-01	Signal harness for connecting the battery pack	Signal harness to connect two battery packages (BS14A-H24/2.5L)*
	WH-04XL04XL-350	Power harness for connecting the battery pack	Power harness to connect one battery package (BS14A-H24/2.5L)*
	WH-02XL04XL-350-01	Power harness for connecting the battery pack	Power harness to connect two battery packages (BS14A-H24/2.5L)*

* The harness is necessary to connect with the battery package (BS14A-H24/2.5L) for backup operation (See the following figures “Configurations of Battery Connection Harnesses”).

Battery connection harness and connection images

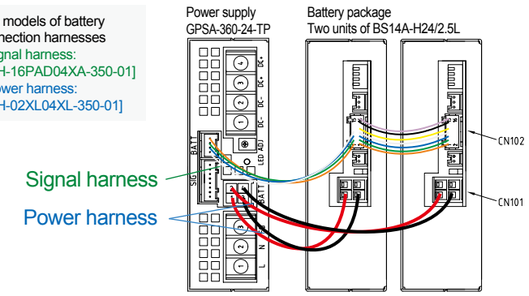
Connecting one battery package (BS14A-H24/2.5L)

The models of battery connection harnesses
* Signal harness:
[WH-16PAD04XA-350]
* Power harness:
[WH-04XL04XL-350]



Connecting two battery packages (BS14A-H24/2.5L)

The models of battery connection harnesses
* Signal harness:
[WH-16PAD04XA-350-01]
* Power harness:
[WH-02XL04XL-350-01]



Connection In Series And Parallel

■Series operation

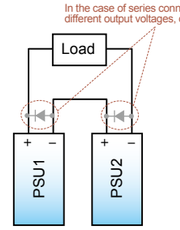
Series connection is available as shown on the right.
* Series connection with different output voltage of GPSA is available, such as 12V and 24V.

Note: In the case that different voltages are connected in series like Fig. (1) on the right;

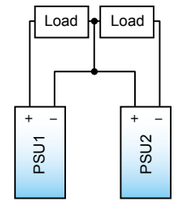
1. The output current shall be the rated current or less of the smaller rated current among the PSU1 and PSU2 connected in series.

2. Connect diodes for protection as shown in the Fig. (1).
Current rating of the diode shall be 1.5 times or more of rated output current whose unit has larger rated output current among PSU1 and PSU2.
Also, use Schottky diodes whose forward voltage is lower than the forward voltage of the diodes used in the PSU.

(1)



(2)

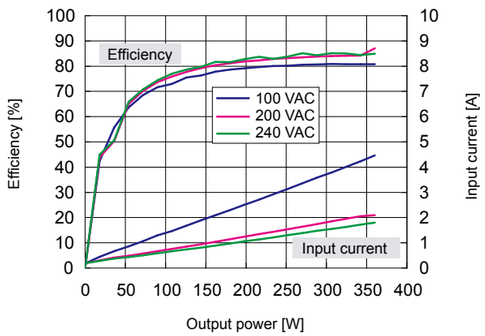


■Parallel operation

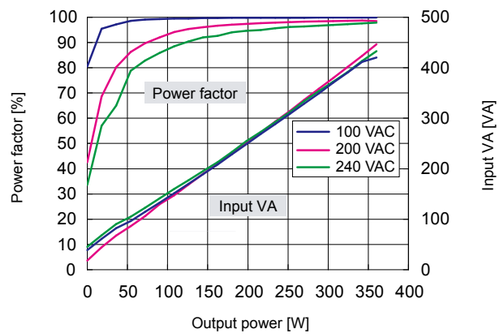
Parallel operation is unacceptable.

Characteristics Data GPSA-360-24-TP (Examples of actual measurement)

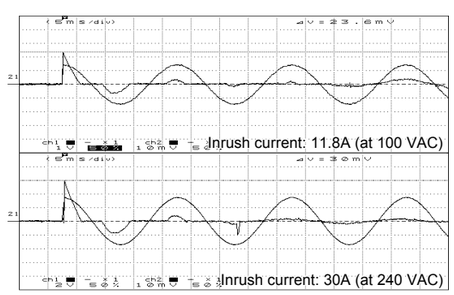
● Fig.4 Efficiency / Input Current vs. Output Power



● Fig.5 Power Factor / Input VA vs. Output Power



● Fig.6 Inrush Current



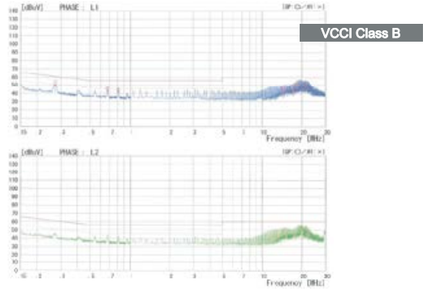
● Fig.7 Leakage Current

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

	Rated load	Min. load
100 VAC	0.06mA	0.08mA
240 VAC	0.18mA	0.20mA

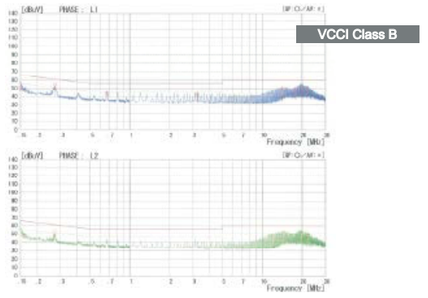
● Fig.8 Conducted Emission at 100 VAC

Input: 100 VAC
Load: Rated
Mode: Peak



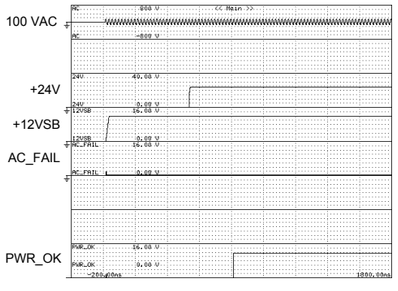
● Fig.9 Conducted Emission at 240 VAC

Input: 240 VAC
Load: Rated
Mode: Peak



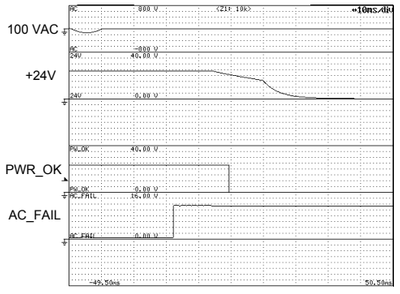
● Fig.10 Rising Characteristics at 100 VAC

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



● Fig.11 Falling Characteristics at 100 VAC

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

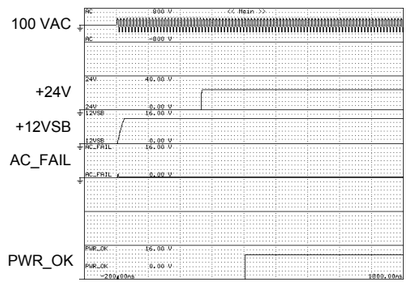


GPSA-360 series

Characteristics Data GPSA-360-24-TP (Examples of actual measurement)

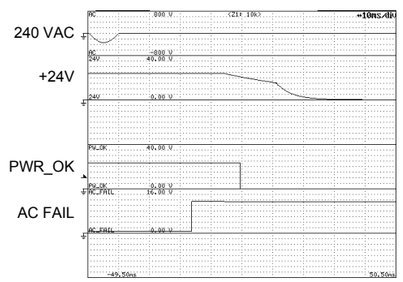
● Fig.12 Rising Characteristics at 240 VAC

Input: 240 VAC
Load: Rated
Time axis: 200ms/DIV



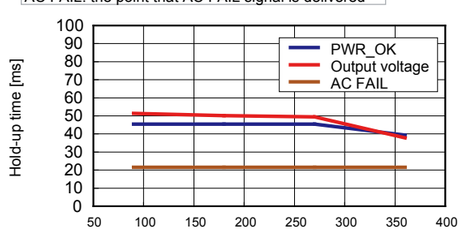
● Fig.13 Falling Characteristics at 240 VAC

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



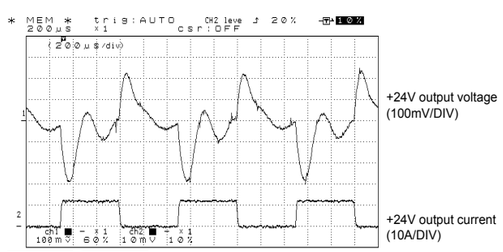
● Fig.14 Output Hold-up Time vs. Output Power

PWR_OK: the point that PWR_OK signal goes to "L"
Output voltage: the point that output voltage decreases to 95%
AC FAIL: the point that AC FAIL signal is delivered



● Fig.15 Dynamic Load Fluctuation Characteristics at 1kHz

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



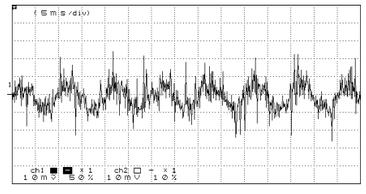
● Fig.16 Output Voltage Regulation

Output	Min. load	Rated load	Peak load
+24V output	0A	15A	17A

AC input voltage	85 VAC	100 VAC	132 VAC	176 VAC	240 VAC	264 VAC
+24V output (min. load)	24.017 V	24.017 V	24.017 V	24.017 V	24.018 V	24.017 V
+24V output (50%)	24.008 V	24.006 V	24.007 V	24.007 V	24.006 V	24.007 V
+24V output (rated load)	23.995 V	23.994 V	23.994 V	23.995 V	23.994 V	23.993 V
+24V output (peak load)	23.992 V	23.991 V	23.990 V	23.990 V	23.990 V	23.992 V

● Fig.17 Ripple and Spike Voltage

Input: 100 VAC
Load: Rated
Time axis: 5ms/DIV



● Fig.18 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. 24.3	approx. 12.2	approx. 6.1

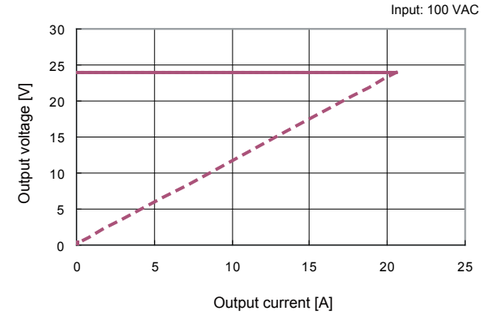
* Lifetime shall be 15 years at longest due to deterioration of sealing plates.

■ Fan

Ambient temp.	25°C	40°C	50°C
Expected service life (yr)	approx. 13	approx. 13	approx. 8.7

● Fig.19 Over Current Protection (V-I Characteristic)

Input: 100 VAC



Specifications, design, and prices in the catalog are subject to change without prior notice. Do not copy. Copyright © 2025 Nipron Co., Ltd.

Single Output High Capacity Power Supply GPSA-600 Series

Model	Description	Stock
GPSA-600-12P-TP	+12V output	Standard stock
GPSA-600-24P-TP	+24V output	Standard stock
GPSA-600-36P-TP	+36V output	Standard stock
GPSA-600-48P-TP	+48V output	Standard stock

■Model Name Coding

GPSA - 600 - ** P - T P
① ② ③ ④ ⑤ ⑥

1. Series name
2. Output power
3. 12:+12V output, 24:+24V output, 36:+36V output, 48:+48V output
4. Peak output compliant
5. Signal output : TTL signal
6. Fan signal : rotation pulse signal

Features

- Industrial power supply with simple design for low price
- Power supply back-up functionality available at AC fail (+24V output only)
- Various safety standards (UL/CSA60950-1) are approved.
- High efficiency
- Width 61mm, height 3U; easily fits into 19-inch racks
- External remote ON-OFF control signal available
- Worldwide range input (85-264 VAC), power factor 94% or higher with PFC circuit
- +12VSB output available

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

Input	85-264VAC (worldwide range)
	120-370VDC*

*The rated input voltage range at the application of safety standard is "100-240 VAC (50/60Hz)".
In the case of DC input use, an external DC fuse shall be equipped to protect from power supply failure.

Output

Output voltage	*+12V*	*+24*	*+36V*	*+48V*	*+12VSB*
Max. current/ max. power (continuous)	50A	25A	16.7A	12.5A	0.5A(0.3A)
	600W	600W	601.2W	360W	6W(3.6W)
Peak current / peak power (5 sec. max.) 100VAC	80A	50A	33.3A	25A	–
	960W	1200W	1198.8W	1200W	–
Peak current / peak power (5 sec. max.) 200VAC	100A	60A	40A	30A	–
	1200W	1440W	1440W	1440W	–
Min. current	0A	0A	0A	0A	0A

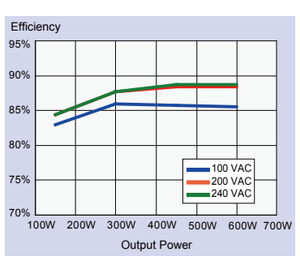
*Refer to () for the 24V backup operation

Dimensions

W×H×D (mm)	128×61×240 (Width 128mm/Height 3U size)

GPSA-600-24P-TP Efficiency chart

At rated output and 240 VAC input, 88.8% high efficiency is achieved. Energy-saving and the reduction of CO_2 emission can be contributed at this age.



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) DC120-370V*1					Worldwide range *Refer to Fig.1
	Input Frequency		50 / 60Hz					47 - 63Hz
	Efficiency		80% typ. (100 VAC), 82% typ. (240 VAC) *Characteristic data: Fig.4					At rated output
	Power Factor		94% min. (100 VAC), 90% min. (240 VAC) *Characteristic data: Fig.5					
	Inrush Current		30A peak (100 VAC) *Characteristic data: Fig.6					At rated input/output at cold start (25°C)*2
	Input Current		7.5A max. (100 VAC), 3.2A max. (240 VAC)					At rated input and max. output
			16.2A max. (100 VAC), 8.1A max. (240 VAC)					At rated input and peak output
Output	Model		GPSA-600-12P-TP	GPSA-600-12P-TP	GPSA-600-12P-TP	GPSA-600-12P-TP	Common for all models	
	Rated Voltage		+12V	+24V	+36V	+48V	+12VSB	
	Rated Current / Power		50A	25A	16.7A	12.5A	0.5A	
			600W	600W	601.2W	600W	6W	
	Peak Current / Power	100 VAC	80A	50A	33.3A	25A	–	Time: 5 sec. or less Duty ratio of repetitive load: 35% or less *Refer to Fig.2, 3
			960W	1200W	1198.8W	1200W	–	
		200 VAC	100A	60A	40A	30A	–	
			1200W	1440W	1440W	1440W	–	
	Min. Current		0A	0A	0A	0A	0A	
	Setup voltage at factory		12V±2%	24V±2%	36V±2%	48V±2%	12V±5%	At rated output
	Voltage adjustable range		12V±10%	24V±10%	36V-20%, +5%	48V±10%	–	
	Static input fluctuation		48mV max.	96mV max.	144mV max.	192mV max.	120mV max.	The values shall be measured at output terminal block or connector.
	Static load fluctuation		100mV max.	150mV max.	150mV max.	300mV max.	600mV max.	
	Time-lapse drift		48mV max.	96mV max.	144mV max.	192mV max.	120mV max.	At 25°C
	Temperature fluctuation		0.02%/°C max.	0.02%/°C max.	0.02%/°C max.	0.02%/°C max.	0.02%/°C max.	
	Max. Ripple Voltage (mVp-p)	-10 to 0°C	160 max.	160 max.	160 max.	300 max.	160 max.	Two wires are coming out from the output terminal block and connected into one at the edge of 100cm max. long. 47µF electrolytic capacitor and 0.1µF ceramic capacitor are placed on it and it is measured by the 100MHz oscilloscope. *Characteristic data: Fig.17
		0 to 60°C	120 max.	120 max.	150 max.	150 max.	120 max.	
	Max. Spike Voltage (mVp-p)	-10 to 0°C	180 max.	180 max.	240 max.	400 max.	180 max.	
		0 to 60°C	150 max.	150 max.	200 max.	200 max.	150 max.	
Protection	Overcurrent Protection	OCP Point (A)	101% min. of peak current					Applying peak current 5 sec. Or more shutdowns PSU. (Recovery: AC input reclosing) At 12VSB overcurrent, the recovery of main output (when the load factor of main output is 1% or less) shall be reclosing of AC input or PS_ON signal. *Characteristic data: Fig.19
		Method	Hold down current limiting					
	Recovery (Overcurrent)	At AC Operation	Reclosing of AC input					
	Overvoltage Protection	OVP Point (V)	105-125% of Vout	110-130% of Vout	105-125% of Vout	105-125% of Vout	–	Output voltage follow-up type
		Method	Output shutdown				–	
	Recovery (Overvoltage)	At AC Operation	Automatic recovery				–	
Environment	Operating Temp. / Humidity		-10 to 60°C* / 10 to 90%					*Refer to Fig.4 No condensation
	Storage Temp. / Humidity		-25 to 75°C / 10 to 95%					No condensation
	Vibration		Acceleration amplitude: 2G (10 - 55Hz), Sweep cycles: 10, Test duration: 10 minutes each axis					JIS-C-60068-2-6, at no operation
	Mechanical Shock		Lift one bottom edge up to 50mm and let it fall. Number of bumps: 3 each of 4 edges					JIS-C-60068-2-31, at no operation
Insulation	Dielectric Strength		AC input - DC output: 3000 VAC for 1 minute AC input - FG: 2000 VAC for 1 minute					Cut-off current: 15mA Completion inspection: at 1 sec. each
	Insulation Resistance		AC input - DC output: 50MΩ min. AC input - FG: 50MΩ min. DC output - FG: 50MΩ min.					At 500 VDC
	Leakage Current		0.5mA max. (100 VAC) / 1mA max. (240 VAC) *Characteristic data: Fig.7					YEW. TYPE3226 (1kΩ) or equivalent
EMC	Line Noise Immunity		± 2000V (pulse width: 100/1000ns, repetitive cycle: 30-100Hz, 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-B, FCC-B, EN55022-B, CISPR22-B compliant *Characteristic data: Fig.8,9					Measured by single unit
	Harmonic Current Regulation		IEC61000-3-2 (Ver.2.1) Class D compliant					At rated input/output
Others	Safety Standard		UL60950-1, CSA60950-1 (c-UL) approved, CE Marking					
	Cooling System		Forced air cooling					Thermal-sensing variable speed fan embedded
	Output Grounding		Capacitor grounding					
	Output Hold-up Time		PWR_OK holds up 20ms min. after AC failure *Characteristic data: Fig.14					At rated output
	Reliability Grade		FA (industrial equipment grade, double-sided through hole PCB)					Follow our standard
	MTBF		70,000 H min.					Based on EIAJ RCR-9102
	Weight		1.95 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 not listed

*1 The rated input voltage range at the application of safety standard is "100-240 VAC (50/60Hz)". If it is used with DC input, an external DC fuse shall be equipped in case of the power supply failure.
*2 The inrush current into input noise filter is not specified unless its period is more than 100µs.

Fig.1 Derating for Low Input Voltage

When the input voltage is 90 VAC or less, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

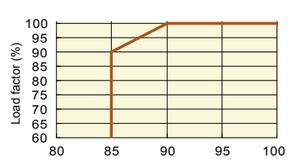


Fig.2 Duty Ratio

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

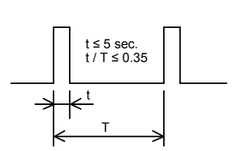


Fig.3 Peak output power condition

Peak output power shall follow the curve below and <Fig. 2>. Keep average output power under 550W when in use of peak output power.

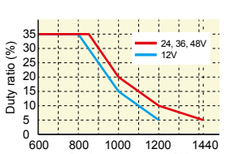
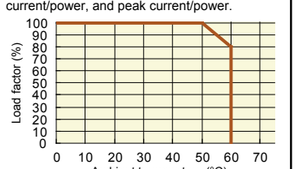


Fig.4 Temperature Derating

When the ambient temperature (near the airflow inlet) exceeds 50°C, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.



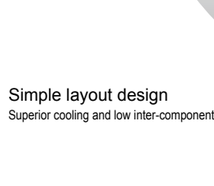
Signal Input / Output Specification Condition: at normal temperature and humidity unless otherwise specified

	Items	Specification	Note
Input Signal	Output ON / OFF Control Signal (PS_ON#)	The power supply starts up with 'L' input and shuts down with 'H' or 'OPEN' input (except for 12VSB).	The pin 4 of SIG connector
Output Signal	Normal Output Signal (PWR_OK)	'H'signal is delivered at normal output (detection delay time: 100 - 500ms). Voltage detection: 9.8V or higher for 12V output,19.9V or higher for 24V output, 26.5V or higher for 36V output, 39.8V or higher for 48V output	The pin 5 of SIG connector
	Fan Monitor Signal (FAN_M)	Two cycle pulses per one rotation of the fan motor are delivered (open collector output).	The pin 2 of SIG connector
	Blackout Detection Signal (AC FAIL)	The signal goes 'OPEN' at low AC input voltage and blackout detection. (detection voltage: 80 VAC typ., detection delay time: 20 - 40ms after AC input failure.)	The pin 6 of SIG connector
	Low Battery Voltage Signal (BATT LOW) *Only available when a dedicated battery package is connected.	The low battery voltage signal, "BATT_LOW" will be sent from the power supply after receiving from the dedicated battery package. If the battery package is not connected, the status shall be 'OPEN'. Detailed specifications shall be based on the specification of the battery package connected.	The pin 7 of SIG connector

Signal Circuit

Input Signal Circuit

(PS_ON#)

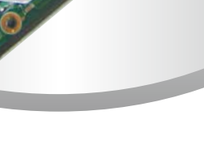


('L'≤0.8V, 2.0V≤'H')

Output Signal Circuit

(PWR_OK)

(FAN_M)

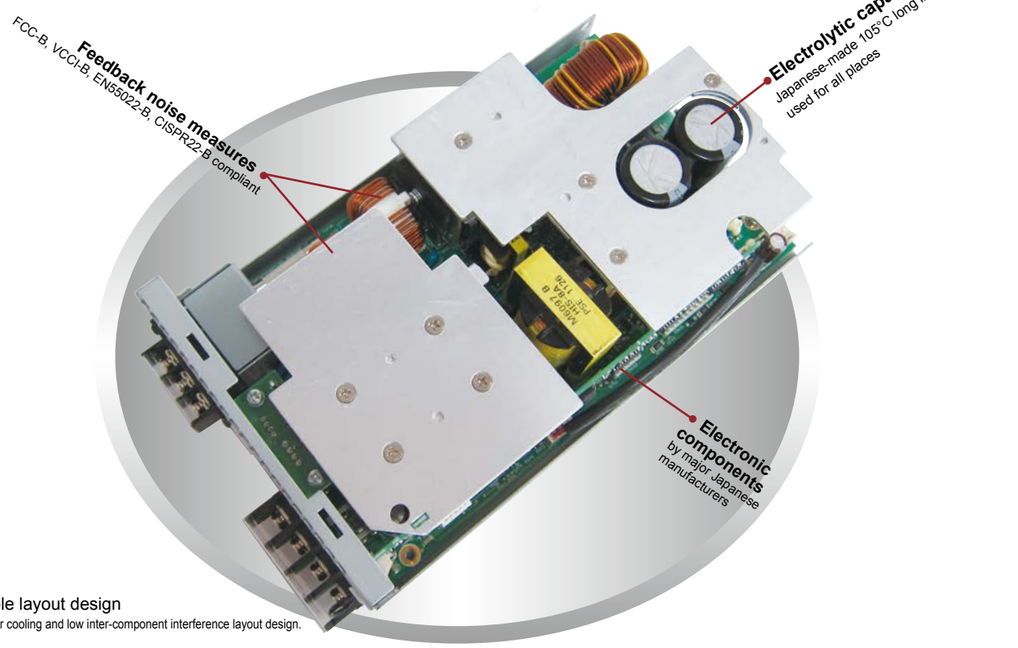


(AC FAIL)

(BATT LOW)

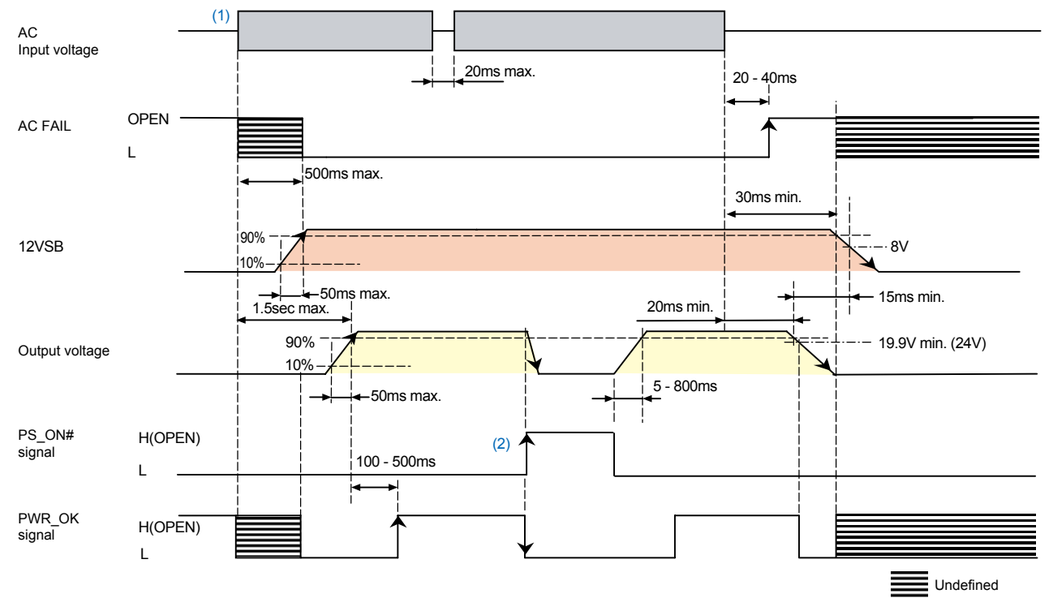
Internal Structure

RoHS fully compliant
Amount of hazardous materials in PWBs, wires, electronic components, coils, chassis, and labels specified by International standard is lower than acceptable level.



Simple layout design
Superior cooling and low inter-component interference layout design.

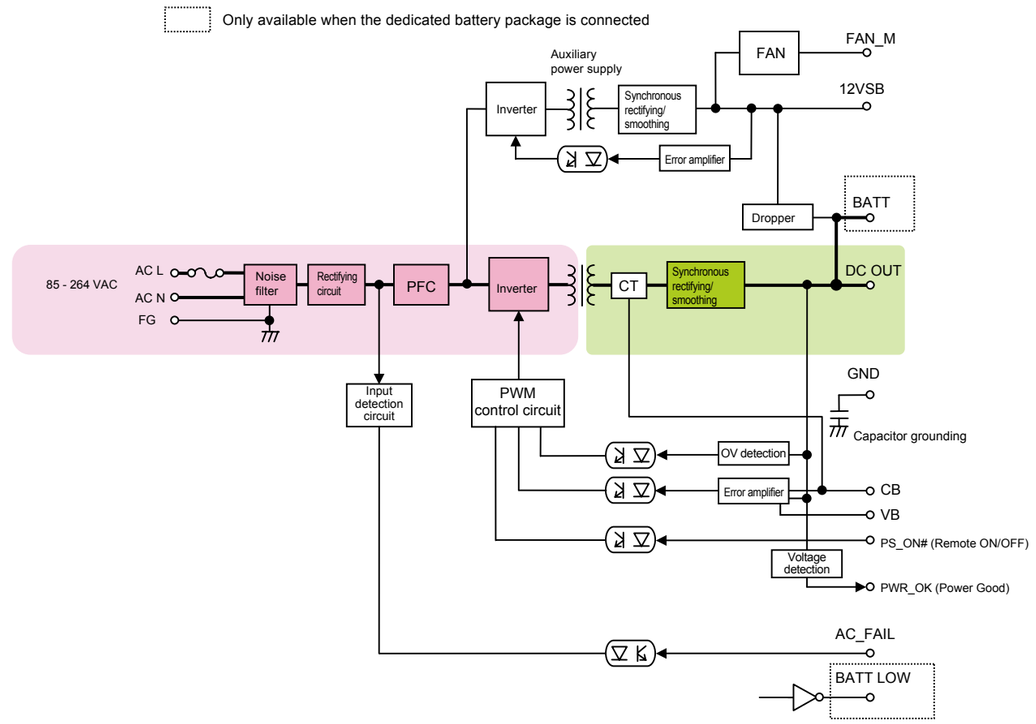
Sequence Diagram



* The time chart for when a dedicated battery package is connected is shown with thick broken lines.

(1)All outputs start up by being supplied AC input under the condition of PS_ON# 'L'. PWR_OK 'H (OPEN)' is delivered at 100 - 500ms after the output has risen.
(2) At PS_ON# 'H'(OPEN) input, outputs except for +12VSB shut down (all outputs including 12VSB shut down at backup operation).

Block Diagram

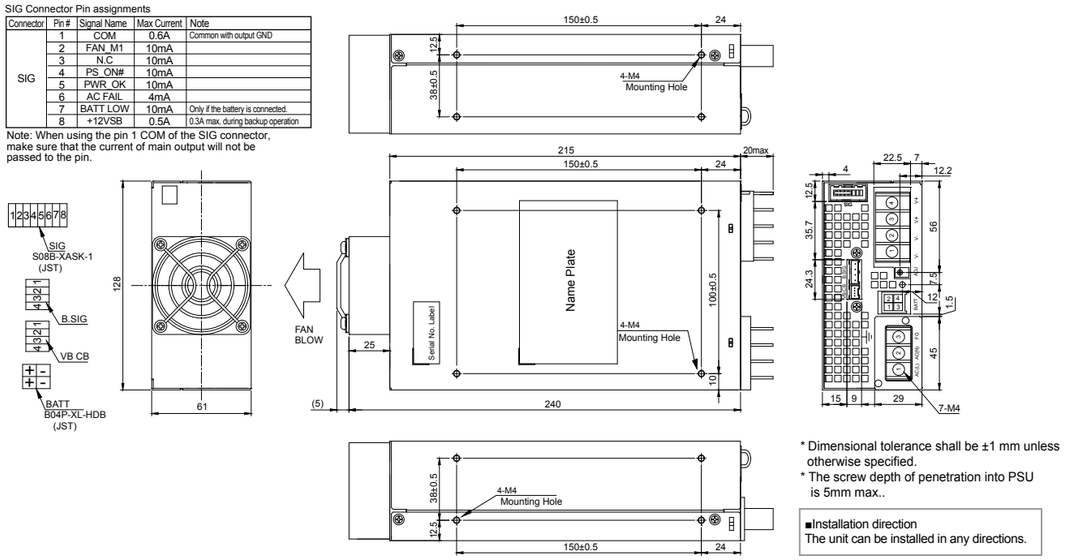


Outline Drawing

SIG Connector Pin assignments

Connector	Pin #	Signal Name	Max Current	Note
SIG	1	COM	0.6A	Common with output GND
	2	FAN_M1	10mA	
	3	N.C	10mA	
	4	PS_ON#	10mA	
	5	PWR_OK	10mA	
	6	AC FAIL	4mA	
	7	BATT LOW	10mA	Only if the battery is connected.
	8	+12VSB	0.5A	0.3A max. during backup operation

Note: When using the pin 1 COM of the SIG connector, make sure that the current of main output will not be passed to the pin.

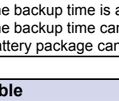


* Dimensional tolerance shall be ±1 mm unless otherwise specified.
* The screw depth of penetration into PSU is 5mm max..

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

Optional Components (Sold Separately)

Battery package

Picture	Model	Type	Shape (size)	Backup Time
	BS14A-H24/2.5L	Ni-MH	1U/3U size (W×D×H=128×211×41mm)	

* The backup time is a reference value at initial use; it is not a guaranteed value.
* The backup time can be extended with parallel connection.
* Battery package can be connected to GPSA-600-24-TP (backup type) only.

Cable

Picture	Model	Type	Description
	WH-08XA08XA-500	Signal harness	For BATT_LOW, AC_FAIL, FAN_M, PS_ON, PWR_OK, and +12VSB
	WH-16PAD04XA-350	Signal harness for connecting the battery pack	Signal harness to connect one battery package (BS14A-H24/2.5L)*
	WH-16PAD04XA-350-01	Signal harness for connecting the battery pack	Signal harness to connect two battery packages (BS14A-H24/2.5L)*
	WH-04XL04XL-350	Power harness for connecting the battery pack	Power harness to connect one battery package (BS14A-H24/2.5L)*
	WH-02XL04XL-350-01	Power harness for connecting the battery pack	Power harness to connect two battery packages (BS14A-H24/2.5L)*
	WH-04PA04PA-100	Signal harness for parallel operation	For connecting 2 pieces of GPSA-600 in parallel
	WH-04PA04PA-100-1	Signal harness for parallel operation	For connecting 3 pieces of GPSA-600 in parallel

* The harness is necessary to connect with the battery package (BS14A-H24/2.5L) for backup operation (See the following figures “Configurations of Battery Connection Harnesses”).

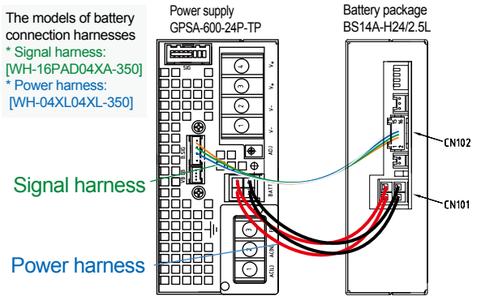
Parts / Unit

Picture	Model	Type	Description
	ACC6183	Output bar for parallel operation	For connecting 2 pieces of GPSA-600 in parallel
	ACC6185	Output bar for parallel operation	For connecting 3 pieces of GPSA-600 in parallel

Battery connection harness and connection images

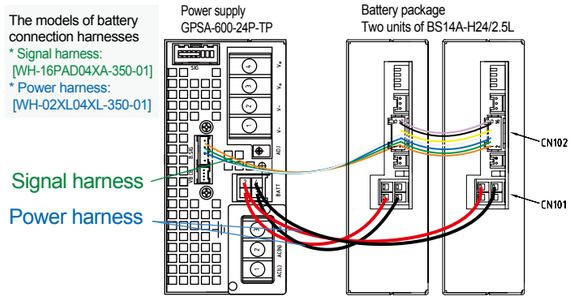
Connecting one battery package (BS14A-H24/2.5L)

The models of battery connection harnesses
* Signal harness: [WH-16PAD04XA-350]
* Power harness: [WH-04XL04XL-350]



Connecting two battery packages (BS14A-H24/2.5L)

The models of battery connection harnesses
* Signal harness: [WH-16PAD04XA-350-01]
* Power harness: [WH-02XL04XL-350-01]



Connection in Series and Parallel

■Series operation

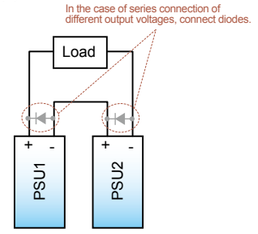
Series connection is available as shown on the right.
* Series connection with different output voltage of GPSA is available, such as 12V and 24V.

Note: In the case that different voltages are connected in series like Fig. (1) on the right;

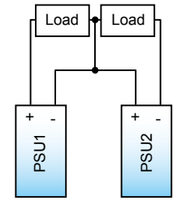
1. The output current shall be the rated current or less of the smaller rated current among the PSU1 and PSU2 connected in series.

2. Connect diodes for protection as shown in the Fig. (1). Current rating of the diode shall be 1.5 times or more of rated output current whose unit has larger rated output current among PSU1 and PSU2. Also, use Schottky diodes whose forward voltage is lower than the forward voltage of the diodes used in the PSU.

(1)

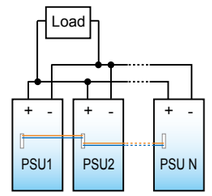


(2)



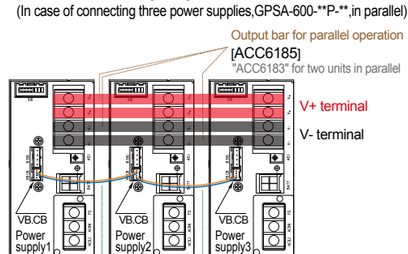
■Parallel connection

Parallel connection up to three units is available by the connecting method as shown below.
*By connecting the outputs of N power supplies in parallel, output capacity "Rated output x N units x 0.9" will be obtained. In this case, please beware of the followings.



1. Current balancing:
   Output current of each parallel connected power supply will be balanced. Connect voltage balancing connector (VB), and current balancing connector (CB) of power supply. (Refer to parallel connecting diagram)
2. Wiring:
   Load wires from each power supplies should be wired to make both impedance equal as much as possible.
   - Connecting by the output bar for parallel operation, ACC6183 (for two units in parallel) or ACC6185 (forthree units in parallel) is recommended.
3. Parallel operation is not available for 12VSB.
4. Output voltage adjustment:
   EXCEPT master power supply, set output voltage adjusting knob to minimum (to the leftmost). Adjust output voltage with master power supply output voltage adjusting knob.
5. Starting time:
   When starting up the power supply by AC input, operating waveform of output voltage may be tiered or dropped down (caused by the operation of over current protection circuit) due to dispersion of start up time of the power supplies connected in parallel. It can be prevented by starting up each output at the same time using output ON/OFF control signal of both power supplies connected in parallel.
6. Power supply failure:
   Because it does not include ORing diode in the output terminal, output power does not remain when one of the power supplies is damaged due to short mode etc. In addition, output power does not remain normally when power supply in operation is connected to the one in shutdown condition in parallel.
7. Please turn ON/OFF AC voltage or input PS_ON signal at the same time.
8. Please set the min. output current "more than 5% of number of units connected x rated current". (eg. More than 2.5A when connecting two 24V output models in parallel)

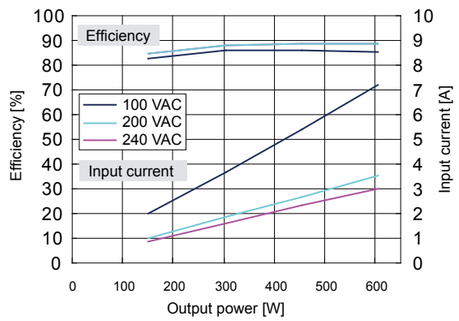
■Paralell connecting diagram
(In case of connecting three power supplies,GPSA-600-**P-**,in parallel)



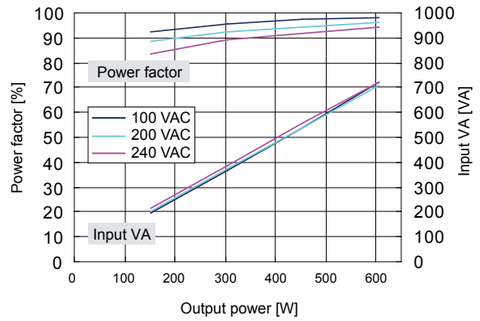
As in parallel connecting diagram, connect each voltage balancing connector (VB) and current balancing connector (CB) with parallel operating signal harness "WH-04PA04PA-100-1".

Characteristics Data GPSA-600-24P-TP (Examples of actual measurement)

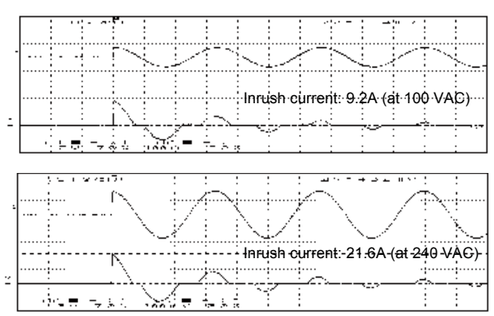
● Fig.4 Efficiency / Input Current vs. Output Power



● Fig.5 Power Factor / Input VA vs. Output Power



● Fig.6 Inrush Current



● Fig.7 Leakage Current

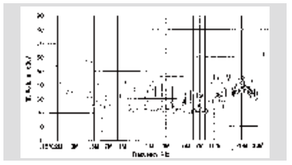
Input: 100 / 240 VAC
Load: Rated and min. load

	Rated load	Min. load
100 VAC	0.22mA	0.22mA
240 VAC	0.57mA	0.58mA

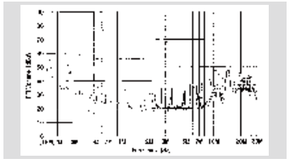
● Fig.8 Conducted Emission at 100 VAC

Input: 100 VAC
Load: Rated
Mode: Peak

VCCI Class B



Measuring point: L1-FG



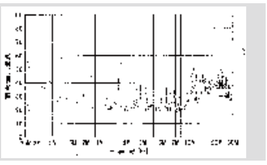
Measuring point: L2-FG

In-house measurement data

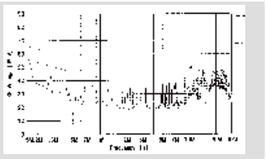
● Fig.9 Conducted Emission at 230 VAC

Input: 230 VAC
Load: Rated
Mode: Peak

VCCI Class B



Measuring point: L1-FG

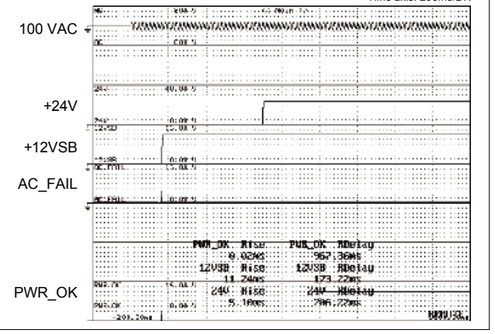


Measuring point: L2-FG

In-house measurement data

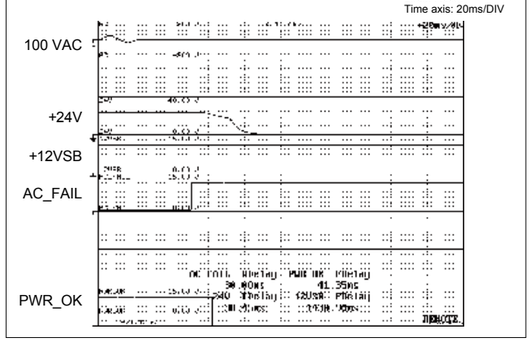
● Fig.10 Rising Characteristics at 100 VAC

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



● Fig.11 Falling Characteristics at 100 VAC

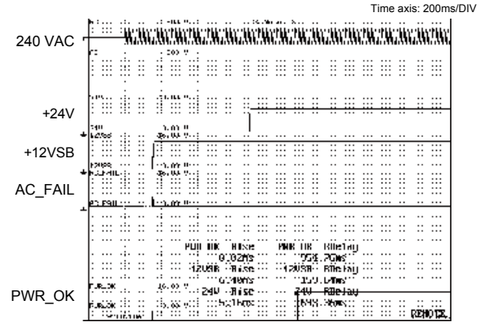
Input: 100 VAC
Load: Rated
Time axis: 20ms/DIV



Characteristics Data GPSA-600-24P-TP (Examples of actual measurement)

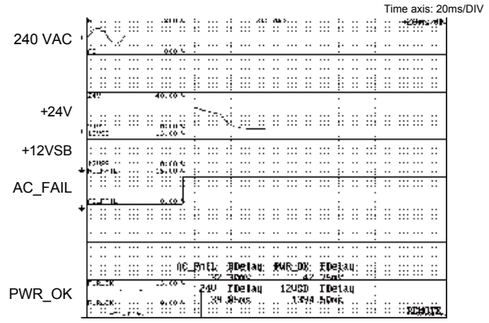
● Fig.12 Rising Characteristics at 240 VAC

Input: 240 VAC
Load: Rated
Time axis: 200ms/DIV



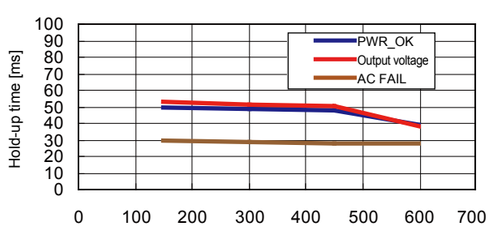
● Fig.13 Falling Characteristics at 240 VAC

Input: 240 VAC
Load: Rated
Time axis: 20ms/DIV



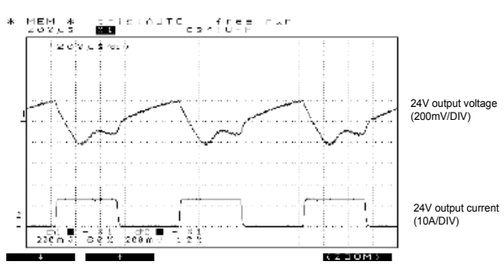
● Fig.14 Output Hold-up Time vs. Output Power

PWR_OK: the point that PWR_OK signal goes to "L"
Output voltage: the point that output voltage decreases to 95%
AC FAIL: the point that AC FAIL signal is delivered



● Fig.15 Dynamic Load Fluctuation Characteristics at 1kHz

Input: 100 VAC
Load: 300W
Time axis: 200μs/DIV



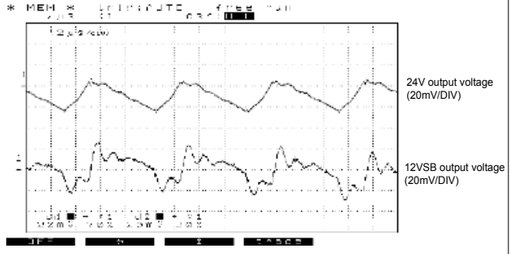
● Fig.16 Output Voltage Regulation

Output	Min. load	Rated load	Peak load
24V output	0A	25A	60A

AC input voltage	85 VAC	100 VAC	240 VAC	264 VAC
24V output (min. load)	23.983V	23.983 V	23.972 V	23.972 V
24V output (50%)	23.967 V	23.969 V	23.960 V	23.960 V
24V output (rated load)	23.956 V	23.958 V	23.953 V	23.953 V
24V output (peak)	23.929 V	23.928 V	23.893 V	23.894 V

● Fig.17 Ripple and Spike Voltage

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



● Fig.18 Ambient Temperature vs. Expected Service Life

Input: 100 VAC
Load: Rated
Operating time: 24 consecutive hours

■ Electrolytic capacitors

Intake air temp.	20°C	30°C	40°C
Expected service life (yr)	approx. 63.2	approx. 31.6	approx. 15.8

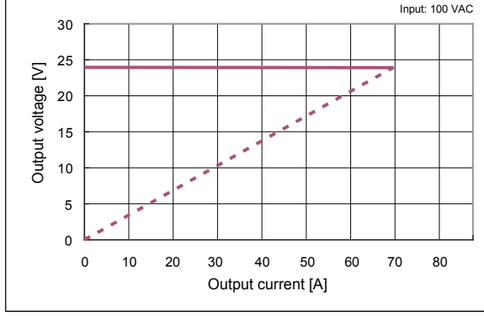
* Lifetime shall be 15 years at longest due to deterioration of sealing plates.

■ Fan

Ambient temp.	20°C	30°C	40°C
Expected service life (yr)	approx. 14.5	approx. 14.5	approx. 14.5

● Fig.19 Over Current Protection (V-I Characteristic)

Input: 100 VAC



Single Output High Capacity Power Supply GPSA-1000 series

Model	Description
GPSA-1000-24P-TES	+24V output FAN direction: Exhaust
GPSA-1000-24P-TIS	+24V output FAN direction: Intake
GPSA-1000-48P-TES	+48V output FAN direction: Exhaust
GPSA-1000-48P-TIS	+48V output FAN direction: Intake

■ Model name coding

GPSA-1000-**P-T**
① ② ③④ ⑤⑥⑦

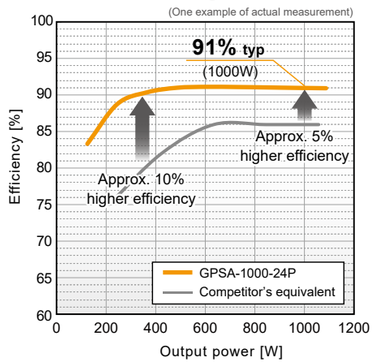
① Series name
② Output power
③ 24:+24V 48:+48V
④ Peak output
⑤ Signal output:TTL signal
⑥ FAN direction E:Exhaust I:Intake
⑦ Modification No. S:Standard

Features

- Various safety standard (UL/CSA60950-1) are approved
- Efficiency max. 91% (240 VAC input)
- Width 61mm, height 3U; easily fits into 19-inch racks
- External remote ON-OFF control signal is available
- Worldwide range input (85-264 VAC), power factor 94% or higher with PFC circuit
- Equipped with+12 V standby output

GPSA-1000-24P-TP efficiency chart

At rated output and 230 VAC input, 91% high efficiency is achieved. Energy-saving and the reduction of CO_2 emission can be contributed at this age.



Safety standard	UL	CSA	EN	CE	CCC
Reliability grade	HFA	FA	HOA	OA	

●Function

DC start | RS 232C | USB | TTL | PFC | Silence | SVSE FAN | VSFC FAN | Connection | RoHS

●Input

AC input	85-264 VAC (Worldwide range)

●Output

Output voltage	+24V	+48V	+12VSB
Max. current/ max. power(continuous) 100VAC	37.8A	18.9A	0.5A
	907.2W	907.2W	6W
Max. current/ max. power(continuous) 115-240VAC	42A	21A	0.5A
	1008W	1008W	6W
Peak current/ peak power(within 5 s) 100VAC	49.5A	25A	-
	1188W	1200W	-
Peak current/ peak power(within 5 s) 115VAC	55A	27.5A	-
	1320W	1320W	-
Peak current/ peak power(within 5 s) 200VAC	84A	42A	-
	2016W	2016W	-
Min. current	0A	0A	0A

●Dimension

W×H×D (mm)	128×61×240 (Width 61mm/Height 3U size)

General Specification (Items are provided at normal temperature and humidity unless otherwise specified.)

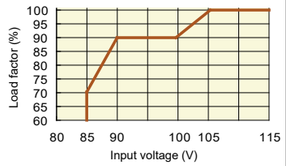
	Items		Specification			Measurements conditions, etc.
AC Input	Rated Voltage		100-240VAC (85*-264VAC)			Worldwide range *See <Fig.1> Low input voltage derating on the following page.
	Input Frequency		50/60Hz			47-63Hz
	Efficiency		88% typ (115VAC), 91% typ (240VAC) *Characteristic data: Fig.4			At rated output
	Power Factor		94% min. (115VAC), 90% min. (240VAC) *Characteristic data: Fig.5			
	Inrush Current		30A peak (Primary inrush current), 40A peak(Secondary inrush current) *Characteristic data: Fig.6			At rated input/output, cold start (25°C) *1
	Input Current		11A max. (115VAC), 5.3A max. (240VAC)			At rated input, max. output
			15A max. (115VAC), 10.6A max. (240VAC)			At rated input, peak output
Output	Model		GPSA-1000-24P	GPSA-1000-48P	Each model common specifications	
	Rated Voltage		+24V	+48V	+12VSB	
	Rated Current/Power	100VAC	37.8A	18.9A	0.5A	
			907.2W	907.2W	6W	
		115VAC-240VAC	42A	21A	0.5A	
			1008W	1008W	6W	
	Peak Current/Power	100VAC	49.5A	25A	-	Time is 5 sec. or less and duty ratio is max. 35% for repetitive peak rating. Refer to the following page, <Fig.2> Duty ratio and <Fig.3> Peak output power condition
			1188W	1200W	-	
		115VAC	55A	27.5A	-	
			1320W	1320W	-	
		240VAC	84A	42A	-	
			2016W	2016W	-	
	Min. Current		0A	0A	0A	
	Factory Setting		24V±2%	48V±2%	12V±5%	At continuous rated output
	Adjustable Voltage Range		24V±10%	48V±10%	-	
	Static Input Regulation		96mV max.	192mV max.	120mV max.	Measurement point shall be output terminal block or connector.
	Static Load Regulation		150mV max.	300mV max.	600mV max.	
	Time-Lapse Drift		96mV max.	192mV max.	120mV max.	At 25°C
	Temperature Regulation		0.02%/°C max.	0.02%/°C max.	0.02%/°C max.	
	Max. Ripple Voltage (mVp-p)	-10 to 0°C	160 max.	350 max.	160 max. (24V), 350 max. (48V)	Connect two wires of 100cm max. in length with a 47uF electrolytic capacitor and a 0.1uF ceramic capacitor connected to the others ends to the output terminal block to measure with a 100MHz oscilloscope.
		0 to 70°C	120 max.	150 max.	120 max. (24V), 150 max. (48V)	
	Max. Spike Voltage (mVp-p)	-10 to 0°C	180 max.	450 max.	180 max. (24V), 450 max. (48V)	
		0 to 70°C	150 max.	200 max.	150 max. (24V), 200 max. (48V)	
Protection	Over Current Protection	OCP point (A)	101% min. of peak rated current		101% min. of peak current	Automatically shuts down with more than 5 sec. of peak rated current. (Recovery: reclosing of AC input) Main recovery at 12VSB over current at main output load factor 1% max.: reclosing of AC input or recycling of PS_ON signal. *Characteristic data: Fig.15
		Method	Hold-down		Hold-down	
	Recovery (Over current)	At AC Operation	Automatic recovery		Automatic recovery	
	Over Voltage Protection	OCP point (V)	Vout (settied output voltage) *1.1-1.3		-	Output voltage follow-up type.
		Method	Output shutdown		-	
	Recovery (Over voltage)	At AC Operation	Reclosing of AC input		-	
Environment	Operating Temp./Humidity		-10-70°C*/10-90%			*Refer to the following page, <Fig.4>Temperature Derating. There shall be no condensation.
	Storage Temp./Humidity		-25-75°C/10-95%			There shall be no condensation.
	Vibration		To endure 10min each the vibration acceleration of 2G with vibration frequency of 10 to 55Hz for 10 sweep cycles in each X, Y, Z direction.			Follow JIS-C-60068-2-6 at no operation
	Mechanical Shock		Left one bottom edge of the unit 50mm 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.			Follow JIS-C-60068-2-31 at no operation
Insulation	Dielectric Strength		3kVAC/1minnute between input and output 2kVAC/1minnute between input and FG			Cut-off current: 15mA At mass production: at 1 sec. each
	Insulation Resistance		50MΩmin. between input and output 50MΩmin. between input and FG 50MΩmin. between output and FG			At 500VDC
	Leakage Current		0.5mA max (100VAC) /1.0mA max (240VAC) *Characteristic data: Fig.7			
EMC	Line Noise Immunity		±2000V (pulse width of 100/1000nS,cycle period of 30 to 100Hz, Normal/Common mode with Positive/Negative polarity for 10 minutes)			There shall be no fluctuation of DC output or malfunction.
	Electrostatic Discharge		EN61000-4-2 compliant			
	Radiated, Radio-Frequency, Electromagnetic Field		EN61000-4-3 compliant			
	Fast Transient Burst		EN61000-4-4 compliant			
	Lightning Surge		EN61000-4-5 compliant			
	Radio Frequency Conducted Immunity		EN61000-4-6 compliant			
	Power-Frequency Magnetic Field Immunity		EN61000-4-8 compliant			
	Voltage dips/Regulation		EN61000-4-11 compliant			
	Conducted Emmision		VCCI-B, FCC-B, EN55022-B and CISPR22-B compliant *Characteristic data: Fig.8,9			There shall be no malfunction or no failure.
	Harmonic Current Regulations		IEC61000-3-2 (edition 2.1) classA compliant			At rated input and rated output
Others	Safety Standard		UL60950-1, CSA60950-1 (c-UL), CE Marking approved			
	Cooling System		Forced air cooling			thermal sensing fan equipped.
	Output Grounding		Capacitor grounding			
	Output Hold-up Time		AC cut-off → PWR_OK hold up 18ms min.			At rated output
	Reliability Grade		FA (Industrial equipment grade to use double-sided PWBs with through holes)			Following our standard
	MTBF		90,000 H min			Based on EIAJ RCR-9102
	Weight		1.95kg typ			
	Warranty		Three years after delivery: If any defects belong to us, the defective unit shall be repaired or replaced at our cost.			Except for errors caused by operation not specified in this specification.

*1 Inrush current less than 100μs in input noise filter section shall not be specified.

General Specification (Items are provided at normal temperature and humidity unless otherwise specified.)

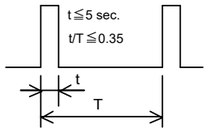
<Fig.1> Low input voltage derating

When the input voltage is 105 VAC or less, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.



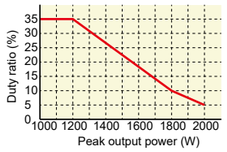
<Fig.2> Duty Ratio

The duration of momentary peak current/power shall be 5 sec. max. and the duty ratio at repetitive use shall be 35% or less.
Average power is 800 W max. at peak road (except 12VSB)



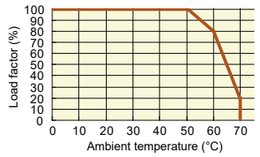
<Fig.3> Peak output power condition

Peak output power shall follow the curve below and <Fig. 2>. Keep average output power under 800W when in use of peak output power.



<Fig.4> Temperature Derating

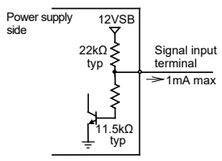
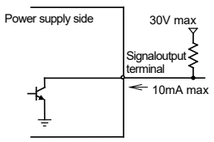
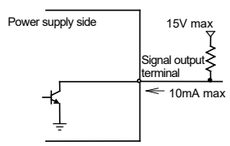
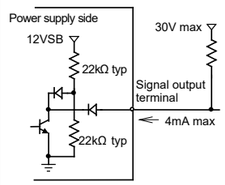
When the ambient temperature (near the airflow inlet) exceeds 50°C, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.



Signal Input/Output Specification (Items are provided at normal temperature and humidity unless otherwise specified.)

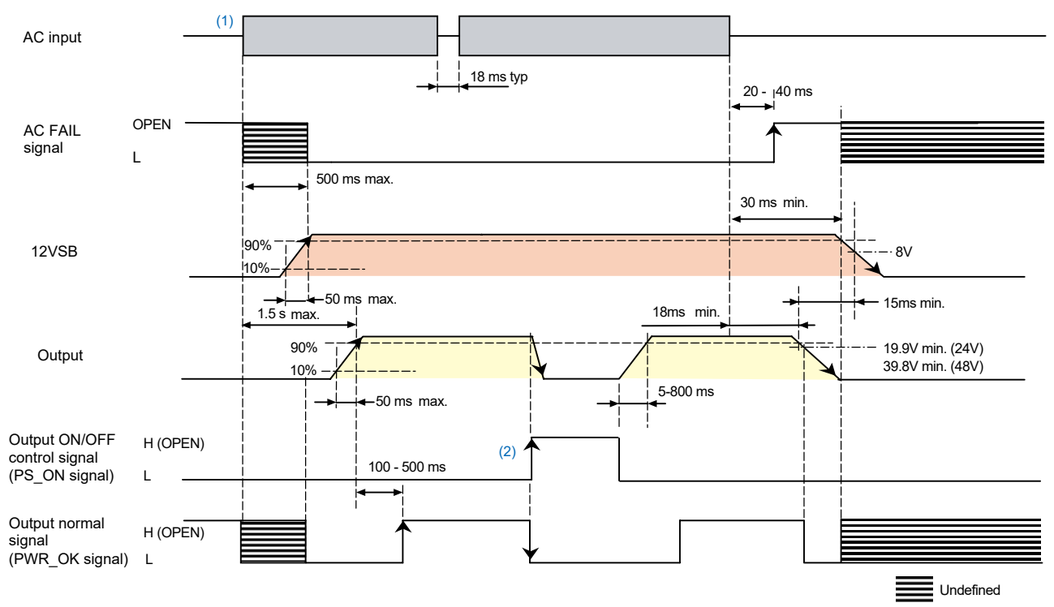
	Items	Specification	Note
Input Signal	Output ON/OFF control signal (PS_ON#)	Power supply starts up at 'L' input. Power supply shuts down at 'H' or 'OPEN' input. (except 12 VSB)	The pin 4 of SIG connector
Output Signal	Normal output signal (PWR_OK)	'H'signal is delivered at normal output (detection delay time: 100 - 500ms). Detection voltage: 19.9 V min. for 24 V output, 39.8 V min. for 48 V output	The pin 5 of SIG connector
	Fan monitoring signal (FAN_M)	Two cycle pulses per one rotation of the fan motor are delivered. this output is open-collector.	The pin 2 of SIG connector
	Blackout detection signal (AC_FAIL)	The signal goes to 'OPEN' at low AC input voltage and blackout detection. Detection voltage: 80 VAC or less. Detection delay time: 20 - 40 ms after AC input failure. (at rated input/output)	The pin 6 of SIG connector

Signal Circuit

Input Signal Circuit	Output Signal Circuit		
(PS_ON#)	(PWR_OK)	(FAN_M)	(AC FAIL)
			

('L'≦ 0.8V, 2.0V ≦'H')

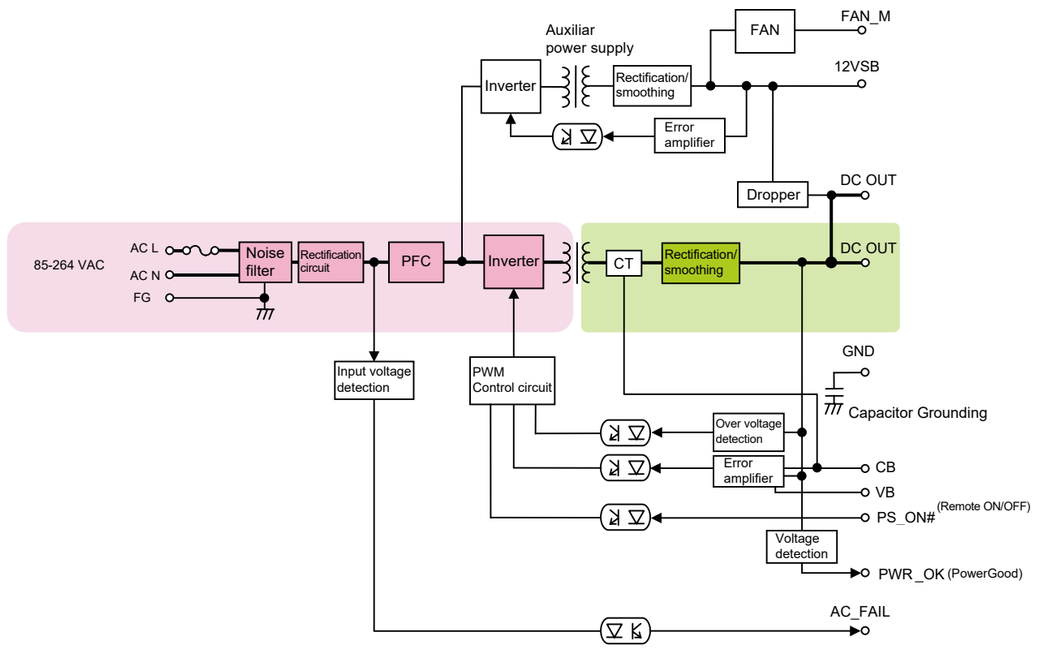
Sequence Timing Chart



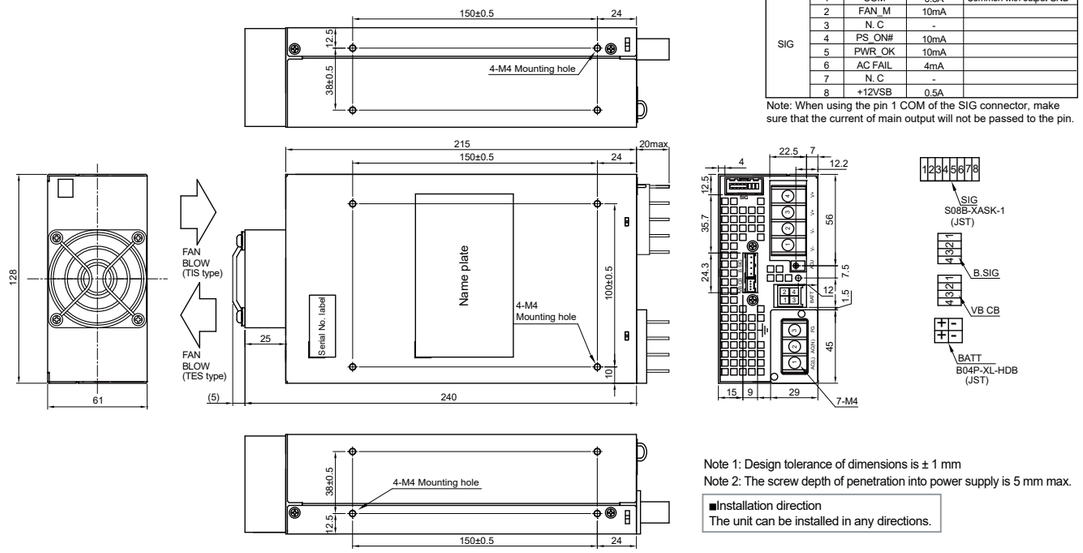
GPSA-1000-24P at rated input/output

(1) All outputs start up by supplying AC input while PS_ON# is "L" status. PWR_OK "H (OEPN)" is delivered at 100-500 ms after the output starts up.
(2) All outputs except +12 V SB shut down by inputting PS_ON# "H" (OPEN). (All outputs including +12 V SB shut down at backup opeartion.)

Block Diagram



Outline Drawing



SIG connector pin assignments

Connector	Pin#	Signal name	Max. current	Note
SIG	1	COM	0.6A	Common with output GND
	2	FAN_M	10mA	
	3	N. C	-	
	4	PS_ON#	10mA	
	5	PWR_OK	10mA	
	6	AC FAIL	4mA	
	7	N. C	-	
	8	+12VSB	0.5A	

Note: When using the pin 1 COM of the SIG connector, make sure that the current of main output will not be passed to the pin.

Note 1: Design tolerance of dimensions is ± 1 mm
Note 2: The screw depth of penetration into power supply is 5 mm max.

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

Options (Sold separately)

Cable

Photos	Model	Category	Description
	WH-08XA08XA-500	Signal harness	AC_FAIL, FAN_M, PS_ON, PWR_OK, and +12VSB for output.
	WH-04PA04PA-100	Signal harness for parallel operation	For connecting 2 units of GPSA-1000 in parallel.
	WH-04PA04PA-100-1	Signal harness for parallel operation	For connecting 3 units of GPSA-1000 in parallel.

Parts / Unit

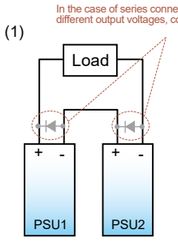
Photos	Model	Category	Description
	ACC6183	Output bar for parallel operation	For connecting 2 units of GPSA-1000 in parallel.
	ACC6185	Output bar for parallel operation	For connecting 3 units of GPSA-1000 in parallel.

Connection in Series and Parallel

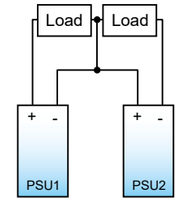
■Series operation

Series connection is available as in figure (1) and (2) on the right.
* Series connection between different output voltages is available, such as 12 V and 24 V.

(1)



(2)

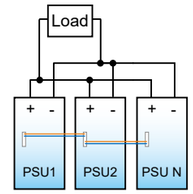


Note: In the case that power supplies are connected in series as in figure (1) on the right;
1. Connect diodes for protection as shown in the figure (1).
   The rated current of the diodes shall be 1.5 times or more of the peak output current of the power supply which has larger peak output current among PSU1 and PSU2. Also, use Schottky diodes whose forward voltage is lower than the forward voltage of the diodes used in the PSU.

2.In the case that different voltages are connected in series, the output current shall be the rated current or less of the smaller rated current among the PSU1 and PSU2 connected in series.

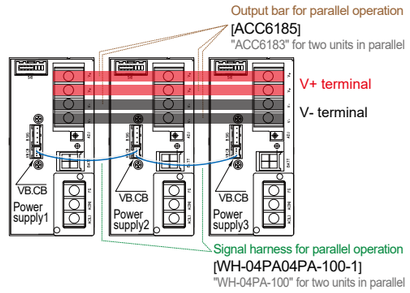
■Parallel operation

Parallel connection up to three units is available by the connecting method as shown below.
*By connecting the outputs of N power supplies in parallel, output capacity "Rated output x N units x 0.9" will be obtained.
In this case, please beware of the followings.



1. Current balancing:
   Output current of each parallel connected power supply will be balanced. Connect Voltage Balance signal (VB), and Current Balance signal (CB) of power supply (refer to the connection diagram).
2. Wiring:
   Please equalize the impedance of the load wires from each power supply as much as possible.
   - Connection by the output bar for parallel operation, ACC6183 (for two units in parallel) or ACC6185 (for three units in parallel) is recommended.
3. Parallel operation is not available for 12 VSB.
4. Output voltage adjustment:
   Output voltage can be adjusted by the variable resistor of the master power supply while the variable resistor of the slave power supply is set minimum by turning it to hard left.
5. Starting time:
   When starting up the power supply by AC input, operating waveform of output voltage may be tiered or dropped down (caused by the operation of over current protection circuit) due to dispersion of start up time of the power supplies connected in parallel. It can be prevented by starting up each output at the same time using output ON/OFF control signal of both power supplies connected in parallel.
6. Power supply failure:
   A redundant diode is not embedded at the output of the power supply, therefore output power does not hold when one of the power supplies is damaged due to short mode etc. In addition, the output power does not hold normally when the power supply in operation is connected to the other power supply in non-operation in parallel.
7. Please turn ON/OFF AC voltage and input PS_ON signal at the same time.
8. Please set the min. output current "more than 5% of number of units connected x rated current". (E.g., more than 4.2 A when connecting two 24 V output models in parallel at 115 VAC input)

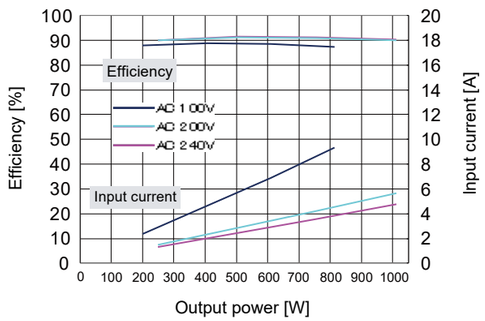
■Connection diagram of signal harnesses for paralell operation
(In case of connecting three power supplies,GPSA-1000-**P-**,in parallel)



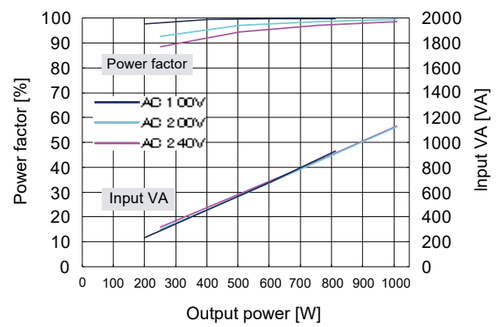
As in connection diagram, connect each Voltage Balance signal (VB) and Current Balance signal (CB) with parallel operating signal harness "WH-04PA04PA-100-1".

Characteristics Data GPSA-1000-24P (Examples of actual measurement)

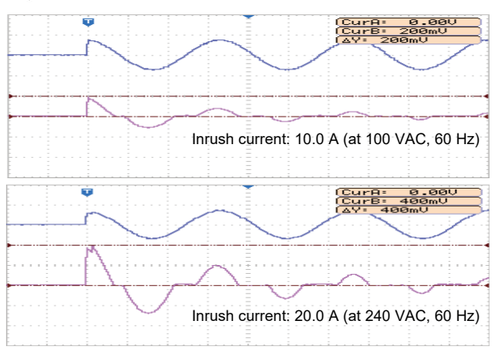
● Fig.4 Efficiency/Input Current vs. Output Power



● Fig.5 Power Factor/Input VA vs. Output Power



● Fig.6 Inrush Current



● Fig.7 Leakage Current

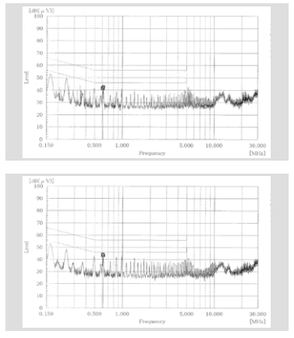
Input : 100, 240 VAC
Load : Rated load and Min. load

	Rated load	Min. load
100 VAC	0.24 mA	0.26 mA
240 VAC	0.55 mA	0.57 mA

● Fig.8 Conducted Emission at 100 VAC

Input : 100 VAC
Load : Rated
Mode : Peak

VCCI Class B

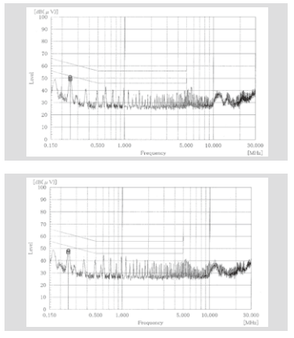


In-house measurement data

● Fig.9 Conducted Emission at 230 VAC

Input : 230 VAC
Load : Rated
Mode : Peak

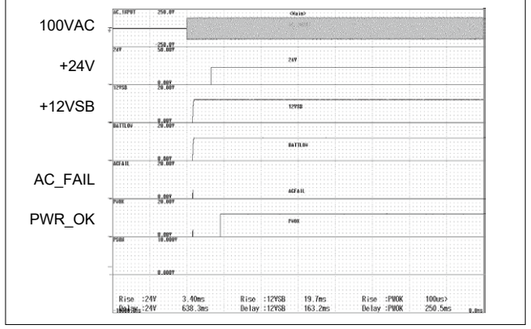
VCCI Class B



In-house measurement data

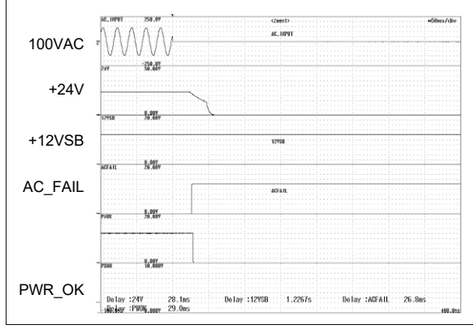
● Fig.10 Rising Characteristics at 100 VAC

Input : 100 VAC
Load : 90%
Time axis : 10 ms/DIV



● Fig.11 Falling Characteristics at 100 VAC

Input : 100 VAC
Load : 90%
Time axis : 20 ms/DIV

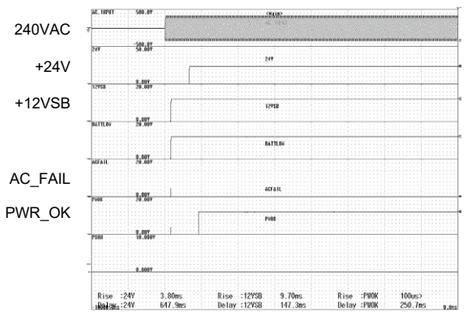


GPSA-1000 Series

Characteristics Data GPSA-1000-24P (Examples of actual measurement)

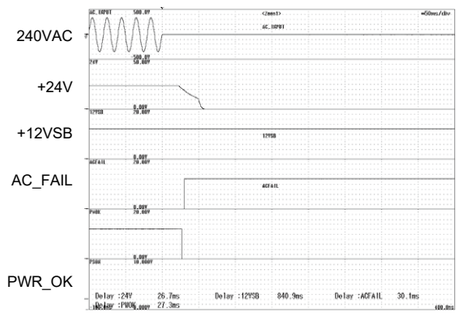
● Fig.12 Rising Characteristics at 240 VAC

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



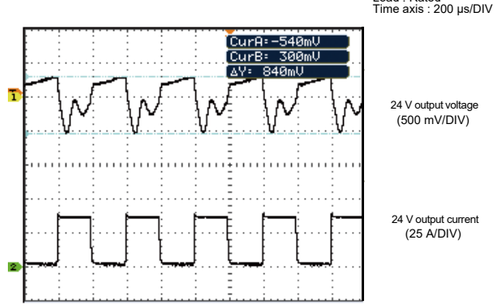
● Fig.13 Falling Characteristics at 240 VAC

Input : 240 VAC
Load : Rated
Time axis : 20 ms/DIV

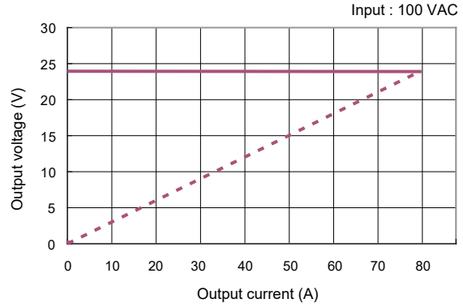


● Fig.14 Dynamic Load Fluctuation Characteristics at 1kHz

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



●Fig.15 Overcurrent Protection Characteristics (V - I Characteristics)



Specifications, design, and prices in the catalog are subject to change without prior notice. Do not copy. Copyright © 2025 Nipron Co., Ltd.

Single Output High Capacity Power Supply GPSA-1500 Series

Model	Description	Stock
GPSA-1500-24P-TES	+24V output block terminal type	Standard stock
GPSA-1500-48P-TES	+48V output block terminal type	Standard stock
GPSA-1500-24P-PES	+24V output copper bar type	Standard stock
GPSA-1500-48P-PES	+48V output copper bar type	Standard stock

■Model Name Coding

GPSA-1500-*P-***

① ② ③④ ⑤ ⑥ ⑦

1. Series name
2. Output power
3. 24:+24V output 48:+48V output
4. Peak output compliant
5. Output terminal P: Copper bar T: Block terminal
6. Fan direction E: Blow out I: Blow in
7. Modification No.

Features

- ●Industrial power supply with simple design for low price
- ●Various safety standards (IEC/UL/CSA60950-1)
- ●High efficiency 93%
- ●External remote ON-OFF control signal available
- ●Worldwide range input (85-264 VAC)
- ●+12VSB output available
- ●Parallel operation available
- ●Copper bar type and block terminal type are available
- ●Another model with backup functionality at blackout is also scheduled to be added in the lineup

Safety standard / Approval	UL	CSA	EN	CE	CCC
Reliability Grade	HFA	FA	HOA	OA	

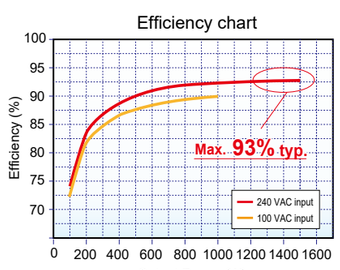
Function

DC start | RS 232C | USB | TTL | PFC | Silence | 5VSB FAN | TSFC FAN | Connection | RoHS

Input

Input	85-264VAC (worldwide range)
	120-370VDC*

*The rated input voltage range at the application of safety standard is "100-240 VAC (50/60Hz)".
In the case of DC input use, an external DC fuse shall be equipped to protect from power supply failure.



Output

Output voltage	+24V	+48V	+12VSB
Max. current / max. power (continuous) 100 VAC	44A	23A	0.5A
	1056W	1104W	6W
Max. current / max. power (continuous) 200 VAC	63A	34A	0.5A
	1512W	1632W	6W
Peak current / peak power (5 sec. max.) 100 VAC	55A	27.5A	-
	1320W	1320W	-
Peak current / peak power (5 sec. max.) 200 VAC	85A	44A	-
	2040W	2112W	-
Min. current	0A	0A	0A

Dimensions

W×H×D (mm)	128×82×250 (Width 2U / Height 3U size)

General Specification Condition: at normal temperature and humidity unless otherwise specified

	Items		Specification			Measurement conditions, etc.
AC Input	Rated Voltage		AC100-240V(AC85*-264V)(Output≦1062W) / AC200-240V（AC180-264V） Outout >1062W）DC120-370V*1			Worldwide range *Refer to Fig.1
	Input Frequency		50/60Hz			47-63Hz
	Efficiency		87% min. (100 VAC), 91% min. (240 VAC) *Characteristic data: Fig.5			At rated output
	Power Factor		94% min. (100 VAC), 90% min. (240 VAC) *Characteristic data: Fig.6			
	Inrush Current		30A peak (primary inrush current), 40A peak (secondary inrush current) *Characteristic data: Fig.7			At rated input/output at cold start (25°C)
	Input Current		13A max. (100 VAC, GPSA-1500-24P), 14A max. (100 VAC, GPSA-1500-48P), 8.5A max. (200 VAC)			At rated input and max. output
			16A max. (100 VAC), 10.5A max. (240 VAC)			At rated input and peak output
Output	Model		GPSA-1500-24P	GPSA-1500-48P	Common for all models	
	Rated Voltage		+24V	+48V	+12VSB	
	Rated Current / Power	100 VAC	44A	23A	0.5A	
			1056W	1104W	6W	
		200 VAC	63A	34A	0.5A	
			1512W	1632W	6W	
	Peak Current / Power	100 VAC	55A	27.5A	-	Time: 5 sec. or less Duty ratio of repetitive load: 35% or less *Refer to Fig.4
			1320W	1320W	-	
		200 VAC	85A	44A	-	
			2040W	2112W	-	
	Min. Current		0A	0A	0A	
	Setup Voltage at Factory		24V±2%	48V±2%	12V±5%	
	Voltage Adjustable Range		21.6-28.0V	38.4-52.8V	-	
	Static Input Fluctuation		96mV max.	192mV max.	120mV max.	The values shall be measured at output terminal block, connector, or copper bar.
	Static Load Fluctuation		150mV max.	300mV max.	600mV max.	
	Time-lapse Drift		96mV max.	192mV max.	120mV max.	At 25°C
	Max. Ripple Voltage (mVp-p)	-10 to 0°C	160mV max.	250mV max.	150mV max.	Two wires are coming out from the output terminal block and connected into one at the edge of 100cm max. long. 47μF electrolytic capacitor and 0.1μF ceramic capacitor are placed on it and it is measured by the 100MHz oscilloscope. *Characteristic data: Fig.18
		0 to 60°C	120mV max.	150mV max.	120mV max.	
	Max. Spike Voltage (mVp-p)	-10 to 0°C	180mV max.	350mV max.	180mV max.	
		0 to 60°C	150mV max.	200mV max.	150mV max.	
Protection	Overcurrent Protection	OCP Point (A)	101% min. of peak current			Applying peak current 5 sec. or more shutdowns PSU. (Recovery: AC input reclosing) At 12VSB overcurrent, the recovery of main output (when the load factor of main output is 1% or less) shall be reclosing of AC input or PS_ON signal. *Characteristic data: Fig.20
		Method	Hold down current limiting		Hold down current limiting	
	Recovery (Overcurrent)	At AC Operation	Automatic recovery (Output shuts off at longer than 5sec. peak current)		Automatic recovery	
	Overvoltage Protection	OVP Point (V)	110-130% of Vout		-	Output voltage follow-up type
		Method	Output shutdown		-	
	Recovery (Overvoltage)	At AC Operation	Reclosing of AC input		-	
Environment	Operating Temp. / Humidity		-10 to 60°C*/10 to 90%			*Refer to Fig.3 No condensation
	Storage Temp. / Humidity		-25 to 75°C/10 to 95%			No condensation
	Vibration		Acceleration amplitude: 2G (10 - 55Hz), Sweep cycles: 10, Test duration: 10 minutes each axis			JIS-C-60068-2-6, at no operation
	Mechanical Shock		Lift one bottom edge up to 50mm and let it fall. Number of bumps: 3 each of 4 edges			JIS-C-60068-2-31, at no operation
Insulation	Dielectric Strength		AC input - DC output: 3000 VAC for 1 minute AC input - FG: 2000 VAC for 1 minute			Cut-off current: 15mA Completion inspection: at 1 sec. each
	Insulation Resistance		AC input - DC output: 50MΩ min.			500VDC
			AC input - FG: 50MΩ min.			
			DC output - FG: 50MΩ min.			
	Leakage Current		0.5mA max. (100 VAC) / 1.0mA max. (240 VAC) *Characteristic data: Fig.8			YEW. TYPE3226 (1kΩ) or equivalent
EMC	Line Noise Immunity		± 2000V (pulse width: 100/1000ns, repetitive cycle: 30-100Hz, 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-B,FCC-B,EN55022-B,CISPR22-B compliant *Characteristic data: Fig. 9, 10			Measured by single unit
	Harmonic Current Regulation		IEC61000-3-2 (Ver.2.1) Class A compliant			At rated input/output
Others	Safety Standard		UL60950-1,CSA22.2 No60950-1(c-UL)			
	Cooling System		Forced air cooling			Thermal-sensing variable speed fan embedded
	Output Grounding		Capacitor grounding			
	Output Hold-up Time		PWR_OK holds up 20ms min. after AC failure *Characteristic data: Fig.15			At rated output
	Reliability Grade		FA (industrial equipment grade, double-sided through hole PCB)			Follow our standard
	MTBF		70,000 H min.			Based on EIAJ RCR-9102
	Weight		2.5 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 not listed

*1 The rated input voltage range at the application of safety standard is "100-240 VAC (50/60Hz)". If it is used with DC input, an external DC fuse shall be equipped in case of the power supply failure.

Fig.1 Derating for Low Input Voltage

When the input voltage is 90 VAC or less, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

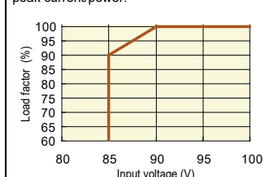


Fig.2 Duty Ratio

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

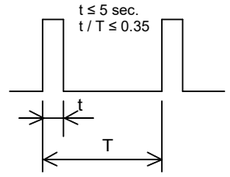


Fig.3 Temperature Derating

When the ambient temperature (near the airflow inlet) exceeds 50°C, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

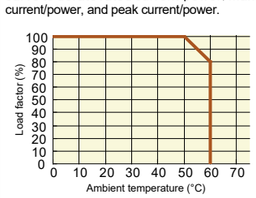
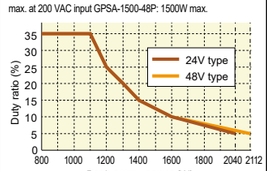


Fig.4 Duty Ratio vs. Output Voltage

Peak output power shall follow the curve below and the Duty Ratio (Fig. 2). Refer to below average output power in use of peak output power.
GPSA-1500-24P: 1000W max. at 100 VAC input and 1400W max. at 200 VAC input GPSA-1500-48P: 1500W max.



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#)	The power supply starts up with 4.5V or higher voltage ('H') input between PS_ON-SIG and GND, and shuts down with 'L' or 'OPEN' input (except for 12VSB). If 24V or higher voltage is applied, limiting resistors shall be added in parallel. At 24-30V: 1kΩ limiting resistor, At 30-40V: 2.2kΩ limiting resistor	The pin 4 of SIG connector
	Remote Sensing + Signal (RS+)	Input terminal for detecting the voltage of 24V or 48V output. By connecting to the load terminal, the line drop of the + side of the output cable is corrected.	The pin 3 of SIG connector
Output Signal	Normal Output Signal (PWR_OK)	'L' signal is delivered at normal output (detection delay time: 100 - 500ms). Voltage detection: 19.9V or higher for 24V output,39.8V or higher for 48V output	The pin 5 of SIG connector
	Fan Monitor Signal (FAN_M)	Two cycle pulses per one rotation of the fan motor are delivered (open collector output).	The pin 2 of SIG connector
	Blackout Detection Signal (AC FAIL)	The signal goes 'OPEN' at low AC input voltage and blackout detection. (detection voltage: 80 VAC typ., detection delay time: 20 - 40ms after AC input failure, at rated input/output)	The pin 6 of SIG connector

Signal Circuit

Input Signal Circuit

(PS_ON#)

('L'≤0.8V, 4.5V≤'H'≤24V)

Output Signal Circuit

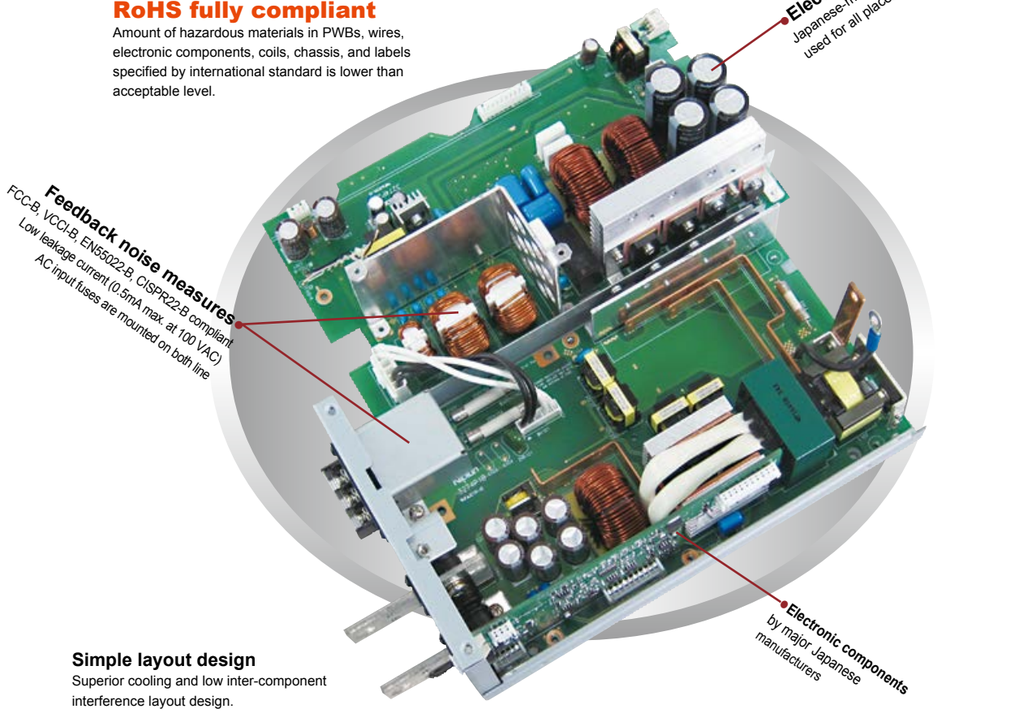
(PWR_OK)

(FAN_M)

(AC FAIL)

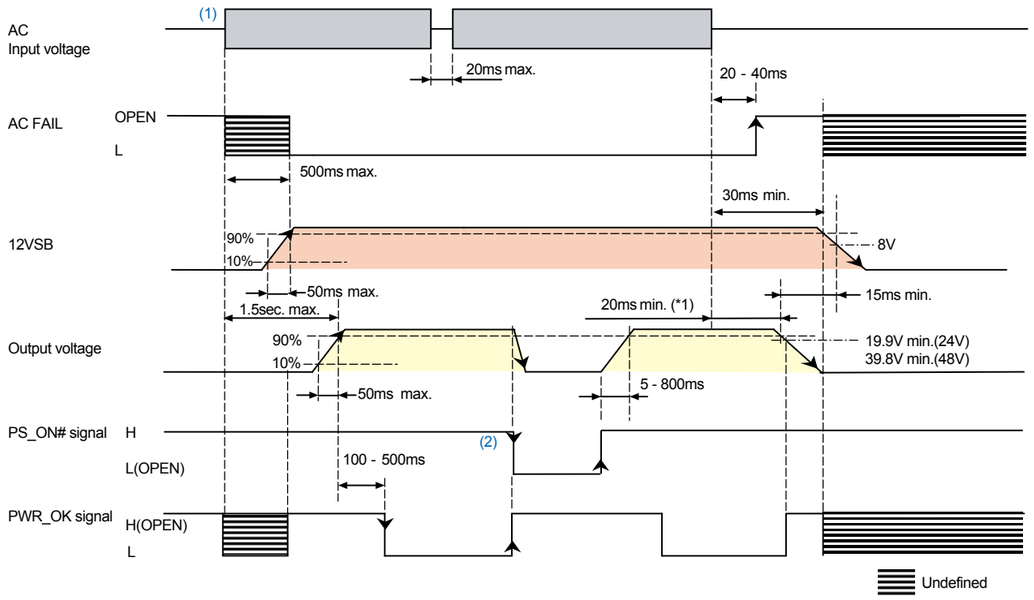
Internal Structure

RoHS fully compliant
Amount of hazardous materials in PWBs, wires, electronic components, coils, chassis, and labels specified by international standard is lower than acceptable level.



Simple layout design
Superior cooling and low inter-component interference layout design.

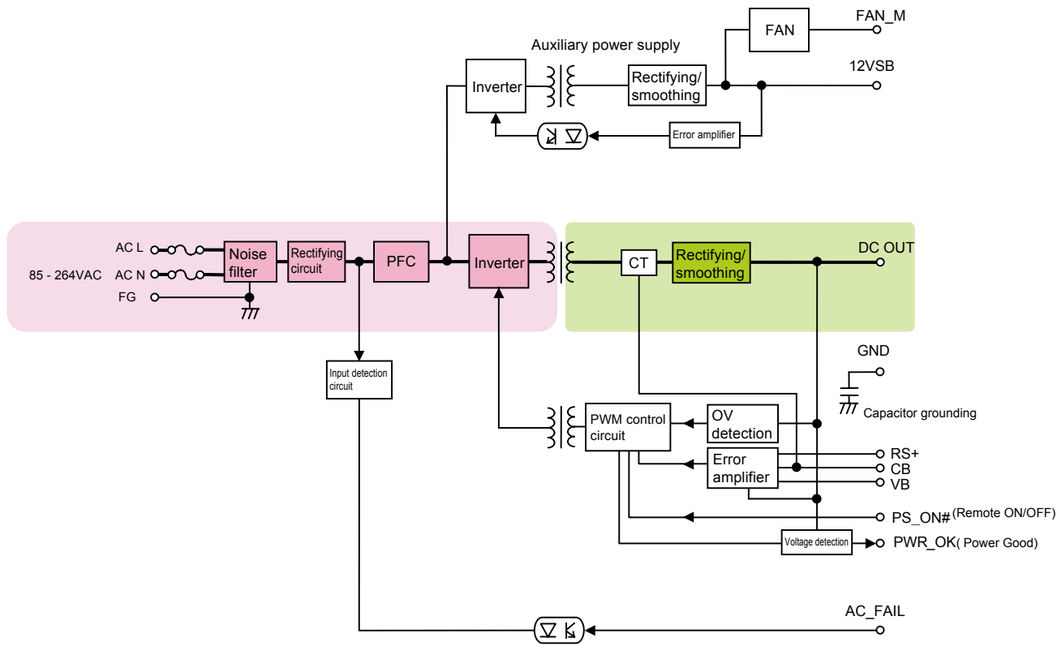
Sequence Diagram



*1 At 1000W output power. If it exceeds 1000W (lower than the continuous rated power), the period shall be 10ms min.

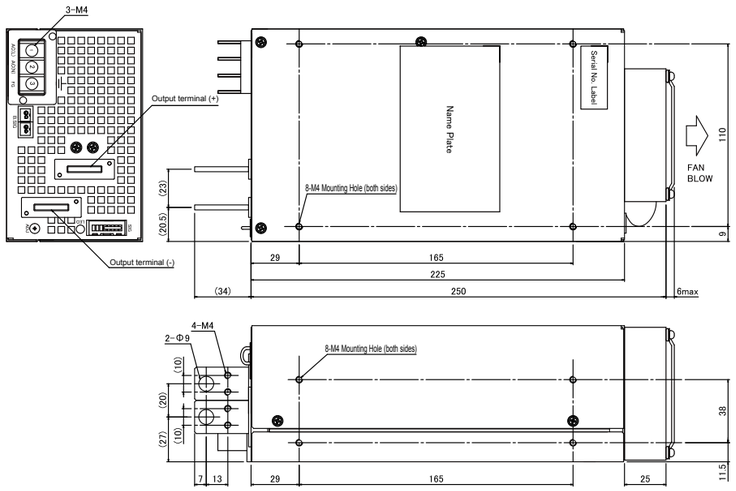
(1) All outputs start up by being supplied AC input under the condition of PS_ON# 'H'. PWR_OK 'H (OPEN)' is delivered at 100 - 500ms after the output has risen.
(2) At PS_ON# 'L' (OPEN) input, outputs except for +12VSB shut down.

Block Diagram



Outline Drawing

Copper bar type (Fan: Blow out type)

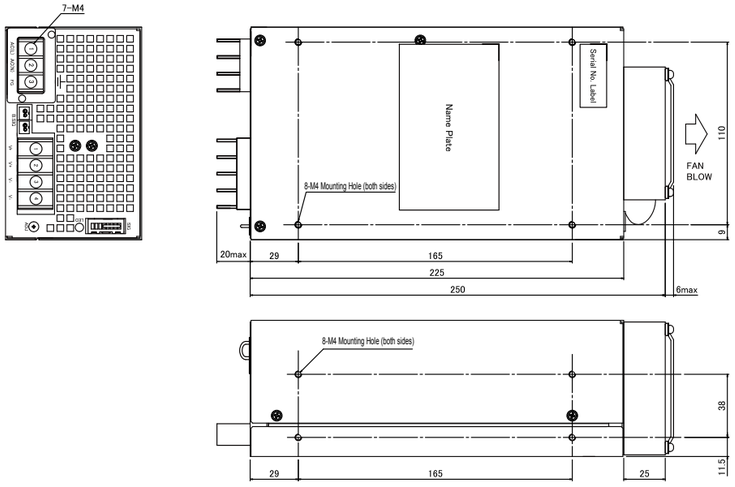


SIG Connector Pin assignments

Connector	Pin #	Signal Name	Max. Current	Note
SIG	1	COM	0.6A	Common with output GND
	2	FAN_M	10mA	
	3	RS+	10mA	
	4	PS_ON#	10mA	
	5	PWR_OK	10mA	
	6	AC FAIL	10mA	
	7	SIG_GND	0.1mA	
	8	+12VSB	0.5A	

Note: When using the pin 1 COM of the SIG connector, make sure that the current of main output will not be passed to this pin.

Block terminal type (Fan: Blow out type)



SIG Connector Pin assignments

Connector	Pin #	Signal Name	Max. Current	Note
SIG	1	COM	0.6A	Common with output GND
	2	FAN_M	10mA	
	3	RS+	10mA	
	4	PS_ON#	10mA	
	5	PWR_OK	10mA	
	6	AC FAIL	10mA	
	7	SIG_GND	0.1mA	
	8	+12VSB	0.5A	

Note: When using the pin 1 COM of the SIG connector, make sure that the current of main output will not be passed to this pin.

Optional Components (Sold Separately)

Cable			
Picture	*Model*	*Type*	*Description*
	WH-08XA08XA-500	Signal harness	For BATT_LOW, AC_FAIL, FAN_M, PS_ON, PWR_OK, and +12VSB
 *Imaging	WH-02XA02XA-150	Signal harness for parallel operation	For connecting GPSA-1500 in parallel
Parts / Unit			
Picture	*Model*	*Type*	*Description*
*Imaging	ACC3368-2	Output bar for parallel operation	For connecting 2 pieces of GPSA-1500 (block terminal type) in parallel
*Imaging	ACC3368-3	Output bar for parallel operation	For connecting 3 pieces of GPSA-1500 (block terminal type) in parallel
*Imaging	ACC3369-2	Output bar for parallel operation	For connecting 2 pieces of GPSA-1500 (copper bar type) in parallel
*Imaging	ACC3369-3	Output bar for parallel operation	For connecting 3 pieces of GPSA-1500 (copper bar type) in parallel

Connection in Series and Parallel

■Series operation

Series connection is available as shown on the right.

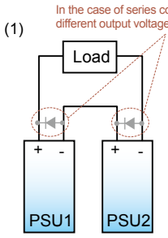
* Series connection with different output voltage of GPSA is available, such as 24V and 48V.

In the case that different voltages are connected in series like Fig. (1) on the right;

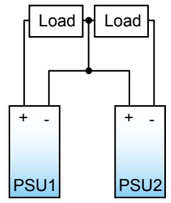
1. The output current shall be the rated current or less of the smaller rated current among the PSU1 and PSU2 connected in series.

2. Connect diodes for protection as shown in the Fig. (1).
Current rating of the diode shall be 1.5 times or more of rated output current whose unit has larger rated output current among PSU1 and PSU2.
Also, use Schottky diodes whose forward voltage is lower than the forward voltage of the diodes used in the PSU.

(1)



(2)



■Parallel connection

Parallel connection up to three units is available by the connecting method as shown below.

*By connecting the outputs of N power supplies in parallel, output capacity "Rated output × N units × 0.9" will be obtained.
In this case, please beware of the followings.

1. Current balancing:
Output current of each parallel connected power supply will be balanced.
Connect each B.SIG terminal with WH-02XA02XA-150.
(Refer to parallel connecting diagram)

2. Wiring:
Load wires from each power supplies should be wired to make both impedance equal as much as possible.
- Connecting by the output bar for parallel operation, ACC3368-2/ACC3369-2 (for two units in parallel) or ACC3368-3/ACC3369-3 (for three units in parallel) is recommended.

3. Parallel operation is not available for 12VSB.

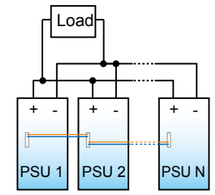
4. Output voltage adjustment:
EXCEPT master power supply, set output voltage adjusting knob to minimum (to the leftmost).
Adjust output voltage with master power supply output voltage adjusting knob.

5. Starting time:
When starting up the power supply by AC input, operating waveform of output voltage may be tiered or dropped down (caused by the operation of over current protection circuit) due to dispersion of start up time of the power supplies connected in parallel. It can be prevented by starting up each output at the same time using output ON/OFF control signal of both power supplies connected in parallel.

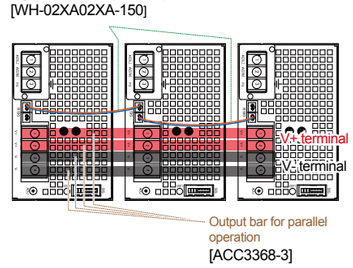
6. Power supply failure:
Because it does not include ORing diode in the output terminal, output power does not remain when one of the power supplies is damaged due to short mode etc. In addition, output power does not remain normally when power supply in operation is connected to the one in shutdown condition in parallel.

7. Please turn ON/OFF AC voltage or input PS_ON signal at the same time.

8. Please set the min. output current "more than 5% of number of units connected × rated current". (eg. More than 4.4A when connecting two 24V output models in parallel)



■Parallel connecting diagram for block terminal type

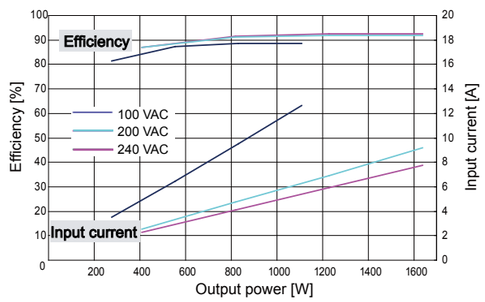


As in above picture, connect each output terminal with ACC3368-3 and each B.SIG terminal with WH-02XA02XA-150.

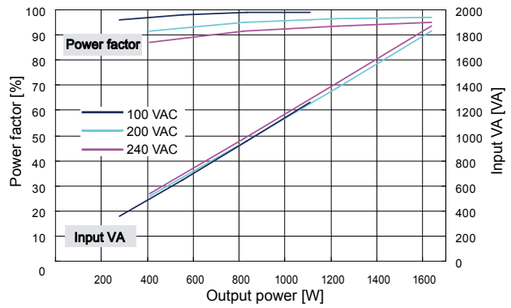
Characteristics Data GPSA-1500-48P-TES (Examples of actual measurement)

* This model is under development, so the product specification may be subject to change

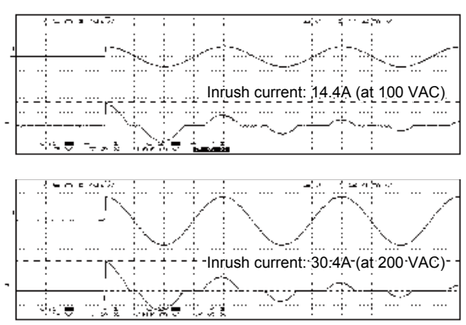
●Fig.5 Efficiency / Input Current vs. Output Power



●Fig.6 Power Factor / Input VA vs. Output Power



●Fig.7 Inrush Current



●Fig.8 Leakage Current

Input: 100 / 240 VAC

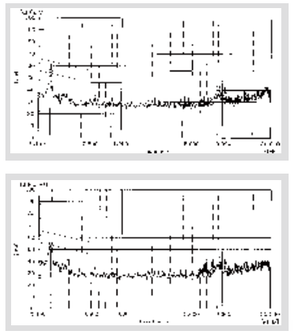
Load: Rated and min. load

Input voltage		100VAC	240 VAC
Measurement value	Rated load	0.19 mA	0.46 mA
	Min. load	0.21 mA	0.52 mA

●Fig.9 Conducted Emission at 100 VAC

Input: 100 VAC
Load: Rated
Mode: Peak

VCCI Class B



Measuring point : L1-FG

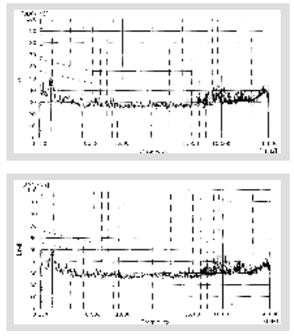
Measuring point : L2-FG

In-house measurement data

●Fig.10 Conducted Emission at 230 VAC

Input: 230 VAC
Load: Rated
Mode: Peak

VCCI Class B



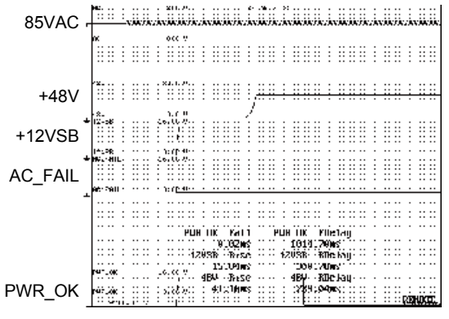
Measuring point : L1-FG

Measuring point : L2-FG

In-house measurement data

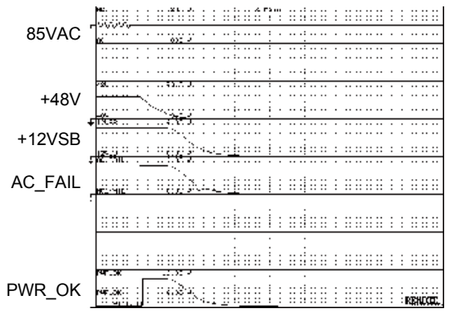
●Fig.11 Rising Characteristics at 85 VAC

Input: 85 VAC
Load: 1110W
Time axis: 200ms/DIV



●Fig.12 Falling Characteristics at 85 VAC

Input: 85 VAC
Load: 1000W
Time axis: 100ms/DIV

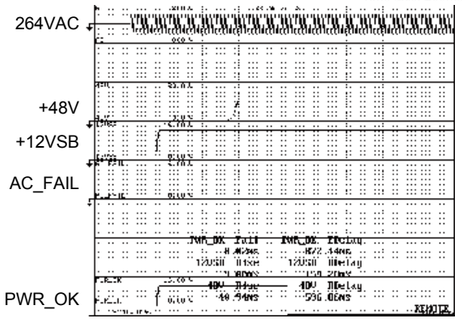


Characteristics Data GPSA-1500-48P-TES (Examples of actual measurement)

* This model is under development, so the product specification may be subject to change

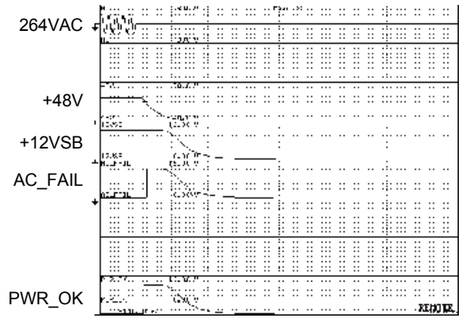
●Fig.13 Rising Characteristics at 264 VAC

Input: 264 VAC
Load: 1638W
Time axis: 200ms/DIV



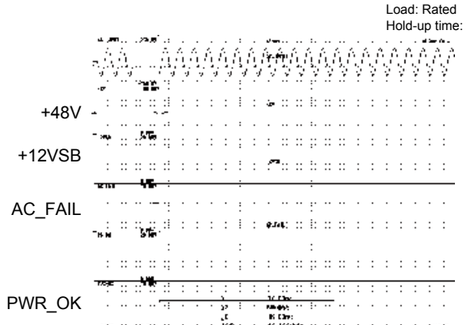
●Fig.14 Falling Characteristics at 264 VAC

Input: 264 VAC
Load: 1638W
Time axis: 100ms/DIV

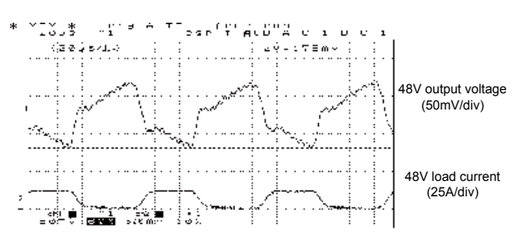


●Fig.15 Output Hold-up Time vs. Output Power

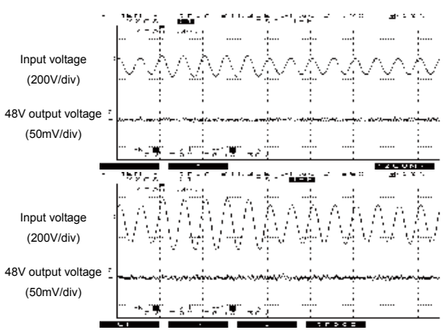
Input: 100 VAC
Load: Rated
Hold-up time: 36ms



●Fig.16 Dynamic Load Fluctuation Characteristics at 1kHz



●Fig.17 Output Voltage Regulation



●Fig.18 Ripple and Spike Voltage

Ripple voltage Load: Rated

Temp.	Input voltage	48V	12VSB
- 15 °C	100 VAC	23.2 mV	20.6 mV
	240 VAC	25.2 mV	26.4 mV
25 °C	100 VAC	14.0 mV	19.2 mV
	240 VAC	14.6 mV	24.5 mV
55 °C	100 VAC	9.4 mV	18.1 mV
	240 VAC	9.9 mV	20.1 mV
65 °C	100 VAC	7.2 mV	14.1 mV
	240 VAC	7.5 mV	17.7 mV

Spike voltage Load: Rated

Temp.	Input voltage	48V	12VSB
- 15 °C	100 VAC	40.2 mV	29.6 mV
	240 VAC	44.4 mV	34.9 mV
25 °C	100 VAC	30.9 mV	24.9 mV
	240 VAC	32.2 mV	29.6 mV
55 °C	100 VAC	26.9 mV	24.2 mV
	240 VAC	26.1 mV	25.2 mV
65 °C	100 VAC	27.4 mV	18.3 mV
	240 VAC	20.1 mV	22.1 mV

●Fig.19 Ambient Temperature vs. Expected Service Life

■Electrolytic capacitors

Input: 100 VAC
Load: Rated
Operating time: 24 consecutive hours

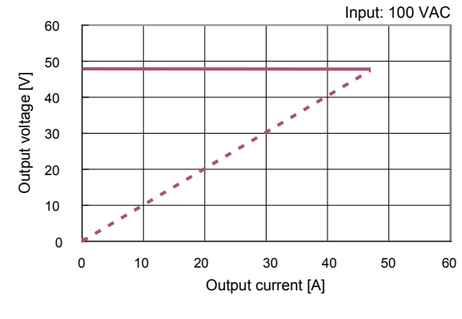
Intake air temp.	20°C	30°C	40°C
Expected service life (yr)	approx. 62.8	approx. 31.4	approx. 15.7

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

■FAN

Ambient temp.	25°C	40°C	50°C
Expected service life (yr)	approx. 14.0	approx. 14.0	approx. 9.4

●Fig.20 Over Current Protection (V-I Characteristic)



Single Output High Capacity Power Supply mGPSA-360 Series

Model	Description	Stock
mGPSA-360-12-TP	+12V output	Standard stock
mGPSA-360-24-TP	+24V output	Standard stock

■Model Name Coding

mGPSA - 360 - ＊ - T P

① ② ③ ④ ⑤ ⑥

1. Medical safety standard certified
2. Series name
3. Output power
4. 12:+12V output 24:+24V output
5. Signal output : TTL signal
6. Fan signal : Rotation pulse signal

Features

- Medical and industrial power supply with simple design for low price
- Power supply back-up functionality available at AC fail (+24V output only)
- Medical standard IEC60601-1 2nd, and 3rd approved
- Various safety standards (UL/CSA60950-1,UL/CSA60601-1) are approved
- High efficiency
- Width 1U, height 3U; easily fits into 19-inch racks
- External remote ON-OFF control signal available
- Worldwide range input (85-264 VAC), power factor 96% or higher with PFC circuit
- +12VSB output available

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 | 12FC FAN | Connection | RoHS

Input

Input	85-264VAC (worldwide range)
	120-370VDC*

*The rated input voltage range at the application of safety standard is "100-240 VAC (50/60Hz)".
In the case of DC input use, an external DC fuse shall be equipped to protect from power supply failure.

Output

Output voltage	*+12V*	*+24V*	*+12VSB*
Max. current/ max. power (continuous)	30A	15A	0.3A
	360W	360W	3.6W
Peak current / peak power (5 sec. max.) 100VAC	40A	20.8A	–
	480W	499.2W	–
Peak current / peak power (5 sec. max.) 200VAC	40A	25A	–
	480W	600W	–
Min. current	0A	0A	0A

Dimensions

W×H×D (mm)	128×41×230 (Width 1U/Height 3U size)

mGPSA-360-24 Efficiency chart

mGPSA-360-24		
Load	Input	Efficiency
Rated 24V 15A	85VAC	79.2%
	100VAC	80.6%
	132VAC	82.5%
	176VAC	83.9%
	200VAC	84.7%
	220VAC	84.8%
	264VAC	87.9%

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) DC120-370V*1			Worldwide range *Refer to Fig.1
	Input Frequency		50 / 60Hz			47 - 63Hz
	Efficiency		80% typ. (100 VAC),83% typ. (240 VAC) *Characteristic data: Fig.4			At rated output
	Power Factor		96% min. (100 VAC),90% min. (240 VAC) *Characteristic data: Fig.5			
	Inrush Current		31A peak (100 VAC), 75A peak (240 VAC) *Characteristic data: Fig.6			At rated input/output at cold start (25°C)*2
	Input Current		4.5A typ. (100 VAC), 1.8A typ. (240 VAC)			At rated input and max. output
			6.3A typ. (100 VAC), 3.0A typ. (240 VAC:24V), 2.4A typ. (240VAC:12V)			At rated input and peak output
Output	Model		mGPSA-360-12-TP	mGPSA-360-24-TP	Common for all models	
	Rated Voltage		+12V	+24V	+12VSB	
	Rated Current / Power		30A	15A	0.3A	
			360W	360W	3.6W	
	Peak Current / Power	100 VAC	40A	20.8A	–	Time: 5 sec. or less Duty ratio of repetitive load: 10% or less
			480W	499.2W	–	
		200 VAC	40A	25A	–	
			480W	600W	–	
	Min. Current		0A	0A	0A	
	Setup Voltage at Factory		12V±2%	24V±2%	12V±10%	
	Voltage Adjustable Range		12V±10%	24V -5%,+20%	–	
	Static Input Fluctuation		48mV max.	96mV max.	120mV max.	The values shall be measured at output terminal block 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.	0.02%/°C max.	0.02%/°C max.	
	Max. Ripple Voltage (mVp-p)	-10 to 0°C	160 max.	160 max.	160 max.	Two wires are coming out from the output terminal block and connected into one at the edge of 100cm max. long. 47μF electrolytic capacitor and 0.1μF ceramic capacitor are placed on it and it is measured by the 100MHz oscilloscope. *Characteristic data: Fig.17
		0 to 60°C	120 max.	120 max.	120 max.	
	Max. Spike Voltage (mVp-p)	-10 to 0°C	180 max.	180 max.	180 max.	
		0 to 60°C	150 max.	150 max.	150 max.	
Protection	Overcurrent Protection	OCP Point (A)	101% min. of peak current		101% min. of peak current	Applying peak current 5 sec.Or more shutdowns PSU. (Recovery: AC input reclosing) *Characteristic data: Fig.19
		Method	Hold down current limiting → Output shutdown		Hold down current limiting	
	Recovery(Overcurrent)	At AC Operation	Reclosing of AC input		Automatic recovery	
	Overvoltage Protection	OVP Point (V)	13.8 - 16	29.2 - 35.0	-	
		Method	Output shutdown		-	
	Recovery(Overvoltage)	At AC Operation	Reclosing of AC input		-	
Environment	Operating Temp. / Humidity		-10 to 60°C* / 10 to 90%			*Refer to Fig.3 No condensation
	Storage Temp. / Humidity		-25 to 75°C / 10 to 95%			No condensation
	Vibration		Acceleration amplitude: 2G (10 - 55Hz), Sweep cycles: 10, Test duration: 10 minutes each axis			JIS-C-60068-2-6, at no operation
	Mechanical Shock		Lift one bottom edge up to 50mm and let it fall. Number of bumps: 3 each of 4 edges			JIS-C-60068-2-31, at no operation
Insulation	Dielectric Strength		AC input - DC output: 4000 VAC for 1 minute AC input - FG: 2000 VAC for 1 minute			Cut-off current: 10mA Completion inspection: 3000 VAC/min. between AC input-DC output
	Insulation Resistance		AC input - DC output: 50MΩ min. AC input - FG: 50MΩ min. DC output - FG: 50MΩ min.			At 500 VDC
	Leakage Current		0.21mA max. (100 VAC) / 0.5mA max. (240 VAC) *Characteristic data: Fig.7			YEW. TYPE3226 (1kΩ) or equivalent
EMC	Line Noise Immunity		± 2000V (pulse width: 100/1000ns, repetitive cycle: 30-100Hz, 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-B, FCC-B, EN55022-B, CISPR22-B compliant *Characteristic data: Fig.8,9			Measured by single unit
	Harmonic Current Regulation		IEC61000-3-2 (Ver.2.1) Class D, EN61000-3-2 (A14) Class D compliant			At rated input/output
Others	Safety Standard		UL60601-1, CSA C22.2 NO 601. 1(c-UL), ANSI/AAMI ES60601-1, UL60950-1, CSA60950-1 (c-UL) approved, PSE (ministerial ordinance) compliant			
	Cooling System		Forced air cooling			Thermal-sensing variable speed fan embedded
	Output Grounding		Capacitor grounding			
	Output Hold-up Time		PWR_OK holds up 20ms min. after AC failure *Characteristic data: Fig.14			At rated output
	Reliability Grade		FA (industrial equipment grade, double-sided through hole PCB)			Follow our standard
	MTBF		70,000 H min.			Based on EIAJ RCR-9102
	Weight		1.4 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 not listed

*1 The rated input voltage range at the application of safety standard is "100-240 VAC (50/60Hz)". If it is used with DC input, an external DC fuse shall be equipped in case of the power supply failure.
*2 The inrush current into input noise filter is not specified unless its period is more than 100μs.

Fig.1 Derating for Low Input Voltage

When the input voltage is 90 VAC or less, follow the derating curve to derate rated current/power, max. current/power, and peak current/power.

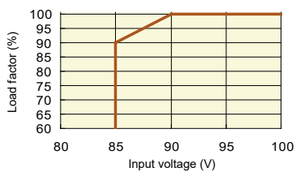


Fig.2 Duty Ratio

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

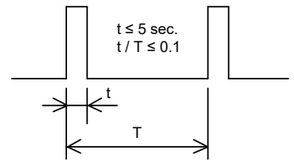
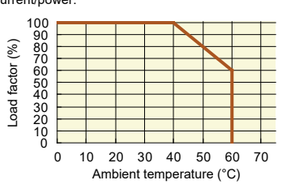


Fig.3 Temperature Derating

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#)	The power supply starts up with 'L' input and shuts down with 'H' or 'OPEN' input (except for 12VSB). *The output also shuts down if PS_ON signal is switched to OFF ('H') during backup operation with the dedicated battery package connected. If this is the case, 12VSB will shut down.	The pin 4 of SIG connector
Output Signal	Normal Output Signal (PWR_OK)	'H'signal is delivered at normal output (detection delay time: 100 - 500ms). Voltage detection: 19.9V or higher for 24V output, 9.4V or higher for 12V output	The pin 5 of SIG connector
	Fan Monitor Signal (FAN_M1,FAN_M2)	Two cycle pulses per one rotation of the fan motor are delivered (open collector output).	The pin 2 of SIG connector, the pin 3 of SIG connector
	Blackout Detection Signal (AC FAIL)	The signal goes 'OPEN' at low AC input voltage and blackout detection (open collector output). detection voltage: 80 VAC typ., detection delay time: 20 - 40ms after AC input failure.	The pin 6 of SIG connector
	Low Battery Voltage Signal (BATT LOW) *Only available when a dedicated battery package is connected.	The low battery voltage signal, "BATT_LOW" will be sent from the power supply after receiving from the dedicated battery package. If the battery package is not connected, the status shall be 'OPEN'. Detailed specifications shall be based on the specification of the battery package connected.	The pin 7 of SIG connector

Signal Circuit

Input Signal Circuit

(PS_ON#)

('L'≤0.8V, 2.0V≤'H')

Output Signal Circuit

(PWR_OK)

(FAN_M1,FAN_M2)

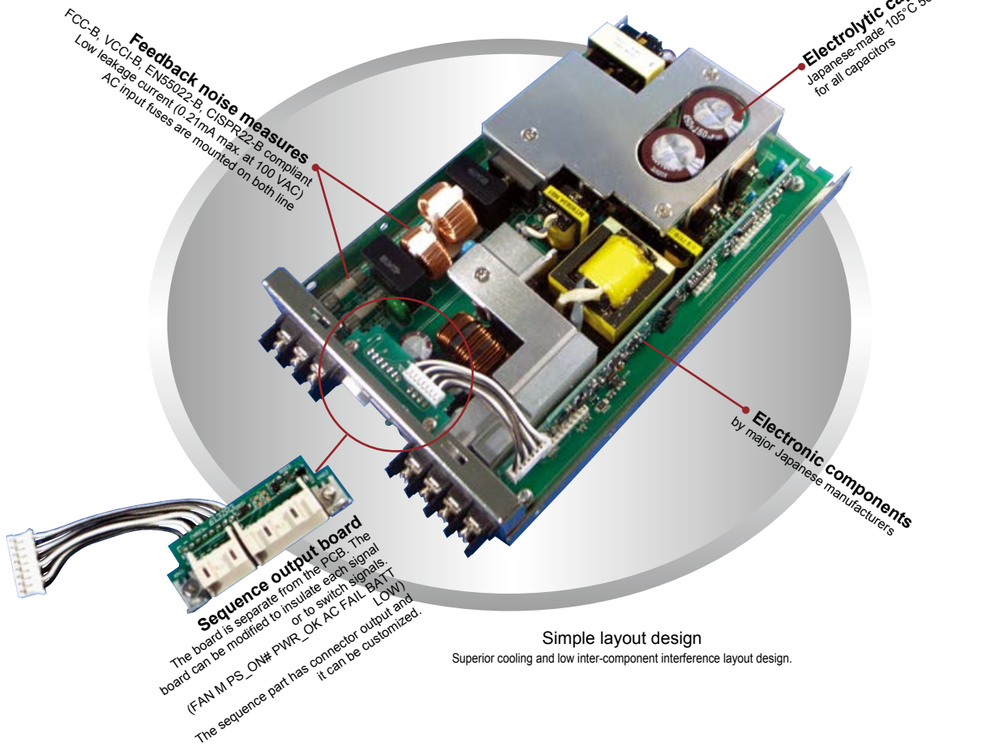
(AC FAIL)

(BATT LOW)

Internal Structure

RoHS fully compliant

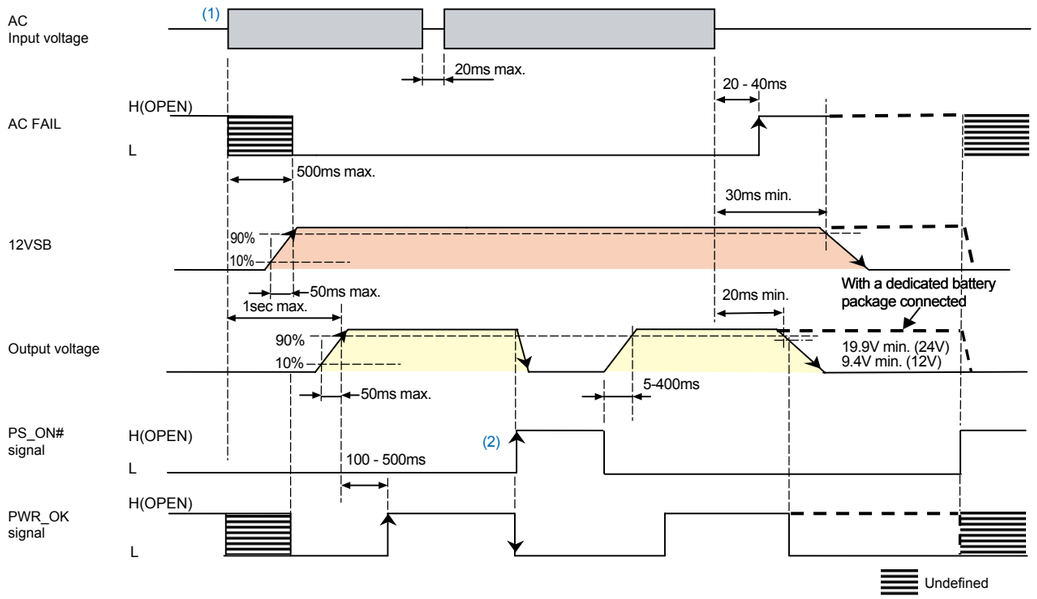
Amount of hazardous materials in PWBs, wires, electronic components, coils, chassis, and labels specified by International standard is lower than acceptable level.



Simple layout design

Superior cooling and low inter-component interference layout design.

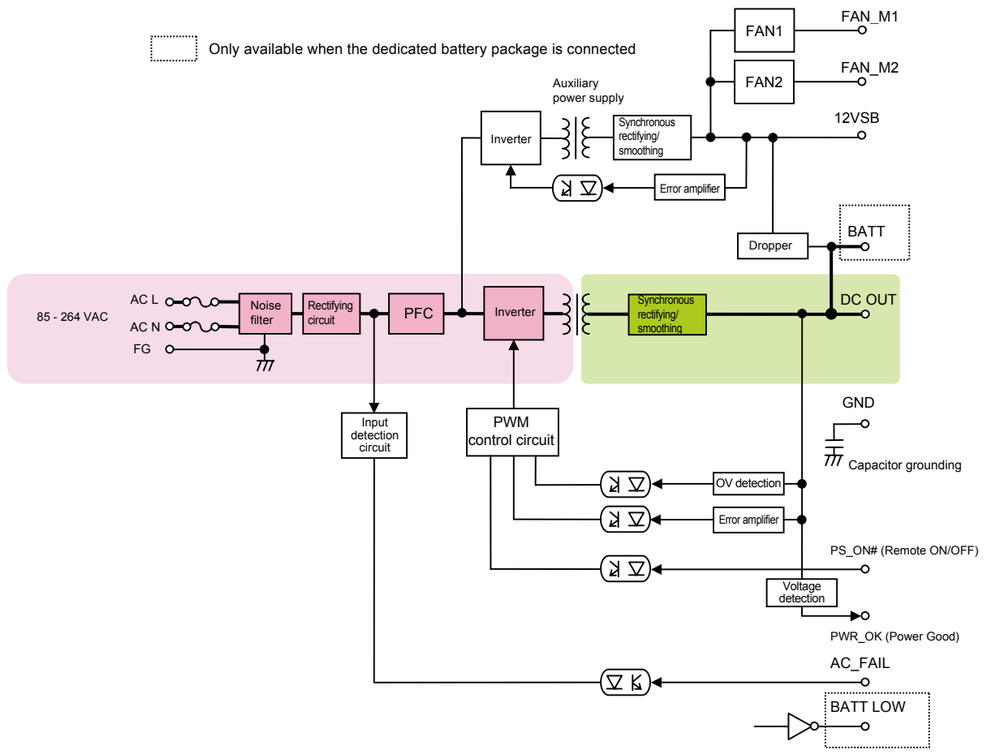
Sequence Diagram



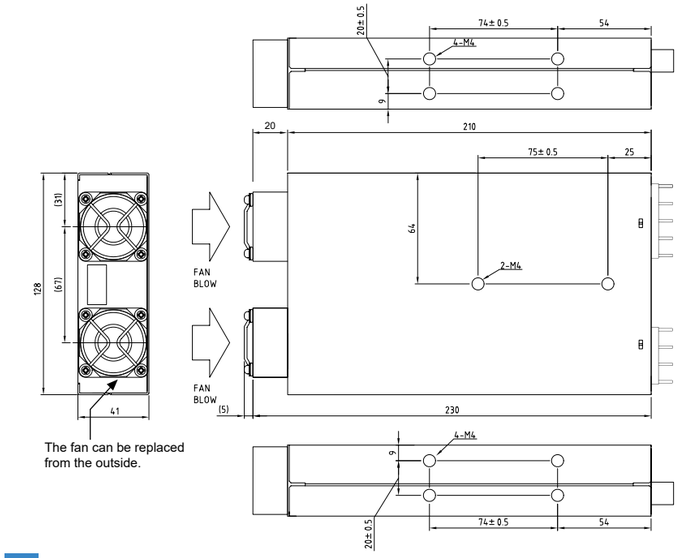
* The time chart for when a dedicated battery package is connected is shown with thick broken lines.

(1)All outputs start up by being supplied AC input under the condition of PS_ON# 'L'. PWR_OK 'H (OPEN)' is delivered at 100 - 500ms after the output has risen.
(2) At PS_ON# 'H'(OPEN) input, outputs except for +12VSB shut down (all outputs including 12VSB shut down at backup operation).

Block Diagram



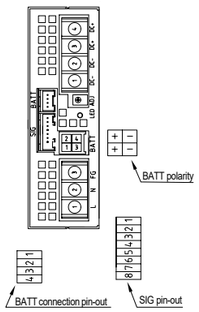
Outline Drawing



SIG Connector Pin assignments

Connector	Pin #	Signal Name	Max Current	Note
SIG	1	COM	0.5A	Common 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 if the battery is connected.
	8	+12VSB	0.3A	

Note: When using the pin 1 COM of the SIG connector, make sure that the current of main output will not be passed to the pin.

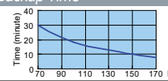


* Dimensional tolerance shall be ±1 mm unless otherwise specified.
* The screw depth of penetration into PSU is 5mm max.

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

Optional Components (Sold Separately)

Battery package

Picture	Model	Type	Shape (size)	Backup Time
	BS14A-H24/2.5L	Ni-MH	1U/3U size (W×D×H=128×211×41mm)	

* The backup time is a reference value at initial use; it is not a guaranteed value.
* The backup time can be extended with parallel connection.
* Battery package can be connected to mGPSA-360-24-TP (backup type) only.

Cable

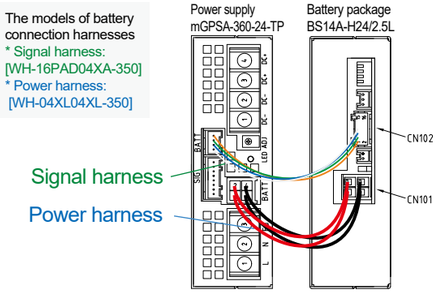
Picture	Model	Type	Description
	WH-08XA08XA-500	Signal harness	For BATT_LOW, AC_FAIL, FAN_M, PS_ON, PWR_OK, and +12VSB
	WH-16PAD04XA-350	Signal harness for connecting the battery pack	Signal harness to connect one battery package (BS14A-H24/2.5L)*
	WH-16PAD04XA-350-01	Signal harness for connecting the battery pack	Signal harness to connect two battery packages (BS14A-H24/2.5L)*
	WH-04XL04XL-350	Power harness for connecting the battery pack	Power harness to connect one battery package (BS14A-H24/2.5L)*
	WH-02XL04XL-350-01	Power harness for connecting the battery pack	Power harness to connect two battery packages (BS14A-H24/2.5L)*

* The harness is necessary to connect with the battery package (BS14A-H24/2.5L) for backup operation (see the following figures “Configurations of Battery Connection Harnesses”).

Battery connection harness and connection images

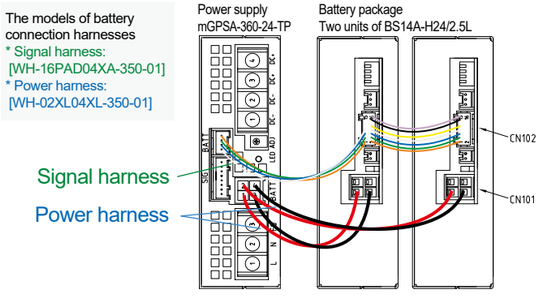
Connecting one battery package (BS14A-H24/2.5L)

The models of battery connection harnesses
* Signal harness: [WH-16PAD04XA-350]
* Power harness: [WH-04XL04XL-350]



Connecting two battery packages (BS14A-H24/2.5L)

The models of battery connection harnesses
* Signal harness: [WH-16PAD04XA-350-01]
* Power harness: [WH-02XL04XL-350-01]



mGPSA Series Features

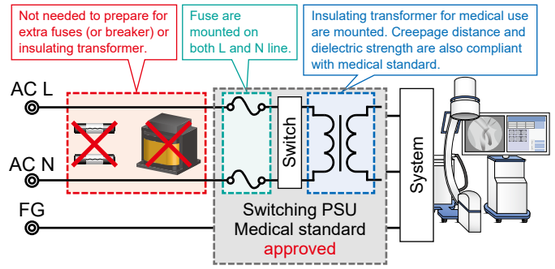
Advantages of Medical Standards Approved Power Supply

► Power supply NOT APPROVED

When power supply does not comply with the standards, customers are required to prepare for input fuses and insulating transformer etc. Because fuses and transformer will be installed separately, system will be large and expensive.

► Power supply APPROVED

These series are all done to be double and reinforced insulation. That is why we are able to satisfy this requirement. You will not need to prepare for extra fuses or transformer. Also, it is compact and inexpensive rather than using power supplies those are not complying with the standards.

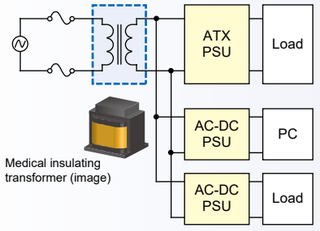


Front PC Power Supply for Medical System

Combination of mGPSA-360 and 24 VDC input ATX power supply, enables low leakage current medical standard compliant ATX output power supply. Backup functionality is also available with the dedicated battery package "BS14A-H24/2.5L". Whole system can be efficiently backup.

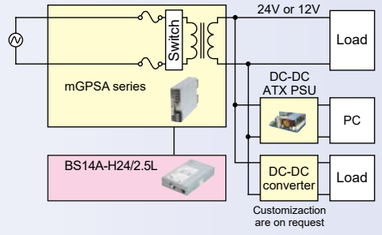
Previous configuration

Previously, it is required the big insulation transformer which is correspond to all ATX and AC-DC power supplies.



Nipron configuration

Nipron medical power supplies do not require the insulation transformer which affects the cost reduction and the space saving. By connecting the dedicated battery package, the backup system for blackout can be achieved.



24 VDC input ATX power supply

PCFD-180-X2S

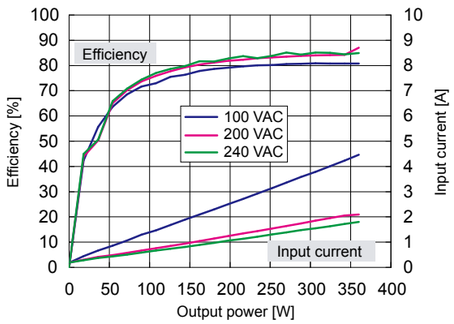
FANLESS ATX
Continuous output : 90W
Peak output : 180W
Input: 24 VDC (20-36V)

Product features

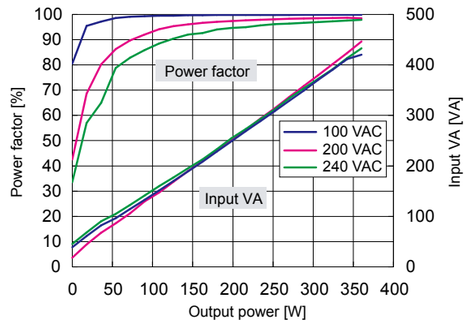
- DC input compact fanless ATX power supply
- Backup functionality is available
- Can be used as medical standard compliant ATX output power supply by connecting with a medical standard approved 24V output power supply

Characteristics Data mGPSA-360-24-TP (Examples of actual measurement)

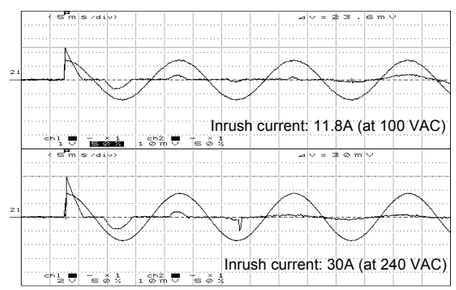
● Fig.4 Efficiency / Input Current vs. Output Power



● Fig.5 Power Factor / Input VA vs. Output Power



● Fig.6 Inrush Current



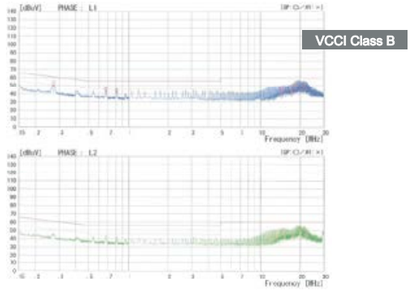
● Fig.7 Leakage Current

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

	Rated load	Min. load
100 VAC	0.06mA	0.08mA
240 VAC	0.18mA	0.20mA

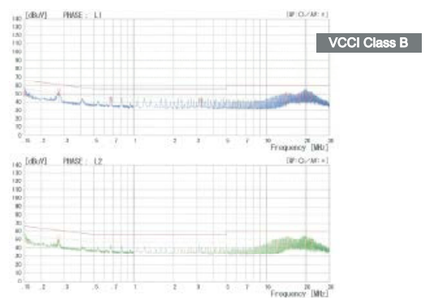
● Fig.8 Conducted Emission at 100 VAC

Input: 100 VAC
Load: Rated
Mode: Peak



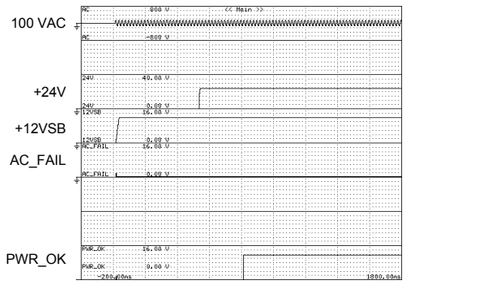
● Fig.9 Conducted Emission at 240 VAC

Input: 240 VAC
Load: Rated
Mode: Peak



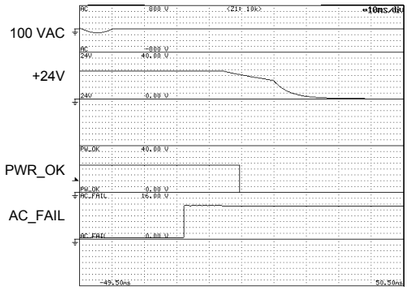
● Fig.10 Rising Characteristics at 100 VAC

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



● Fig.11 Falling Characteristics at 100 VAC

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

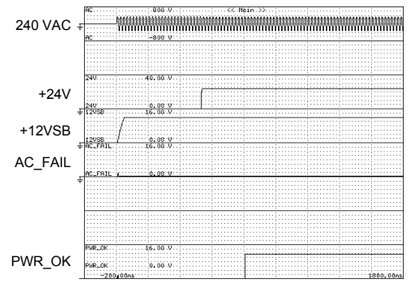


mGPSA-360 series

Characteristics Data mGPSA-360-24-TP (Examples of actual measurement)

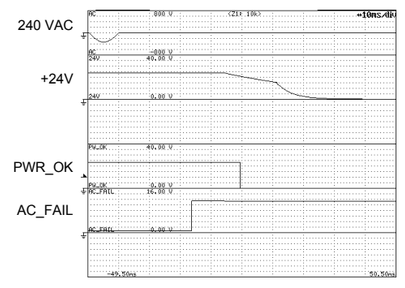
● Fig.12 Rising Characteristics at 240 VAC

Input: 240 VAC
Load: Rated
Time axis: 200ms/DIV



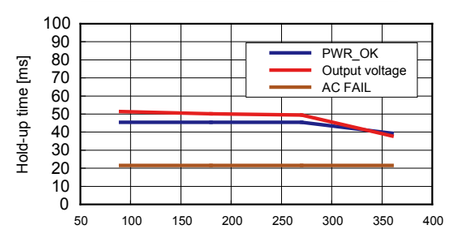
● Fig.13 Falling Characteristics at 240 VAC

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



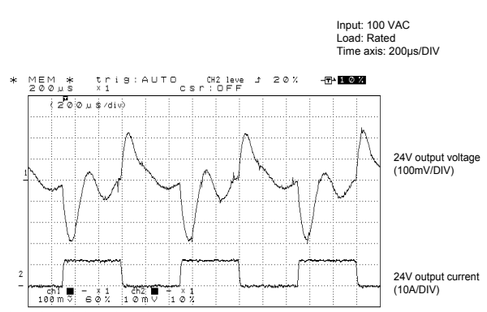
● Fig.14 Output Hold-up Time vs. Output Power

PWR_OK: the point that PWR_OK signal goes to "L"
Output voltage: the point that output voltage decreases to 95%
AC FAIL: the point that AC FAIL signal is delivered



● Fig.15 Dynamic Load Fluctuation Characteristics at 1kHz

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



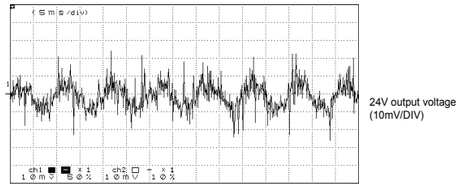
● Fig.16 Output Voltage Regulation

Output	Min. load	Rated load	Peak load
24V output	0A	15A	17A

AC input voltage	85 VAC	100 VAC	132 VAC	176 VAC	240 VAC	264 VAC
24V output (min. load)	24.017 V	24.017 V	24.017 V	24.017 V	24.018 V	24.017 V
24V output (50%)	24.008 V	24.006 V	24.007 V	24.007 V	24.006 V	24.007 V
24V output (rated load)	23.995 V	23.994 V	23.994 V	23.995 V	23.994 V	23.993 V
24V output (peak)	23.992 V	23.991 V	23.990 V	23.990 V	23.990 V	23.992 V

● Fig.17 Ripple and Spike Voltage

Input: 100 VAC
Load: Rated
Time axis: 5ms/DIV



● Fig.18 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. 24.3	approx. 12.2	approx. 6.1

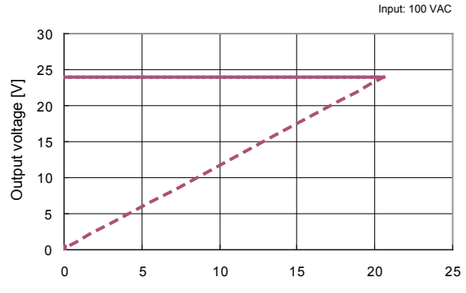
* Lifetime shall be 15 years at longest due to deterioration of sealing plates.

■ Fan

Ambient temp.	25°C	40°C	50°C
Expected service life (yr)	approx. 13	approx. 13	approx. 8.7

● Fig.19 Over Current Protection (V-I Characteristic)

Input: 100 VAC



Battery Package BS14A-H24/2.5L

Model	*Description*	*Stock*
BS14A-H24 / 2.5L	———	Standard stock

■Model Name Coding

BS14A - H 24 / 2.5 L

① ② ③ ④ ⑤

1. Series name
2. Ni-MH battery
3. Output voltage (24 VDC)
4. Capacity
5. Long life expectancy battery

Compatible Power Supply

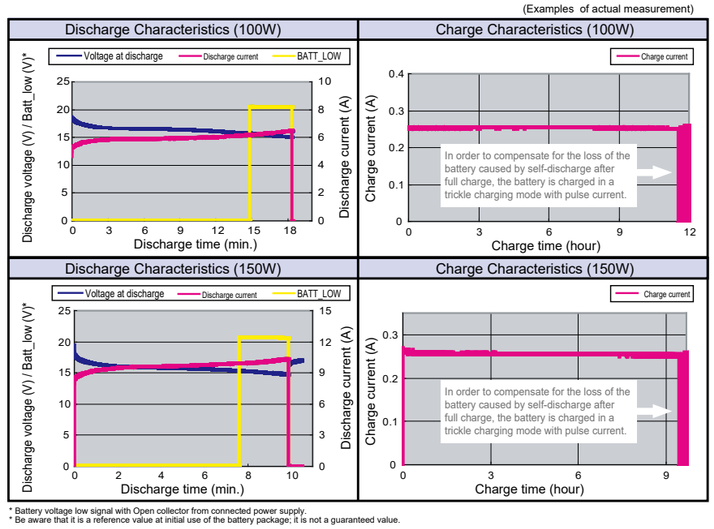
- GPSA-360-24-TP
- GPSA-600-24P-TP
- mGPSA-360-24-TP

Features

- Long life as Ni-MH battery is adopted.
- With parallel connection function, multiple batteries can be connected in parallel when capacity is short.
- Discharge halt by Dip switch is available.

Battery Charge/Discharge Characteristics* (used with OZP-170-24-JB0)

(Examples of actual measurement)



* Battery voltage low signal with Open collector from connected power supply.
* Be aware that it is a reference value at initial use of the battery package; it is not a guaranteed value.

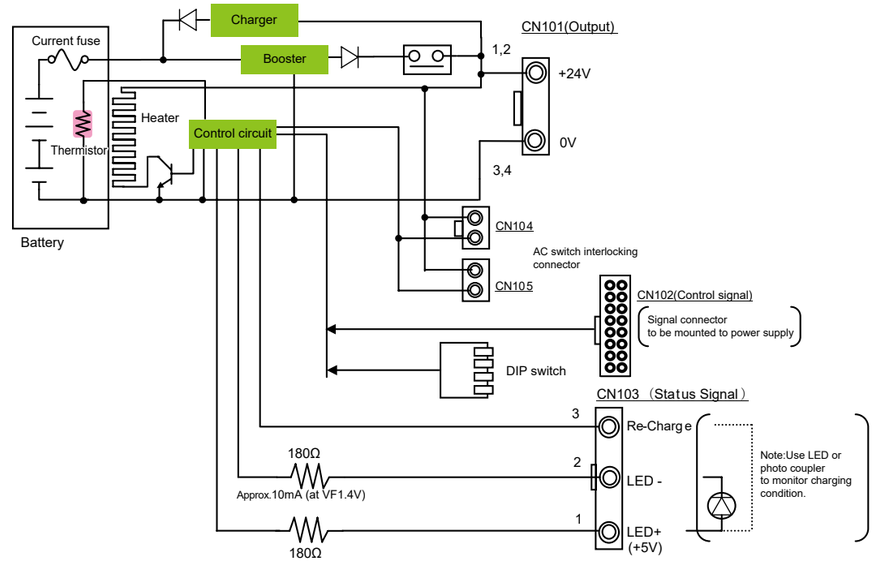
General Specification Condition: at normal temperature and humidity unless otherwise specified

Items	*Specification*	*Measurement conditions, etc.*
Battery	1.2V 2.5Ah × 14 connected in serial	Sealed Ni-MH battery
Battery's Nominal Voltage	16.8 VDC	
Rated Capacity	2.5Ah	
Max. Output Capacity	Rated 170W (Peak 240W within 10 sec., the peak duty ratio 35% max.)	Average output power shall be within 170W
Rated output voltage	24VDC	Voltage is adjustable by voltage adjustment variable resistor in the power supply to be connected.(Note. 1)
Charge Specification	0.25A typ. (15 hours typ.)	Timer charging method The output of connected power supply (24V) charges. (Note.2)
Heater	The element operates at 20 deg. typical or lower , and stops at 22 deg. typical or higher of battery temperature. It also operates during 0 deg. to 20 deg. to maintain battery discharging characteristics in rating: Warm-up. The warm-up time is approx. one hour from 0 deg.. (Heater consumption power at operation: approx. 13W).	24V output voltage of connected power supply provides the power. (Note. 2)
Embedded Fuse Rating	30A 32V	
Operating Temp. / Humidity	0 to 50°C / 10 to 90% RH	No condensation
Storage Temp. / Humidity	1 year or less: less then -20 to 35°C / 10 to 95%, 6 months or less: -20 to 45°C / 10 to 95%, 1 month or less: -20 to 55°C / 10 to 95%, 1 week or less: -20 to 65°C / 10 to 95%	No condensation
Weight	1.9 kg typ.	
Life Expectancy(Note 3)	Approx. 9 to 10 yrs. (5 times/year discharge), approx. 3 to 4 yrs. (1 time/day discharge)	Environmental temp. 30°C, 100W 3-minutes discharge at a time
Warranty	1 year after delivery. If any faults belong to us, the defective unit shall be repaired or replaced at our cost. (Except for inside battery.)	Except for errors caused by operation not listed

(Note.1)Voltage range shall be 22.8-28.8V. In case of out of the range, it might not charge or backup.
(Note.2)When battery package is connected to power supply, 20W typ. power is consumed due to charging battery package and heater function. At battery package connected, please reduce output load of power supply.
(Note.3)Life expectancy is a reference value. It is not a guaranteed value.

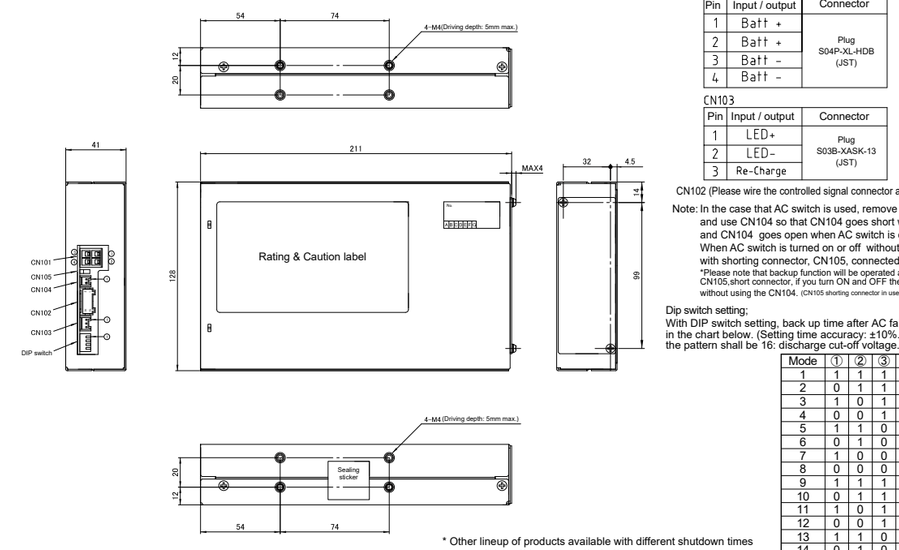
BS14A-H24/2.5L

Block Diagram



Outline Drawing

1U/3U size



CN101

Pin	Input / output	Connector
1	Batt +	Plug S04P-XL-HDB (JST)
2	Batt +	
3	Batt -	
4	Batt -	

CN103

Pin	Input / output	Connector
1	LED+	Plug S03B-XASK-13 (JST)
2	LED-	
3	Re-Charge	

CN102 (Please wire the controlled signal connector at power supply side.)

Note: In the case that AC switch is used, remove the shorting connector and use CN104 so that CN104 goes short when AC switch is on, and CN104 goes open when AC switch is off.
When AC switch is turned on or off without using CN104 with shorting connector, CN105, connected, backup operation starts.
*Please note that backup function will be operated at applying CN105,short connector, if you turn ON and OFF the AC switch without using the CN104. (CN105 shorting connector in use)

Dip switch setting;
With DIP switch setting, back up time after AC fail can be set as in the chart below. (Setting time accuracy: ±10%. At shipping configuration, the pattern shall be 16: discharge cut-off voltage.

Mode	①	②	③	④	Discharge setting time
1	1	1	1	1	1 min.
2	0	1	1	1	5 min.
3	1	0	1	1	10 min.
4	0	0	1	1	15 min.
5	1	1	0	1	20 min.
6	0	1	0	1	25 min.
7	1	0	0	1	30 min.
8	0	0	0	1	35 min.
9	1	1	1	0	To dischartge cut-off voltage
10	0	1	1	0	
11	1	0	1	0	
12	0	0	1	0	
13	1	1	0	0	
14	0	1	0	0	
15	1	0	0	0	
16	0	0	0	0	

1: Swich ON, 0: Swich OFF

* Other lineup of products available with different shutdown times at 5 sec./10sec./30sec./1min./2min./3min./5min./10min.
Model:BS14P-H24/2.5L

Optional Components Sold separately

Cable		
Model	*Type*	*Description*
WH-16PAD04XA-350	Battery connection cable (signal cable)	Signal harness to be connected to a power supply.
WH-16PAD04XA-350-01	Battery connection cable (signal cable)	Signal harness to be connected to a power supply. (for two battery packages in parallel connection)
WH-02XL02XL-350	Battery connection cable (power cable)	Power harness to be connected to a power supply.
WH-04XL04XL-350	Battery connection cable (power cable)	Power harness to be connected to a power supply. (Two harnesses are used in the parallel connection of two battery packages)
WH-02XL04XL-350-01	Battery connection cable (power cable)	Power harness to be connected to a power supply (for two battery packages in parallel connection).
ACC3318	D-sub harness with RS232C signal board (signal harness)	Signal output is possible by RS232C signal.

Nipron Co.,Ltd.
●Sales department and R&D department
1-3-30, Nishinagasu-cho, Amagasaki-city, Hyogo, 660-0805, Japan.
TEL: +81-6-6487-0605 FAX: +81-6-6487-2212
URL: http://www.nipron.com/

w w w . n i p r o n . c o . j p

●Contact us

CAT No.130680-1312