Nipron GAZE into the future

Thanks to your support,
Nipron Wave now celebrates
its 50th publication.

Nipron Wave

Vol.50 2018 Winter

This is the highlight!

1 Special feature on PC power supplies
Appearance of an IoT compatible model. Introduction of highly reliable PC power supplies.

2 Special feature on single output power supplies
Board type single output power supplies with a variety of features, e.g. backup for blackouts & instantaneous power failures.
Standard lineup of power supply units up to a high power 5000 W unit.

Special feature, H-series power supplies

PC power supplies of outstanding reliability and with a great track record

Nipron's H-series power supplies offer multiple advantages, including a high efficiency, a low standby power and a low leakage current. Their features are introduced below.

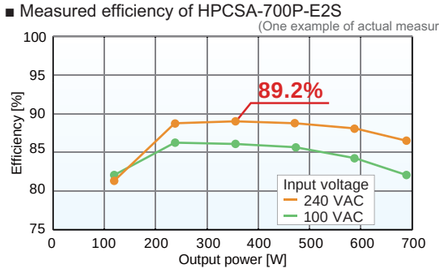
		Continuous	Peak
HNSP4-1000P series Nonstop power supply		822W	1000W
HNSP9-520P series Nonstop power supply		400W	520W
HPCSF-400P-X2B Nonstop power supply		310W	400W
HPCSA-1000P-E2S ATX power supply		822W	1000W
HPCSA-700P-E2S ATX power supply		600W	700W
HPCSA-570P-X2S ATX power supply		400W	570W
HPCSF-400P-X2S1 SFX power supply		310W	400W
HPC1U-400P-X2S 1U power supply		305W	400W
HPCFL-400P-X2S Fanless ATX power supply		Continuous (natural/forced air cooling) 170/305W	400W
HPCFX-350P-X2S Flex ATX power supply		245W	346W

High efficiency

A high efficiency achieved by the adoption of a synchronous rectification circuit and a resonant circuit

■ Measured efficiency of HPCSA-700P-E2S

(One example of actual measurement)



■ Measured power supply efficiency

With a 50% load

Model	For 115 VAC	For 240 VAC
HNSP4-1000P series	88.5%	89.2%
HPCSA-1000P-E2S	87.6%	89.5%
HPCSA-700P-E2S	87.1%*	89.2%
HPCSA-570P-X2S	85.7%	87.7%
HNSP9-520P series	85.7%	87.7%
HPCSF-400P-X2S1	87.3%	89.1%
HPCSF-400P-X2B	87.3%	89.1%
HPC1U-400P-X2S	85.6%	87.3%
HPCFL-400P-X2S	83.4%	85.6%
HPCFX-350P-X2S	86.4%*	88.4%

* For 100 VAC

Low standby power

Contributes to the global energy conservation by complying with the ErP directive (Lot6)

The H-series power supplies satisfy the standby power consumption.*

* Excluding the HNSP9-520P series

The standby power (Lot6) requirement can only be satisfied by limiting the power consumption of a device in the standby modes (off mode*1 and standby mode*2) to 0.5W or lower.

*1 Off mode: A state in which only the AC power is input to the device.
*2 Standby mode: A state in which only a reactivation function or areactivation function plus a display of available reactivation function is provided.

■ Measured standby power consumption (standby power supplied)

(One example of actual measurement)

Model	For 100 VAC	For 230 VAC
HNSP4-1000P series	0.06W	0.07W
HPCSA-1000P-E2S	0.20W	0.28W
HPCSA-700P-E2S	0.02W	0.27W*1
HPCSA-570P-X2S	0.08W	0.11W
HPCSF-400P-X2S1	0.08W	0.08W
HPCSF-400P-X2B	0.08W	0.08W
HPC1U-400P-X2S	0.08W	0.08W
HPCFL-400P-X2S	0.04W	0.04W
HPCFX-350P-X2S	0.08W	0.27W*2

*1 For 240 VAC *2 For 200 VAC

Low leakage current & low noise

A reduction of leakage current is achieved in the H-series power supplies. In addition, the conducted noise emission satisfies the VCCI Class B requirements. This eliminates the need for installing an external noise filter and, thus, helps reduce the cost and man-hour.

■ Measured leakage current (One example of actual measurement)

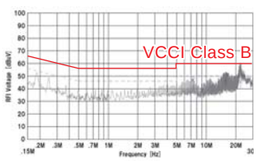
During rated load

Model	For 100 VAC	For 200 VAC
HNSP4-1000P series (with a battery connected)	0.14mA	0.27mA
HPCSA-1000P-E2S	0.13mA	0.23mA
HPCSA-700P-E2S	0.10mA	0.20mA
HPCSA-570P-X2S	0.18mA	0.30mA
HNSP9-520P series	0.18mA	0.30mA
HPCSF-400P-X2S1	0.05mA	0.06mA
HPCSF-400P-X2B	0.05mA	0.06mA
HPC1U-400P-X2S	0.17mA	0.34mA
HPCFL-400P-X2S	0.12mA	0.25mA
HPCFX-350P-X2S	0.27mA	0.58mA

■ Measured conducted noise emission

(One example of actual measurement)

HNSP4-1000P (for 100 VAC)

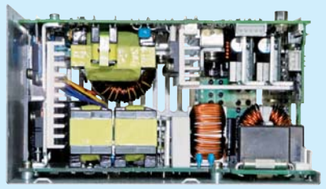


H-series ATX power supply with a variety of features http://www.nipron.com

A design to ensure superior quality and high reliability

Common imported ATX power supplies are available at a low cost but with a concern in their reliability. Also, discontinuity in their production and changes in specifications are often heard of. Nipron products can solve customers' problems with the high reliability and durability. The difference in the reliability is obvious with a glance at the internal circuitry. Do experience the superior quality of Nipron's power supply units.

Nipron ATX power supply
HPCSA-700P-E2S



Nipron HPCSA-700P-E2S

Examples of imported ATX power supplies

Circuit boards

Highly reliable double sided through-hole printed circuit boards are used for every circuit to prevent cracking on solder joints.

Single sided boards are found in some circuits, such as moving parts at the inlet, and there is a risk of solder joint cracking.

Temperature condition

Components with a low rated temperature are not arranged in the perimeter of high temperature components, realizing a safe power supply unit.

A film capacitor, of which rated operating temperature is lower than that of semiconductors, leans against a high temperature bridge diode, raising a concern of a failure of film capacitor due to high temperature and even a risk of burning.

Parts arrangement

The design includes an arrangement with room between components, avoiding stresses on neighboring parts.

Cords and parts push neighboring parts, giving stresses, and early degradation with time of parts and other problems are expected.

Output section

Considerations are given to avoid interference between leads and wires and, if they come in contact, to provide safety measures.

The leads to the output connectors come in contact with shielded wires, raising a concern of damaging the wires and a risk of short circuits.

Optimum for industrial application! Nipron ATX power supply http://www.nipron.com

Special feature, H-series power supplies

Product lineup for devices of a higher rank

Starting with a nonstop power supply with a support for backup in case of a power failure, a variety of models are available from 350 W to 1000 W. Besides offering options for customers' applications, these power supplies help make environment friendly products and reduce the running cost with their energy saving performance enabled by the high efficiency and low standby power design.

NSP HNSP4-1000P series

Efficiency(with a 50% load)
88.5% / 89.2%
(For 115 VAC/For 240 VAC)
Standby power
0.06W / 0.07W
(For 100 VAC/For 230 VAC)
Output capacity
Continuous **822W**
Peak **1000W**
Example of a battery pack
BS25A-H350/2.5L
With a load of 370 W: 12 minutes

High efficiency & low standby power
Large capacity nonstop ATX power supply

Minimum load current 0 A for all outputs specification

NSP HNSP9-520P series

Efficiency(with a 50% load)
85.7% / 87.7%
(For 115 VAC/For 240 VAC)
Standby power
0.55W / 0.65W
(For 100 VAC/For 230 VAC)
Output capacity
Continuous **400W**
Peak **520W**
Example of a battery pack
BS10A-H24/2.0L
With a load of 100 W: 17 minutes

80PLUS BRONZE
Nonstop ATX power supply

Models with +24 V/+48 V supplies are also available.

NSP HPCSF-400P-X2B

Efficiency(with a 50% load)
87.3% / 89.1%
(For 115 VAC/For 240 VAC)
Standby power
0.08W / 0.08W
(For 100 VAC/For 230 VAC)
Output capacity
Continuous **310W**
Peak **400W**
Example of a battery pack
BS28A-H350/2.5L
With a load of 220 W: 3.3 minutes

Offers a backup power for blackout
Large capacity SFX power supply

Minimum load current 0 A for all outputs specification

ATX HPCSA-1000P-E2S

Efficiency(with a 50% load)
87.6% / 89.5%
(For 115 VAC/For 240 VAC)
Standby power
0.20W / 0.28W
(For 100 VAC/For 230 VAC)
Output capacity
Continuous **822W**
Peak **1000W**

80PLUS SILVER & ErP directive compatible
Large capacity ATX power supply

Minimum load current 0 A for all outputs specification

ATX HPCSA-700P-E2S

Efficiency(with a 50% load)
87.1% / 89.2%
(For 100 VAC/For 240 VAC)
Standby power
0.02W / 0.27W
(For 100 VAC/For 230 VAC)
Output capacity
Continuous **600W**
Peak **700W**

High efficiency & low standby power
Large capacity ATX power supply

Models supporting IoT features are also available.

ATX HPCSA-570P-X2S

Efficiency(with a 50% load)
85.7% / 87.7%
(For 115 VAC/For 240 VAC)
Standby power
0.08W / 0.11W
(For 100 VAC/For 230 VAC)
Output capacity
Continuous **400W**
Peak **570W**

80 PLUS BRONZE & Low standby power
ATX power supply

Models with +12 V/+48 V supplies are also available.

* Values listed as efficiency and standby power are some examples of actual measurements.

SFX HPCSF-400P-X2S1

Efficiency(with a 50% load)
87.3% / 89.1%
(For 115 VAC/For 240 VAC)
Standby power
0.08W / 0.08W
(For 100 VAC/For 230 VAC)
Output capacity
Continuous **310W**
Peak **400W**

80PLUS BRONZE & ErP directive compatible
Large capacity SFX power supply

A model supporting the medical standard (mHPCSF-400P-X2S1) is also available

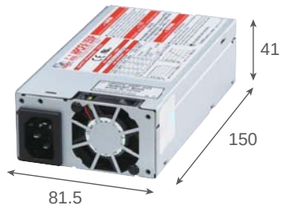
1U HPC1U-400P-X2S

Efficiency(with a 50% load)
85.6% / 87.3%
(For 115 VAC/For 240 VAC)
Standby power
0.08W / 0.08W
(For 100 VAC/For 230 VAC)
Output capacity
Continuous **305W**
Peak **400W**

80PLUS BRONZE & ErP directive compatible
1U size power supply

The adoption of a temperature controlled variable fan makes a quiet PSU.

Flex ATX HPCFX-350P-X2S

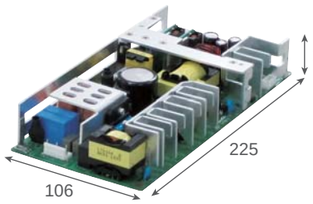


Efficiency(with a 50% load)
86.4% / 88.4%
(For 100 VAC/For 240 VAC)
Standby power
0.08W / 0.27W
(For 100 VAC/For 200 VAC)
Output capacity
Continuous **245W**
Peak **346W**

Small & large capacity
Flex ATX power supply

A model capable of addressing power failures by connecting a battery pack will be added.

Fan less HPCFL-400P-X2S



Efficiency(with a 50% load)
83.4% / 85.6%
(For 115 VAC/For 240 VAC)
Standby power
0.04W / 0.04W
(For 100 VAC/For 230 VAC)
Output capacity
Continuous
(natural/forced air cooling)
170W/305W
Peak **400W**

Fanless & thin
1U size power supply

A model capable of addressing power failures by connecting a battery pack will be added.

* Values listed as efficiency and standby power are some examples of actual measurements.

Products with medical standard certification are included.

Some models in the H-series power supplies are approved for the medical standard. Inheriting high efficiency and low standby power of the H-series, they also offer low noise and low leakage current suitable for medical applications.

mHNSP4-1000P series
Large capacity 1000W nonstop power supply
IEC60601-1 Ed.3 (MOOP) approved

Continuous **822W** Peak **1000W**

mHPCSF-400P-X2S1
Large capacity SFX power supply
IEC60601-1 Ed.3.1 (MOOP) approved

Continuous **310W** Peak **400W**

ATX power supply units with IEC60601-1 Ed.3 (MOPP: Means of Patient Protection) certification are also available.

mNSP3-450P series
Nonstop ATX power supply
IEC60601-1 Ed.2, Ed.3 (MOPP) approved

Continuous **300W** Peak **450W**

mPCSA-500P-X2S
High reliability ATX power supply
IEC60601-1 Ed.2, Ed.3 (MOPP) approved

Continuous **301W** Peak **500W**

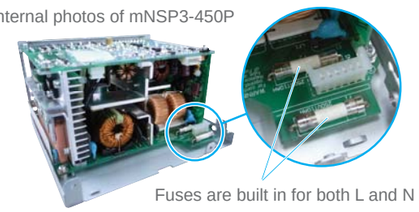
If the power supply unit does not support the medical standard

Addition of a safety standard approved fuse or circuit breaker is required for both L and N lines. → If the power supply supports the medical standard: Built-in dual fuse

Addition of an insulated transformer for medical use is required to address leakage current, creepage distance and withstand voltage. (An insulated transformer satisfying IEC60601-1 is required.) → Internal circuitry of the power supply unit has the withstand voltage and creepage distance equivalent to those of an insulated transformer for medical applications.

Use of the m-series (medical standard approved) eliminates the need for an external fuse or insulated transformer in applying for the medical standard. In addition, it is also possible to reduce the size and cost of the device in comparison with power supply units that are not approved for the medical standard.

Internal photos of mNSP3-450P



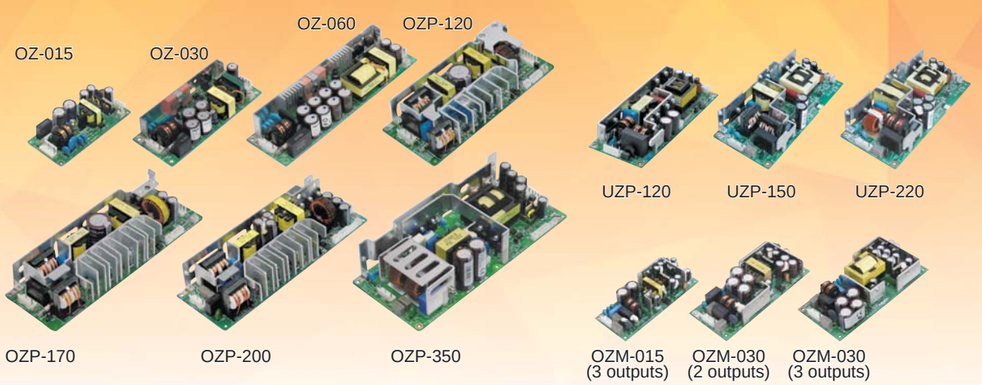
Fuses are built in for both L and N lines

Special feature, general purpose power supply units

Board type AC-DC switching power supply units

Outstanding reliability and better functionality than competitors'

Nipron's board type AC-DC switching power supply units, OZ/OZP/OZM/UZP series, are all designed with a focus on their reliability and functionality. A wide variety of models are offered, including those supporting standby output and backup for instantaneous power failures and blackouts.



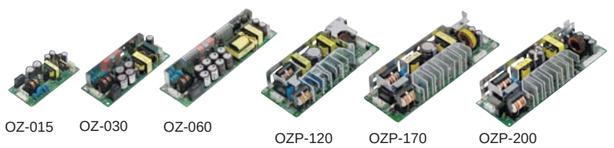
Board type AC-DC switching power supply unit lineup

OZ/OZP series

Input: 85-264 VAC (applicable worldwide)

Name of series	Output voltage (single output)	Maximum output	Peak output	Efficiency*1	Size (W×H×D)	
OZ-015	+3.3V +5V +12V +15V +24V	9.9 - 16.8W	- W	80% typ	Without chassis and cover:50×28×105	With chassis and cover:57×36×125
OZ-030	+3.3V +5V +12V +15V +24V	19.8 - 31.2W	- W	81% typ	Without chassis and cover:55×28×133	With chassis and cover:65×36×163
OZ-060	+3.3V +5V +12V +15V +24V	39.6 - 60W	- W	83% typ	Without chassis and cover:55×32×195	With chassis and cover:65×42×225
OZP-120	+12/15V*2 +24V +30/36V*2 +48V	120 - 122.4W	180 - 216W	85% typ	Without chassis and cover:73×35×180	With chassis and cover:83×45×210
OZP-170	+12/15V*2 +24V	168W	270 - 300W	86% typ	Without chassis and cover:73×40×222	With chassis and cover:83×51×252
OZP-200	+3.3V +5V +12V +15V +24V +36V*3 +48V	132 - 201.6W	198 - 403.2W	90% typ	Without chassis and cover:73×41×222	With chassis and cover:83×51×252

*1 Input: 200–240 VAC, Output: rated output of 24 V *2 Output select type *3 The 36 V output may be used as a 30 V output power supply by adjusting the volume.



■ Features

- Conducted emission level of VCCI Class B satisfied for the power supply unit alone
- Use of double sided through-hole printed circuit boards
- Long-life design expected to last more than ten years

■ Offers a backup power for blackout

Blackout backup supported by connecting a battery pack dedicated for the unit

OZP-120/170 12 V and 24 V supported

[Battery pack model]

For 12 V:BS24A-H12/2.0L For 24 V:BS14A-H24/2.5L

■ Offers a backup power for instantaneous power failure

Instantaneous power failure backup supported by connecting a capacitor pack dedicated for the unit

OZP-200 series supported

[Capacitor pack model]

BS13A-EC400/422F

■ Supports 5 V and 12 V standby power supply

Standby power supply possible by connecting a standby power supplyunit dedicated for the unit

OZP-200 series supported

[Standby power supply unit model]

For 5 VSB:PS-10WP-5VSB

■ Medical standard approved mOZP series

Name of series	Output voltage (single output)	Maximum output	Peak output	Medical standard IEC60601-1		
				Ed.2	Ed.3(MOPP)	Ed.3(MOOP)
mOZP-200	+3.3V +5V +12V +15V +24V +36V +48V	132 - 201.6W	198 - 403W	-	-	○

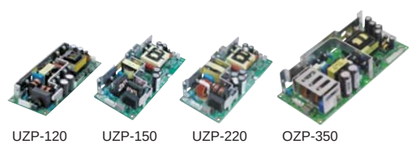
Ultra-high efficiency! UZP/OZP 350 is an amazing product! *http://www.nipron.com*

UZP/OZP series (Low heat generation type)

Input: 85-264 VAC (applicable worldwide)

Name of series	Output voltage (single output)	Maximum output	Peak output	Efficiency*1	Size (W×H×D)	
UZP-120	+12V +24V	100.8 - 120W	200.4 - 201.6W	94% typ	Without chassis and cover:62×27×155	With chassis and cover:72×38.8×185
UZP-150	+12V +18V +24V +48V	150 - 153.6W	400.8 - 401.4W	91.5% typ	Without chassis and cover:75×35×160	With chassis and cover:83.8×45×188
UZP-220	+12V +18V +24V +48V	180 - 223.2W	400.8 - 401.4W	93.5% typ	Without chassis and cover:75×36×160	With chassis and cover:83.8×45×188
OZP-350	+12V +15V +24V +30V +36V +48V	300 - 352.8W	504 - 601W	94% typ	Without chassis and cover:95×47×222	With chassis and cover:107×57×252

*1 Input: 200–240 VAC, Output: rated output of 24 V



ニプロンが放つ 凄い奴！
Amazing Product from Nipron!

■ Features

- The power supply unit alone satisfies the VCCI Class B conducted noise emission.
- Low heat generation by the adoption of a high efficiency circuit
- Use of double sided through-hole circuit boards
- Long-life design expected to last more than ten years

■ Offers a backup power for blackout

Blackout backup supported by connecting a dedicated battery charger and battery

UZP-120/220 series supported

[Charging/discharging board model]

BS27A-P350/12V

■ Recommended battery supplier: GS Yuasa

Model	Capacity	Type	Size (W×H×D)
PXL12023	12V 2.3Ah	Lead-acid battery	34×60×178
PXL12050	12V 5Ah	Lead-acid battery	70×102×90

- If any other lead-acid battery than above is connected, a customer is requested to perform operation verification in advance. • A lead-acid battery of up to 12 V 5Ah can be connected.
- Since it is also possible for our company to provide it, please contact us.

UZP-120/220 series supported

[Battery model]

BS28A-H350/2.5L (Under development)

■ Offers a backup power for instantaneous power failure

Instantaneous power failure backup supported by connecting a dedicated capacitor pack and unit

OZP-350, UZP-120/220 series supported

[Capacitor pack model]

BS13A-EC400/422F

UZP-120/220 series supported

[Capacitor board model]

CB03A-EC400/801F

OZP-350(-*SEB) series supported

[Capacitor unit model]

CB01A-EC400 series

■ Supports 5 V and 12 V standby power supply

Standby power supply possible by connecting a standby power supplyunit dedicated for the unit

OZP-350 series supported

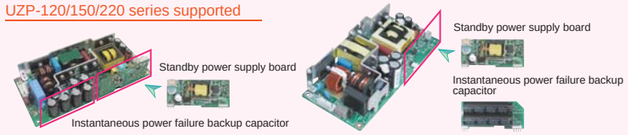
[Standby power supply unit model]

For 5 VSB:PS-10WP-5VSB For 12 VSB:PS-10WP-12VSB

■ Standby power supply and instantaneous power failure backup capacitor supported

Standby power supply and instantaneous power failure backup supported by connecting a standby power supply board and instantaneous power failure backup capacitor dedicated for the unit

UZP-120/150/220 series supported



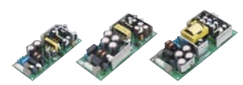
■ Medical standard approved mUZP/mOZP series

Name of series	Output voltage (single output)	Maximum output	Peak output	Medical standard IEC60601-1		
				Ed.2	Ed.3.1(MOPP)	Ed.3.1(MOOP)
mUZP-120	+12V +24V	100.8 - 120W	200.4 - 201.6W	-	-	○
mUZPT-120	+12V +15V +24V	100.8 - 120W	200.4 - 201.6W	○	○	○
mUZP-150	+12V +18V +24V +48V	150 - 153.6W	400.8 - 401.4W	○	○	○
mUZP-220	+12V +18V +24V +48V	180 - 223.2W	400.8 - 401.4W	○	○ (Ed.3)	○ (Ed.3)
mOZP-350	+12V +15V +24V +30V +36V +48V	300 - 352.8W	504 - 601W	○	○	-

OZM series (Multiple output type)

Input: 85-264 VAC (applicable worldwide)

Name of series	Model	Output voltage (multiple output)	Maximum output	Size (W×H×D)
OZM-015	OZM-015-0312N12	+3.3/+12/-12V	13.8W	Without chassis and cover:50×28×127 With chassis and cover:57×38×147
	OZM-015-0315N15	+3.3/+15/-15V	14.1W	
	OZM-015-0512N12	+5/+12/-12V	17.2W	
	OZM-015-0515N15	+5/+15/-15V	17.5W	
OZM-030 (3 outputs)	OZM-030-0312N12	+3.3/+12/-12V	29.1W	Without chassis and cover:65×31.5×140 With chassis and cover:72×38×160
	OZM-030-0315N15	+3.3/+15/-15V	29.4W	
	OZM-030-0512N12	+5/+12/-12V	34.2W	
	OZM-030-0515N15	+5/+15/-15V	34.5W	
OZM-030 (2 outputs)	OZM-030-12N12	+12/-12V	36W	Without chassis and cover:55×28×133 With chassis and cover:65×36×163
	OZM-030-15N15	+15/-15V	36W	



■Features

- High efficiency achieved for all series with a synchronous rectification method
- Use of double sided through-hole circuit boards suitable for industrial applications
- Low noise & low leakage current (The board alone satisfies VCCI Class B.)
- Medical standard IEC60601-1 Ed.3 (MOOP) compliant

Handle blackouts & instantaneous power failures with switching power supplies with backup features *http://www.nipron.com*

Special feature, general purpose power supply units

Unit type AC-DC switching power supply

Single output power supply unit with excellent cost performance and advanced features

GPSA Series

The GPSA series is a line of unit type single output power supply unit that offer a performance, features and reliability at a level superior to those of common high-end products. With a flexible and optional modification, the products satisfy a variety of customers' needs.

GPSA-360

Continuous:360W
Peak :480W
- 600W

GPSA-600

Continuous:600W
Peak :960W
- 1440W

GPSA-1000

Continuous:1008W
Peak :1320W
- 2016W

GPSA-1500

Continuous :1056W
- 1632W
Peak :1320W
- 2112W

GPSA-5000

Continuous:4800W
- 4992W
Peak :6000W

小さな巨人 Small Giant

Unit type AC-DC switching power supply lineup

Unit type AC-DC single output power supply GPSA series

Name of series	Output voltage (single output)	Maximum output	Peak output(For 100 VAC)	Peak output(For 200 VAC)	Size (W×H×D)
GPSA-360	+12V +24V	360W	480 - 499.2W	480 - 600W	41×128×230
GPSA-600	+12V +24V +36V +48V	600W	960 - 1200W	1200 - 1440W	61×128×240
GPSA-1000	+24V +48V	1008W *1	1320W *2	2016W *3	61×128×240
GPSA-1500	+24V +48V	1512 - 1632W *4	1320W	2040 - 2112W	82×128×250
GPSA-5000	+48V +96V	4800 - 4992W *5	-	6000W *5	198×125×314

*1 With a 115 VAC input (907 W with a 100 VAC input) *2 With a 115 VAC input (1188 W with a 100 VAC input) *3 With a 240 VAC input
*4 With a 200 VAC input (1056 W with a 100 VAC input) *5 With a three-phase 180–240 VAC input

GPSA-360 series

Input: 85-264 VAC (applicable worldwide)

■Features
- The power supply unit alone satisfies VCCI Class B conducted noise emission.
- Low leakage current (0.10 mA with a rated load at 100 VAC)
- Long-life design expected to last more than ten years

■ Offers a backup power for blackout

The 24V output model supports blackout backup by connecting a battery pack dedicated for the unit

[Battery pack model]
For 24 V:BS14A-H24/2.5L

■ Medical standard approved models

Name of series	Output voltage (single output)	Maximum output	Peak output	Medical standard IEC60601-1		
				Ed.2	Ed.3(MOPP)	Ed.3(MOOP)
mGPSA-360	+12V +24V	360W	480 - 600W	○	-	○

GPSA-600 series

Input: 85-264 VAC (applicable worldwide)

■Features
- Supports the peak power output 2.4 times greater than the rating
- Supports parallel operation
- The load factor of 100% achieved even at the ambient temperature of 50ºC
- Compliant the ErP directive with its low standby power consumption

■ Offers a backup power for blackout

The 24V output model supports blackout backup by connecting a battery pack dedicated for the unit

[Battery pack model]
For 24 V:BS14A-H24/2.5L

Small but large capacity, Small Giant GPSA series http://www.nipron.com

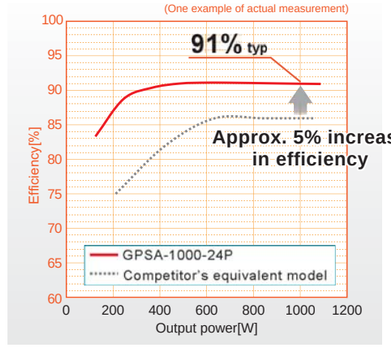
GPSA-1000 series

Input: 85-264 VAC (applicable worldwide)

Small & large capacity power supply unit supporting a high peak power

■Efficiency graph [For 230 VAC]

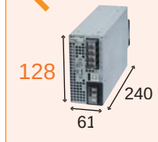
(One example of actual measurement)



■Downsized and high peak power output achieved

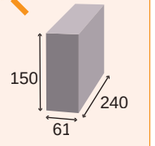
□Comparisons with a competitor's 1000 W power supply unit
[comparisons made with a 200-240 VAC input and a 24 V output]

GPSA-1000 Series



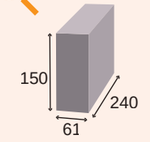
Continuous output:1008W
Peak output:2016W

Competitor's equivalent "A"



Continuous output:1056W
Peak output:1224W

Competitor's equivalent "B"



Continuous output:1008W
Peak output: - W

■The highest power density and efficiency in the class

*Based on a research made by Nipron

The max. efficiency of 91% achieved while limiting the heat generation and reducing the size. Despite its small housing of 61×128×240, a high level of output power is available --- 1008 W rated/1320 W peak with a 115 VAC input and 2016 W peak with a 240 VAC input.

■The power supply unit alone satisfies VCCI Class B.

The leakage current has been reduced to 0.24 mA for 100 VAC and 0.55 mA for 240 VAC. The conducted noise emission clears VCCI Class B without any added circuit. This eliminates the need for installing an external noise filter and, thus, helps reduce the cost and man-hour.

(One example of actual measurement)

■Cooling fans are available in either exhaust or inlet type.

■Parallel operation supported

■Operable up to the ambient temperature of 70ºC (derating required)

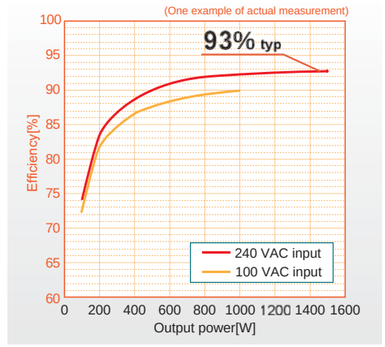
GPSA-1500 series

Input: 85-264 VAC (applicable worldwide)

High performance power supply units with standard features of parallel operation and various detection signals

■Efficiency graph

(One example of actual measurement)



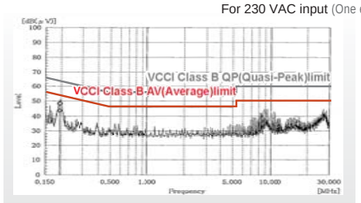
■High efficiency achieved by the adoption of a full-bridge phase shift circuit

A high efficiency of 93% achieved with a 240 VAC input. By suppressing the heat generation from the power supply, it is possible to extend the service life of not only the power supply unit but also the entire system.

■The power supply unit alone satisfies VCCI Class B.

The need for installing an external noise filter is eliminated and, thus, helps reduce the cost and man-hour. In addition, the leakage current has been reduced to 0.29 mA with a 100 VAC input and 0.83 mA with a 240 VAC input to reduce the noise. (One example of actual measurement)

For 230 VAC input (One example of actual measurement)



■Parallel operation supported

■The output terminals are selectable between copper bar and terminal block.

■Constant current and 60 V models are also included in the lineup.

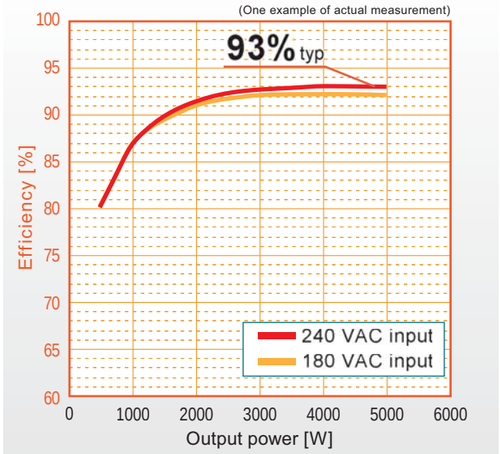
The support of a high peak power makes it optimum for motors. http://www.nipron.com

GPSA-5000 series Input: Three-phase 170–264 VAC

Overwhelming cost performance unheard of on a large power supply unit

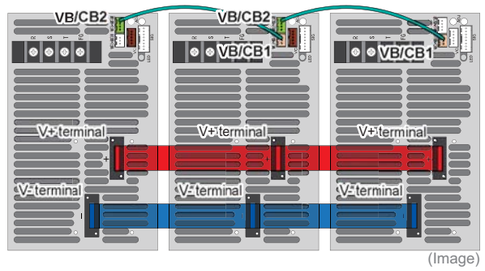
A large capacity power supply unit with a continuous supply of 5000 W is available as a standard model. Unlike a custom-made power supply unit, it helps to reduce the cost significantly as the development and testing expenses can be held in check.

■Efficiency graph [GPSA-5000-96P]



■Parallel operation makes it possible to scale up the capacity to the load.

If the power capacity is insufficient, it is possible to increase the capacity by connecting power supply units in parallel. Connections of the output voltage balance (VB) and output current balance (CB) signals makes it possible to provide a stable power by balancing the output voltage and current of each unit.



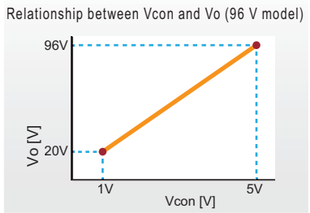
(Image)

■Supports the output voltage control signal

It is possible to control the output voltage by feeding an external voltage input of 1–5 V (Vcon).

Variable voltage range

20-96V
20-55V

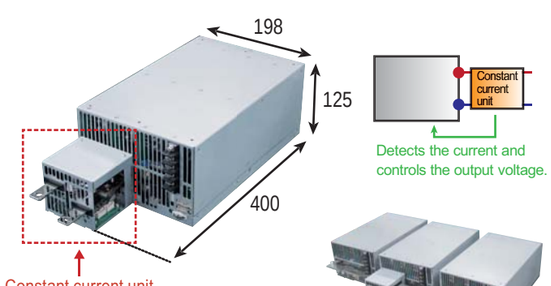


■Conversion to a constant current power supply made possible by adding a unit

Make a large capacity insulated charger compatible with a three-phase input at a low cost.

An addition of an optional unit to GPSA-5000 will convert the unit to a constant current power supply.

- Constant voltage setting: 60–96 V (96 V model)
- Constant current setting: 50–150 A (three 96 V models in parallel connection)



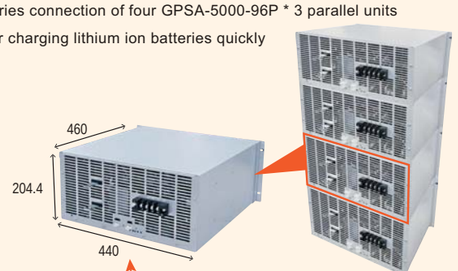
Three power supply units in parallel connection

GPSA-5000-96P x 3 units plus constant current unit built-in model can be ordered.

Used as a 1C/2C fast charger for a lithium ion battery

Series connection of four GPSA-5000-96P * 3 parallel units

For charging lithium ion batteries quickly



An example of 60 kW construction

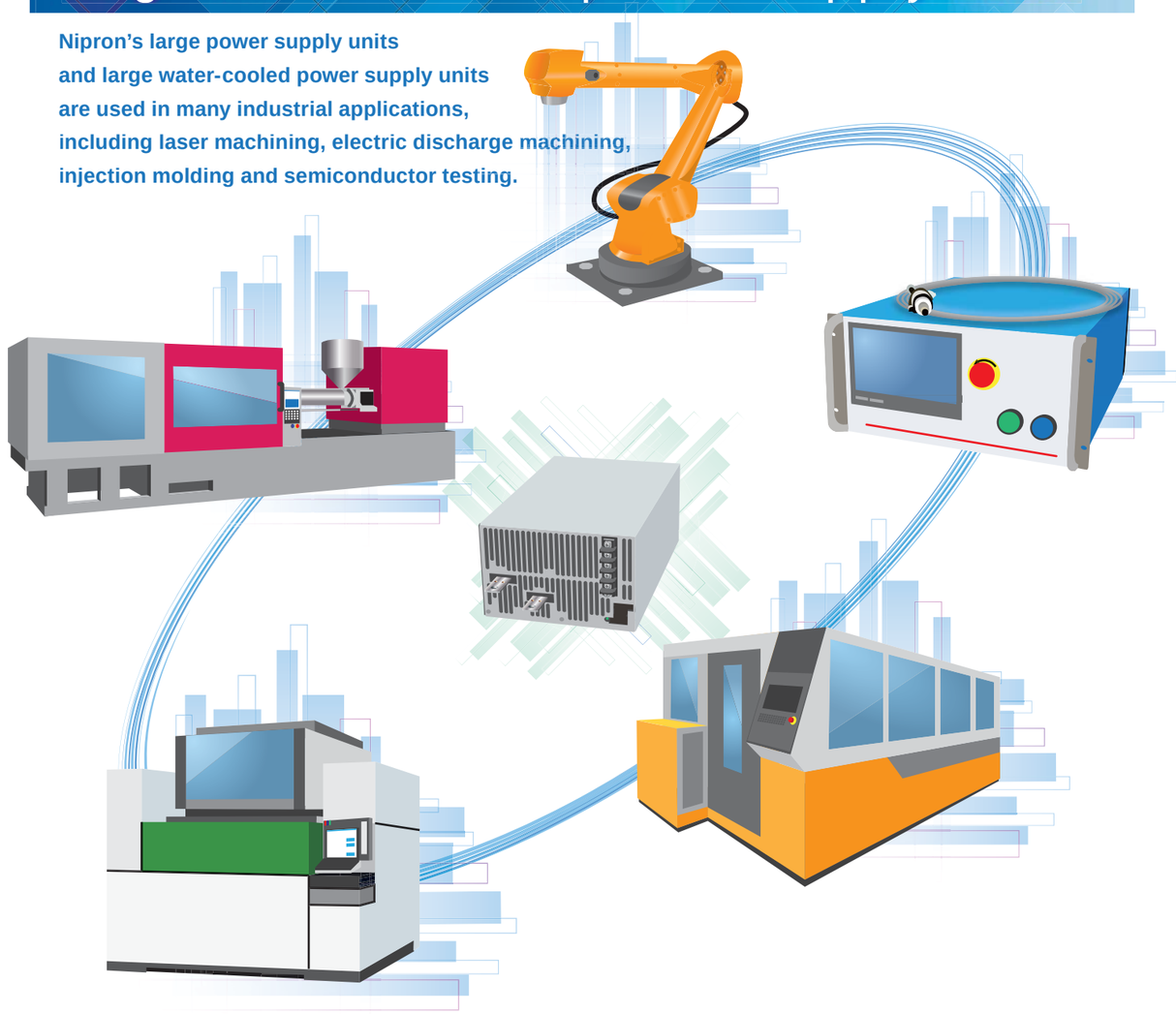
Three parallel units of GPSA-5000-96P plus constant current control unit built in model

GPSA-5000, a large capacity model comes as a standard model. ***http://www.nipron.com***

Highly acclaimed by manufacturers in and out of the country.

Nipron' s large power supply units large water-cooled power supply units

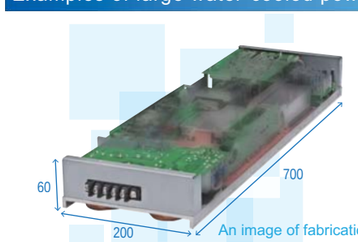
Nipron's large power supply units and large water-cooled power supply units are used in many industrial applications, including laser machining, electric discharge machining, injection molding and semiconductor testing.



Different types of power supply units can be proposed depending on the application.

Please do not hesitate to consult us.

Examples of large water-cooled power supply unit fabrication



An image of fabrication example B

	Fabrication example A	Fabrication example B	Fabrication example C	Fabrication example D
Input voltage	Three-phase 200 VAC	Three-phase 200 VAC	Three-phase 200 VAC	Three-phase 400 VAC
Output voltage	DC24V	DC80V	DC80V	DC80V
Output current	100A	60A	50A	60A
Output power	2.4kW	5kW	4kW	5kW

We propose power supply units optimum for customers' system. ***http://www.nipron.com***

Maximize the output of a photovoltaic power generation.

PV Maximizer

With the PV Maximizer (PVM), sufficient power generation can be expected even if panels are installed in spaces with poor conditions thanks to the MPPT control performed for each string.

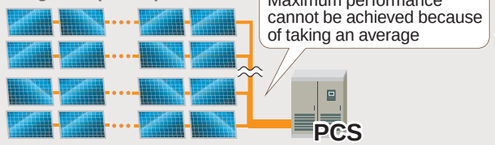
Why does the generated power increase by introducing the PV Maximizer (PVM)?

It is easy to understand the reason with an analogy of study!

Common photovoltaic system

A power converter of central control, which is the most widely used type, performs MPPT control for 30 to 50 strings with a single power converter. Therefore, the MPPT control is performed so that it works on the average power generated by different strings. This limits the power generation of a string capable of producing a higher power because the control is made based on a lower level of power production. A distributed power converter system, which is drawing a lot of attention recently, is a system that reduces the loss in produced power due to different levels of power generation by arranging strings in multiple groups.

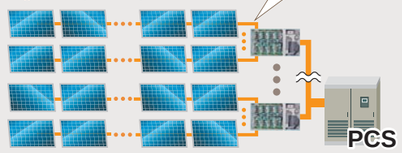
An image of a power plant



Photovoltaic power generation system with the PVM

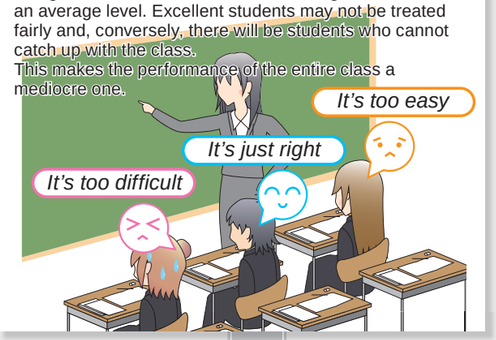
Because the PVM performs its MPPT control for individual strings, it is possible to maximize the output of each string even if there are differences in the performance between strings due to different reasons.
Also, the PVM has a track record of connections with different power converters from many suppliers.

An image of a power plant



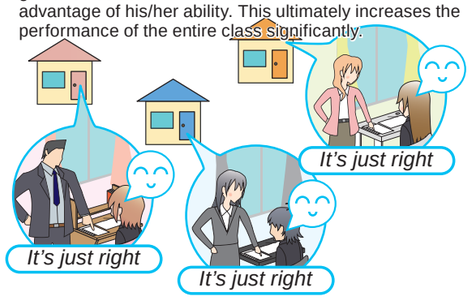
Central-type (In analogy ...)

In a school where classes (MPPT control) are provided for a large number of students, lectures are given based on an average level. Excellent students may not be treated fairly and, conversely, there will be students who cannot catch up with the class.
This makes the performance of the entire class a mediocre one.



PV maximizer (In analogy ...)

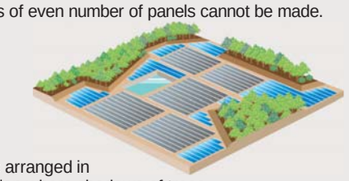
By hiring a tutor for each student, it is possible to provide guidance suitable for each student and take full advantage of his/her ability. This ultimately increases the performance of the entire class significantly.



Utilize the improvement brought about by the PVM to make the most of available spaces.

Panel arrangement to take full advantage of available spaces

Sufficient power generation can be expected by installing panels in a small space that has been overlooked or in a location where shadows of trees and mountains will be cast or where series connections of even number of panels cannot be made.

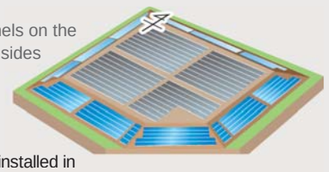


Panels arranged in a location where shadows of trees and mountains will be cast or where

Concentrated panel arrangement for all seasons

It is possible to minimize the effects of poor conditions to the panels by introducing the PVM even if panels are arranged on a slope with poor conditions.

Adding panels on the slope in all sides



Panel installed in locations with poor insolation

PV Maximizer capable of maximizing the power generated http://www.nipron.com

Remote PV characteristics monitoring for all strings in a power plant

PV Guardmyan

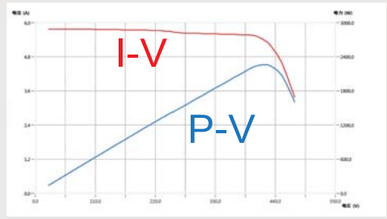
String by string remote monitoring system
With its high precision diagnosis of problems, errors can be reported quickly any time and in any situation.

- It is too troublesome to visit a remote power plant! It also takes a lot of time for measurements even after arriving at the site ...
  - Sometimes, measurements cannot be taken due to a change in the weather after the arrival ...

- Measurements of all strings enabled while staying at home or in an office.
- Self diagnosis suitable for each system with the error diagnosis feature utilizing AI!

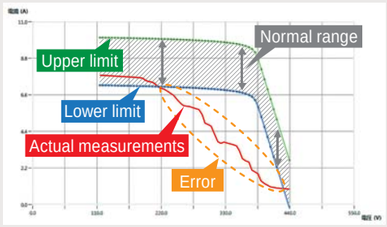
The PV Guardmyan is capable of measuring the I-V and P-V characteristics of the entire power plant remotely, eliminating the need to visit remote power plants.
In addition, there is no loss in the power generation during the measurement because measurement is possible while power is being generated.

Real-time power generation monitoring on the cloud



The accuracy of monitoring is high because the I-V and P-V curves can be obtained remotely and early detection of problems is enabled.

Power generation problem diagnosis on the cloud utilizing AI (under development)

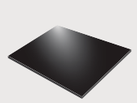


By learning data accumulated on the cloud, diagnoses suitable to respective systems are performed.

Continuous sale of power for an extended period with panel overloading + power storage system

PV eXpander

Materialize a power plant that is capable of selling power continuously and for an extended period with an overloading of 5 to 10 times the PCS rating and storage of power.



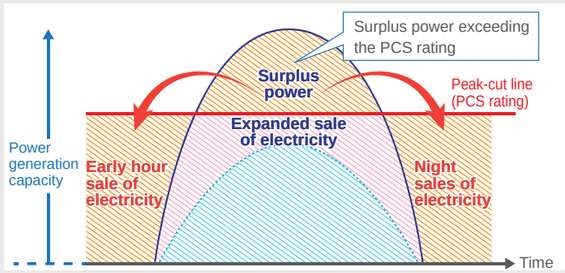
Solar cell

PV Maximizer

Power storage system

The contribution for grid connection can be saved with an overloading of 5 to 10 times greater than the PSC rating and a high income is enabled by storing the excess power in a rechargeable battery and continue selling power up to 24 hours. It is also possible to save the cost of land improvement because the PV Maximizer makes it possible to install panels on a ground with poor conditions. Even if there is a limitation in the connection capacity of PCS, the power generation can be controlled optimally with the built-in power supply to avoid overloading the PCS.

A high income is enabled by storing excess power exceeding the PCS rating and selling the stored power continuously up to 24 hours.



PV Guardmyan brings about a revolution in O&M http://www.nipron.com

Invitation to exhibition

Invitation to the INT'L SMART GRID EXPO

8th INT'L SMART GRID EXPO

Dates: February 28 (Wed)–March 2 (Fri) 2018
Venue: Tokyo Big Sight East Hall 1
Booth No: E4-30

Nipron will participate in the 8th INT'L SMART GRID EXPO, which will be held from February 28 to March 2 at Tokyo Big Sight.
It is an international exhibition and business opportunity, which attracts all products and technologies required to construct a smart grid (IT solution for the power systems). At the Nipron booth, the PV Maximizer, which restrains drops in photovoltaic power generation caused by various reasons to maximize the output, the PV eXpander, an excess power storage system that enables continuous sale of power up to 24 hours, the PV Guardmyan, which performs remote monitoring and automatic check on a variety of characteristics, eliminates losses and wastes by daily full automatic diagnosis and enables optimum operation of power plants will be exhibited, including some demonstrations. Also, presentations of these products, which were popular in past exhibitions, will be made at the booth. There will be panels introducing various installations made in the past and, in addition, an opportunity to perform a simulation at the simulation corner will be provided to customers who are interested in our products. If you plan to visit the exhibition, do not forget to visit Nipron's booth.

* If you are interested, an invitation to the exhibition can be sent. Please do not hesitate to contact us.
WEB Support Team, Nipron Co., Ltd.

A report on the Management Policy Presentation

On October 27, 2017, the 14th Management Policy Presentation was held at Miyako Hotel New Alchaic after a private exhibition on photovoltaic products held at the Nipron head office inviting suppliers, manufacturers, bankers and educators. We would like to thank everybody who spared their time to attend the meeting.

Private exhibition

In the private exhibition held in the morning at the head office, a number of products made for photovoltaic power generation were exhibited with panels introducing past installations, demonstrations on power storage system and unique presentations that were easy to understand. With a tour of factory producing quality products daily offered after the lunch, we had an impression that the guests were satisfied with the experience.


Demonstration of power storage system


Presentation


Factory tour

The 14th Management Policy Presentation

At the management policy presentation, management policies, R&D policies and business policies were presented by the heads of R&D department, engineering department, Green Power Business, in addition to Mr. Sakai, President and Representative Director.
There was also a lecture titled "Thoughts on EVs and Lithium-ion Batteries" provided by Mr. Fumio Ohtsubo, Special Advisor, Panasonic Corporation. The reception after the policy presentation provided an excellent opportunity to exchange opinions, with everybody enjoying foods and conversations. Through the reception, we have an impression that we have been able to build stronger ties with the guests.
Nipron will continue its pursuit of products of future and make every effort to offer better products to customers.

Greeting by Mr. Sakai, President and Representative Director


A scene from the reception

A diversity of power supply unit is available. First of all please telephone us. http://www.nipron.com

President talks! TOP sales corner.

26th RE 100: Targeting a 100% Renewable Energy Rate by 2050

Following the ratification of the Framework Convention on Climate Change known as the Paris Agreement, many nations are participating in a wave of CO2 reduction initiatives with the ultimate goal of substituting 100% of fossil fuel consumption with renewable energy sources. After lagging behind initially, Japan has started to take steps toward its 2050 target of 70%, with 20% (about 200 GW) of domestic electricity supply to be generated through photovoltaic power generation (representing about 40 GW as of 2017). Following revision of the FIT in Japan, the price of electricity power per kWh of photovoltaic power generation fell further from 21 yen, supporting the pessimistic view that the photovoltaic power generation boom had dissipated. However, a growing number of renowned enterprises around the world, including Japanese companies, are participating in the RE 100 initiative. Going forward, solar power stations about ten times the scale of existing plants will be constructed at more than double the rate of the past, and if one wonders whether sufficient land is available in our small country, it seems that it simply depends on how innovative we become. If that is the case, further increasing the panel installation rate and boosting the power generation efficiency in order to increase the land use rate even more are prerequisites. Furthermore, from the viewpoint of O&M, accurate monitoring of power generation by string is important.
Therefore, the PV Maximizer (a multiplex DC-DC converter with a step-up MPPT), whose performance record continues to grow, is the perfect solution to this demand. Since it is configured with power collection box and junction box functions, it limits the total outlay in order to minimize costs. Additional features and applications are listed below.

1. It is possible to increase the power generation efficiency by 5 to 10% or even more because all generated power is boosted and maximized, with no suppression of power generation, even considering conditions such as variation per string, temperature, and installation angle. Moreover, no problems arise even when different types of panels or fractional numbers of panels are incorporated.

2. Shade from trees and electric wires as well as wildlife droppings and dirt on the panels can be minimized, thus greatly reducing power generation loss.

3. With the MPPT control function of the integrated multiplex DC-DC converter, the power generation monitoring function (PV Guardmyan) utilizing the output power detection function can be utilized inexpensively as an option; as a result, high-precision power monitoring and failure analysis can be performed with AI, while O&M cost can be reduced.

4. The use of items 1 and 2 above are recommended as a way to ensure effective use of the land, including the East-West arch-shaped panel arrangement on South-North slopes. This can be considered a dense panel arrangement suitable for all four seasons.


Illustration of installation utilizing all four compass points

Setsuo Sakai
Representative Director & President, Sales General Manager

A report on a visit to the USA

A stepping stone for the expansion of global business

From November 8 to 15, President Sakai made a trip to the USA, which is considered a stepping stone for the future expansion of global business, accompanied by two other employees. In the trip, which featured visits to GE Healthcare, who started mass production of a product using our power supply unit for medical applications, and to our sales representative in the USA, Braemac. Certain levels of achievements were made through discussions held at the respective companies. At GE Healthcare, we visited their R&D and main production facility of C-Arm in Salt Lake City to confirm the progress of above mentioned project with the power supply unit for medical applications and present some new products from Nipron. In addition, after gaining better understanding on GE Healthcare products through a presentation provided by them, further discussion was held to have our products adopted for their future products under development. During the visit, we were also introduced to persons in charge of selecting power supply units at the GE head office. Meanwhile, at Braemac, an energetic exchange of opinions took place on future sale of power supply units, approaches to major laser device manufacturers and the sale of Nipron's new products to confirm future plans between the parties.
The goal of expanding global business awaits after achieving the mark of ten billion yen. The global marketing team is already on the move setting an eye on the future. We hope everybody will have a high expectation for Nipron's future global business expansion.

GE Healthcare

Braemac

Keysight Technologies

"When you are in trouble with power supply," please consult with Nipron. http://www.nipron.com

The Nipron Story, by Our President

Make 2018 the Year We Shine!

Happy New Year, everyone! I hope that you and your families enjoy good health and prosperity in the year ahead.
On New Year's Day 2018, I participated in worship at sunrise and greeted the sunny dawn of a very pleasing new year.

This year, I am confident that a strong economy will make this a year in which our company truly shines. Around February of last year, when a report on China's economic recovery was released, orders for our products began to increase by 20 to 30% compared with the same period a year earlier. From June and July to the end of the year, our orders sharply increased by nearly 50%. We even started to hear some complain of too much success. The difficulty of obtaining electronic components — especially semiconductors — at that time began to exert a drag on our production. The Matsuzaka Dream Factory (MDF), which had been put back into service in July 2015, returned to full operation providing production capacity as a specialized factory for small general-purpose power supplies, so we do not expect any such shortages for the time being. Meanwhile, in March of this year, we will start construction of a 6,600-square-meter building located on land adjoining the Hanshin Dream Factory (HDF). It is scheduled to be completed in September, creating a dedicated factory for green power supplies (GP) and large-scale power supplies to meet rapid demand for machine tool applications. Production space will double as we prepare a production system capable of reaching 10 billion yen in sales. Production space will double as we prepare a production system capable of reaching 10 billion yen in sales.
Although the economic recovery has provided the background for this increase in orders, for two or three years now we have been focusing on rapid growth in sales of large power supplies, both standard products as well as custom-made power supplies.

Artist's impression of annex to be constructed at Hanshin Dream Factory

The rapid growth in orders from major manufacturers has continued apace thanks to the introduction of a new model of electric power supplies for electric discharge machines — which have conventionally captured a high market share — as well as the successful yet highly difficult development of large-scale power supplies for fiber lasers, a product that has been expanding rapidly in recent years. Similarly, we have received a surge in orders for the UZP Series (Amazing Product) that was developed in recent years. It is used in the medical equipment field and as a motor power source for transportation systems, and demand is exploding for use in automated merchandise warehouses used by mail-order companies such as Amazon. At the same time, we are experiencing rapidly increasing orders for our green power supplies (PV Maximizer and PV eXpander power storage systems), which are coming into full bloom thanks to continued investment focused on next-generation businesses. Along with our policy of keeping all our manufacturing 100% in-house in Japan, we have always pursued proactive rationalization and capital investment in expanded production; I am concerned, however, about how long this economic trend will last. After summarizing information gathered from various sources since around the end of last year, including stories from other businesspeople in charge of management as depicted in newspapers around the New Year period, we remain bullish about further economic expansion, along with a rising stock market, until 2020, the year of the Tokyo Olympics.

The semiconductor fabrication equipment industry began to strengthen with the emergence of smartphones, as well as the growth in IoT devices and the rapid computerization of automobiles. This was also related to the digital transformation created by VR and AI, all of which are emerging simultaneously. The productivity shortfall (the capability to supply new semiconductor fabrication equipment) became an issue, leading to a shortage of all semiconductor components. At the same time, the global labor shortage in the industrial sector worsened, sparking rapidly growing demand for automation and robotics to enhance productivity. Meanwhile, plant expansions and investment in increased production have been flourishing.

Against this background, it is likely that we will soon enter the era of full-scale deployment of electric vehicles, and the revolutionary shift in the industry is expected to continue. We are confident that the economic boom will continue until 2020. Furthermore, demand has been expanding for our general-purpose compact power supplies for medical devices and transportation equipment. Our goal of reaching 10 billion yen in sales — an objective we have been seeking for many years — is finally coming into view. It appears likely that we will achieve 10 billion yen in sales under our 10th Medium-term Management Plan (spanning the period from July 2017 to June 2020). Meanwhile, the Japanese economy has started to boom due to the success of Prime Minister Shinzo Abe's "Abenomics" policy. While some controversy has arisen in the U.S.A., that country is demonstrating strong economic performance that is driving the world economy thanks to the positive comments and effectiveness of President Donald Trump. China also seems to be having a positive economic impact under the "One Belt, One Road" infrastructure investment strategy advocated by Xi Jinping, General Secretary of the Communist Party of China.
While the Bank of Japan and the Japanese government are thought to be close to declaring their intentions regarding deflation, concerns have arisen regarding the potential adverse effects of the highly relaxed monetary policy and negative interest rates. An exit strategy may have to be hammered out as a result.

To conclude, we are currently commemorating the publishing of Vol. 50 of Nipron Wave, and I will continue to do my best to ensure the publication of Vol. 100. I very much look forward to your assistance at Nipron in the coming year.

Setsuo Sakai
January 2018

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