

# Power supply of varied attainments

## 7 different types of usage available!



“Eco-friendly”, “High reliability”, “Multi functions”  
Ultra-high performance power supply in general-purposes  
for the satisfaction of many users

### OZP-350

Continuous max. **350W / 500W**  
(natural air cooling) (forced air cooling)  
Peak max. **600W**

Product specification	12	24	30	36	48
Model name (OZP-350-)	12	24	30	36	48
Output voltage	12V	24V	30V	36V	48V
Max. current/power (Natural air cooling)	25A / 300W	14.6A / 350.4W	11.7A / 351W	9.8A / 352.8W	7.3A / 350.4W
Max. current/power (Forced air cooling)	36A / 432W	21A / 504W	16.8A / 504W	14A / 504W	10.5A / 504W
Peak current/power (10 sec)	42A / 504W	25A / 600W	20A / 600W	16.7A / 600W	12.5A / 600W
Min. current	0A	0A	0A	0A	0A
Input voltage	85 – 264 VAC (PFC, worldwide range input voltage)				
WxHxD(mm)	95x44x222 (Board mounted type)				
Safety standard	UL/CSA/IEC60950-1 approved CCC scheduled to be approved				

**mOZP-350 is also lined up as medical standard power supply!!**  
Medical standard IEC60601-1 2nd and 3rd approved!!

Ultra-high efficiency and ultra-high reliability AC-DC switching mode power supply OZP-350 is well received from many customers. This time, it is featured as multi specifications power supply that can change its styles for various purposes.

#### Industry-leading level ultra-high efficiency 95% achieved

Amazing high efficiency 95% typ. is achieved with 24V output type. It contributes to energy saving and CO<sub>2</sub> reduction. Compared with the equivalent power supply in competitors, OZP-350 improved approx. 6% efficiency and reduced approx. 55% power loss.

#### Continuous 350W, peak 600W large output capacity\*

It is equivalent size of 240W / 300W power supply in competitors but can output **350W continuous and 600W peak**. In addition, **continuous 500W output at forced-air cooling** is possible so that it is used as high power fanless power supply or replaces unit type power supply. \*Output voltage: 24V min.

#### Standby power at remote OFF is reduced

The reduction of electrical power loss and CO<sub>2</sub> is achieved by suppressing the power consumption in standby mode.

**0.05W typ. at 100 VAC input 0.2W typ. at 200 VAC input**  
(an example of actual measurement)

#### Equipped with current balance circuit and easy to operate in parallel

Since the output voltage volume configuration balances as well, it is enough to set an either voltage. The higher voltage is taken priority and the other is raised to same value.

#### Low noise and low leakage current

Conducted emission **VCCI Class B** passes without external noise filter. It gives a cost reduction for preparing equipment on the user's side. Besides, the leakage current is reduced to **0.06mA typ. at 100 VAC and 0.12mA typ. at 200 VAC**. It achieved both low noise and low leakage current.

#### Various functions can be equipped depends on the usage!! Flexible specification

OZP-350 has many kinds of optional functions. These functions are flexibly equipped for various requirements such as constant current power supply with board unit or such as backup power supply with capacitor package.

#### Input/output terminal is connector type or harmonica terminal type.

#### Selectable Chassis or Cover

Open frame, with chassis, or with chassis and cover are available.

[Open frame]



WxHxD(mm)  
=95x44x222

[With chassis]



WxHxD(mm)  
=107x55x252

[With chassis and cover]

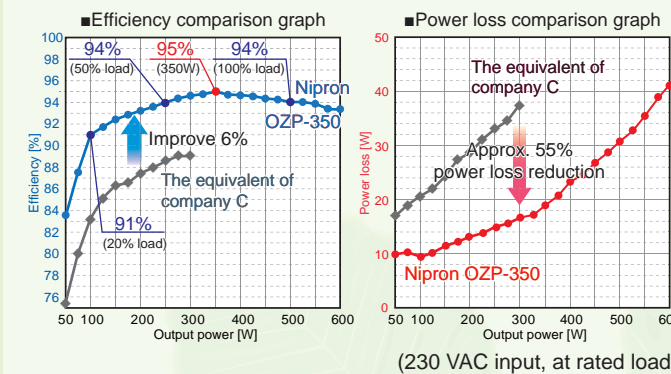


WxHxD(mm)  
=107x57x252

### Eco-friendly specification

#### 95% ultra-high efficiency!! Energy saving and CO<sub>2</sub> reduction!

It improves approx. 6% efficiency compared with the competitor's equivalent. Eco-friendly power supply with the reduction of approx. 55% power loss.



#### Energy saving comparison OZP-350 vs. General switching-mode power supply

Input/output condition	Measured input power (an example of actual measurement)	
Input voltage: 230 VAC	OZP-350-24	317W
Output voltage: 24V	General switching-mode power supply	339W
Output power: 300W		

The difference of input power is **22W**

[Operating condition: 300W output, 24 hours/day, 365 days]

Used 1 unit	Nipron OZP-350-24	General switching-mode power supply	Difference
Efficiency	94.8%	88.9%	5.9%
Electrical power rate	JPY 69,423	JPY 74,241	JPY 4,818
CO <sub>2</sub> emission	1,055kg	1,128kg	73kg

Calculated by JPY 25/kWh, 0.38kgCO<sub>2</sub>/kWh

#### Energy saving calculation (electricity rate/CO<sub>2</sub>)

Annual electrical power rate **JPY 4,818**  
Annual CO<sub>2</sub> emission **73kg**

Although this result is measured by 1 power supply unit, if it is calculated by a few hundred or thousand units, the actual power consumption cost can be considerably reduced.

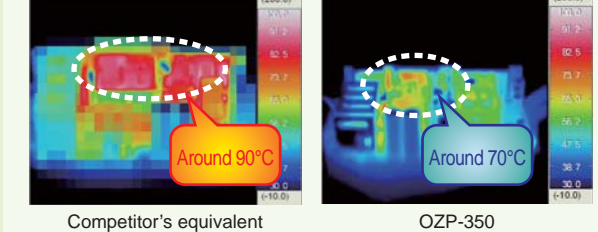
#### Long lifetime with ultra-high efficiency

OZP-350 reduced the power loss and the rise in temperature by its ultra-high efficiency so that large capacity and more than 10 years long lifetime are achieved. It contributes to the environment by decreasing the frequency of replacement due to the failure or short life-span.

\* At 100 VAC input, 350W output, 40°C, and 24 hours/day

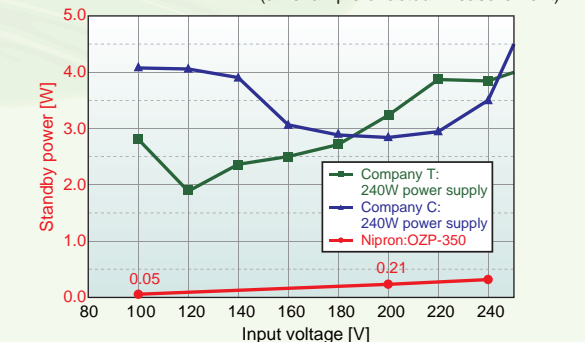
#### Rise in temperature comparison

[Measurement condition: 100 VAC input, 300W load, and ambient temperature 25°C]



#### Ultra-low standby power

**0.05W typ. at 100 VAC input 0.2W typ. at 200 VAC input**  
(an example of actual measurement)

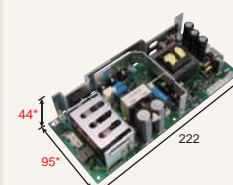


### TYPE 1, 2

#### At parallel operation

- It **changes** into large capacity power supply (**type 1**)
- Continuous output power **changes** into nearly double by forced-air cooling (**type 2**)

Equivalent size of 240W / 300W power supply in competitors!  
More capacity with forced-air cooling!!  
For further power, parallel operation is possible!!!



\* Equivalent size of 240W / 300W products in competitors

#### Output specification at parallel output

	1 unit (normal)	2 units (parallel)	3 units (parallel)
■OZP-350 12V output type			
Used units	1 unit (normal)	2 units (parallel)	3 units (parallel)
Continuous (normal)	300W	540W	810W
Continuous (air cooling)	430W	774W	1161W
Peak	500W	900W	1350W
■OZP-350 24/30/36/48V output type			
Used units	1 unit (normal)	2 units (parallel)	3 units (parallel)
Continuous (normal)	350W	630W	945W
Continuous (air cooling)	500W	900W	1350W
Peak	600W	1080W	1620W

#### VCCI class B compliant measured by single unit

No need for external noise filter  
The cost and man-hour reduced

Furthermore, low leakage current compliant with medical standard

#### The measured value of leakage current

With 100 VAC input⇒0.06mA (at rated load), 0.07mA (at min. load)  
With 200 VAC input⇒0.12mA (at rated load), 0.15mA (at min. load)

#### Other features

- Double-sided PCB with through-holes adopted
- The capacitor package as for instantaneous power failure measure (Refer to p.8)
- Output voltage remote sensing function
- Sound reduction circuit adopted
- Output voltage adjustable volume equipped as standard
- Output ON/OFF control function

## TYPE 3

With constant current control board embedded, OZP-350 **changes** into a constant voltage (CV) / constant current (CC) power supply for battery charging (type 3).

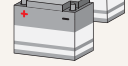
Although OZP-350 is constant voltage power supply, it can be used as constant current power supply with a special PCB. Constant current power supply is required for many equipment such as battery charger, LED display, and chemical equipment. Besides, the voltage/current can be adjusted freely by volume and it has a sensor input part for the thermal compensation of charging voltage. It is best suited for lead-acid battery charger etc.

### Arbitrary current is settable by volume knob!!

Constant current PCB can be set the current value by volume knob. (the voltage is also adjustable)

### Utilizing as charger

Constant current / constant voltage output characteristic is suitable for various battery charger such as lead-acid or lithium ion battery.



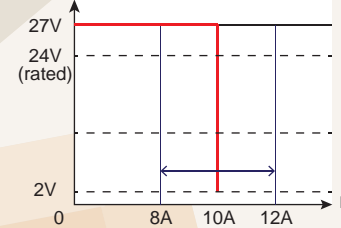
Sensor input part for thermal compensation is equipped in order to control the charging voltage according to the lead-acid battery temperature. It also contributes to the long-lifetime of battery.

### Utilizing as LED display power supply



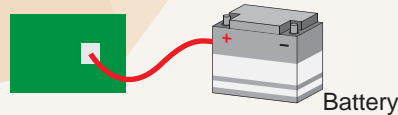
Recently LED is embedded in many kinds of applications and the demand of constant current power supply is increasing as LED display power supply. Just connect the constant current PCB to OZP-350, and high reliability, efficiency, and capacity constant current power supply will be available.

### Constant current / voltage charging characteristic (reference graph)



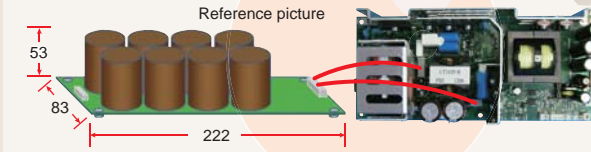
The current is adjustable by volume  
\* Contact us for detailed adjustable current range

Just connecting the harness with thermistor to the sensor input part for the thermal compensation!!



## TYPE 5

Connected with electrolytic capacitor backup unit, it **changes** into a 0.4-1.0 sec backup power supply (type 5).



Dedicated power supply model name: OZP-350-\*\*-\*\*SEB-\*

- ① Output voltage
- ② Input/output terminal
- J: Nylon connector
- T: Block terminal
- ③ Chassis/Cover
- : Without chassis/cover
- C: With chassis
- K: With chassis and cover

Achieving low cost measures for instantaneous blackout. It is required for semiconductor equipment or machine tool etc.

### Rapid charging available

Capacitor package can be charged from AC input within 30 sec.

### Modification for longer backup time is also possible.

Since the PCB design is able to add the extra capacitor, the backup time can be modified to be longer than 1 sec (at 350W load) if required.

### Capacitor charging completion signal equipped

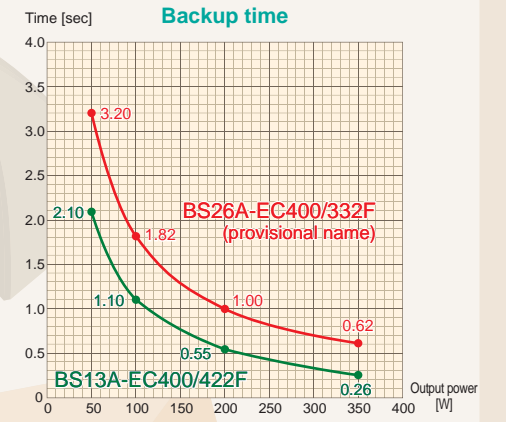
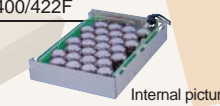
With detecting higher than 300V of capacitor voltage, open collector 'L' signal is delivered. It enables the confirmation of breaking/disconnection of capacitor backup unit and of its failure/degradation. Besides, an initial inspection is also possible.

### Capacitor package is also connectable

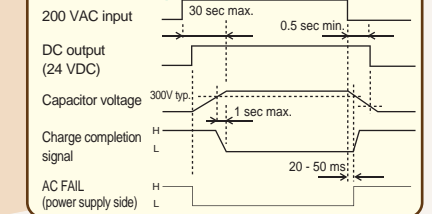
Capacitor package (BS13A-EC400/422F) is also connectable

Model name: BS13A-EC400/422F

- Expected service life 12 years min. (at 40°C)
- Available at both low and high temperature
- 1.4kg lightweight



### Sequence diagram



## TYPE 4

It **changes** into the power supply that has two sets of overcurrent protection (OCP) with timer by connecting an overcurrent limiting PCB (type 4).

A motor rotates at a constant speed but if some abnormal status happens when the motors are not engaged, the rotating force will be increased in order to return to the constant speed and larger current flows. If the motor works with over the rated current, it might be burned out and there is a risk for fire hazard or equipment trouble.

### For the protection against the shaft-locked operation of DC motor

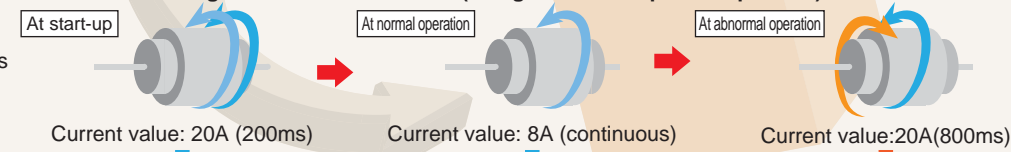
The peak overcurrent at startup operation is not sensed up to the second OCP point. In the case of continuous overcurrent because of a shaft-locked operation and so on, the current can be shut down by arbitrary timer configuration (around 200ms - 5 sec) and current setting in order to avoid the burning of wire, connector, and motor itself.

The set current is adjustable by volume knob  
Timer setting is also modifiable

### Usage example

<Additional PCB setting value>  
First OCP: 15A  
Timer setting: 500ms

In the case of using a motor with 10A rated (using OZP-350 of peak output 25A)

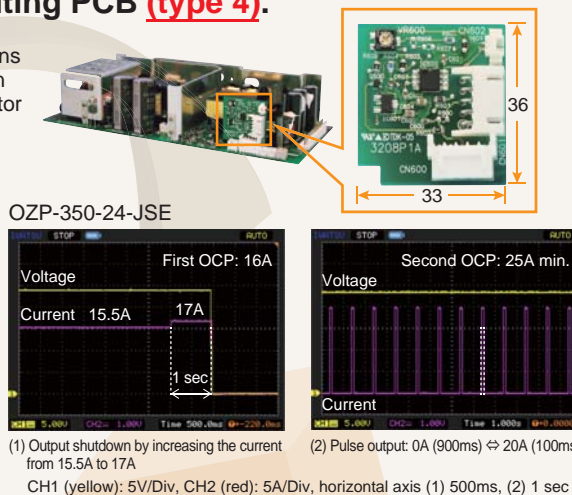


OZP-350 operation status

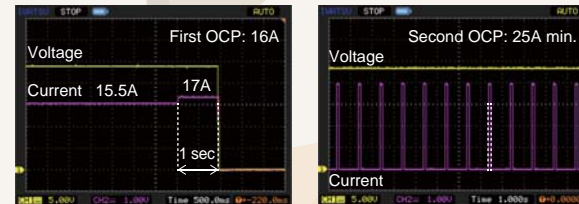
Although first OCP point is exceeded, output **remains** because of the short period

Since it is within the first OCP point (15A), output **remains**.

Since first OCP point and setup time (500ms) are exceeded, output is **shut down**  
When more than 15A current is output longer than 500ms, a limiter control works to shut down the output.



OZP-350-24-JSE



(1) Output shutdown by increasing the current from 15.5A to 17A  
CH1 (yellow): 5V/Div, CH2 (red): 5A/Div, horizontal axis (1) 500ms, (2) 1 sec

## TYPE 6, 7

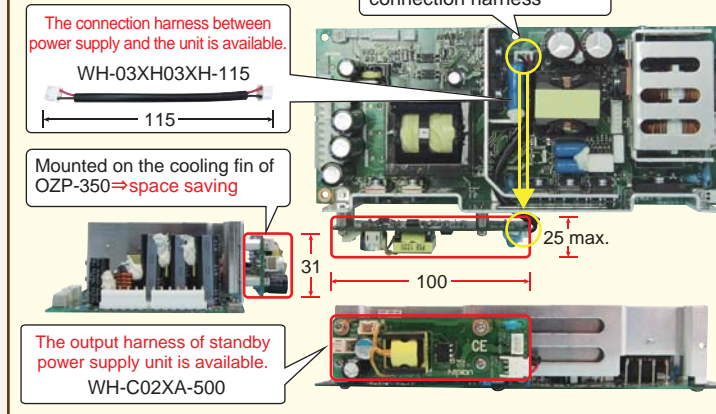
With standby power supply unit (+5V / +12V), it **changes** into a standby mode or a remote ON/OFF function power supply (type 6).

The features are downsizing and cost reduction by cutting rectifying bridge and filter. In addition, the power consumption at light load is reduced so that it complies with ErP directive Lot 6.



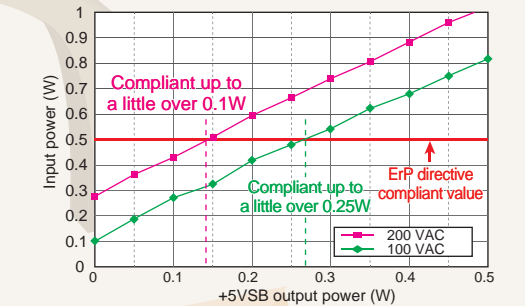
Model name: PS-10WP-5VSB  
Output: +5V (1.5A, Peak: 2.0A)  
Size(WxHxD)  
: 31x25x100(mm)

### Standby power supply unit connection diagram



In addition, by the developing of other output boards, it **changes** into a multi outputs power supply (type 7).

### "PS-10WP-5VSB" + "OZP-350" Power consumption at remote OFF



### Block diagram

