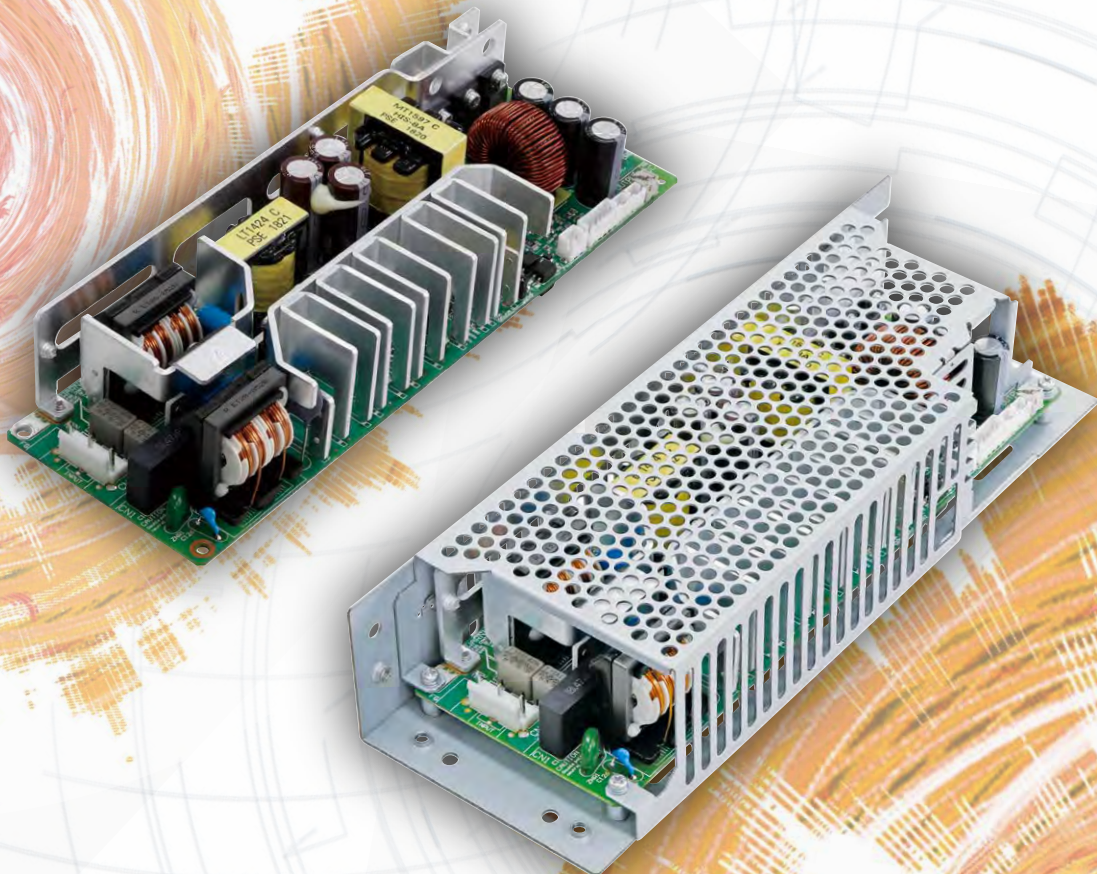


2020 April

Single Output Power Supply Featuring Enhanced Peak Power OZP-240/600P Series



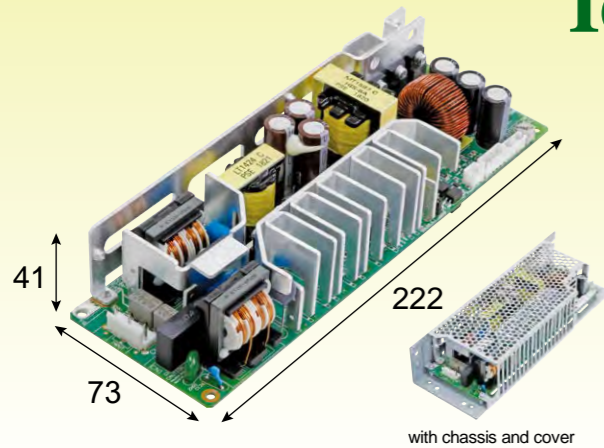
OZP-240/600P series

Ideal for motor loads

AC-DC switching-mode power supply featuring enhanced peak power

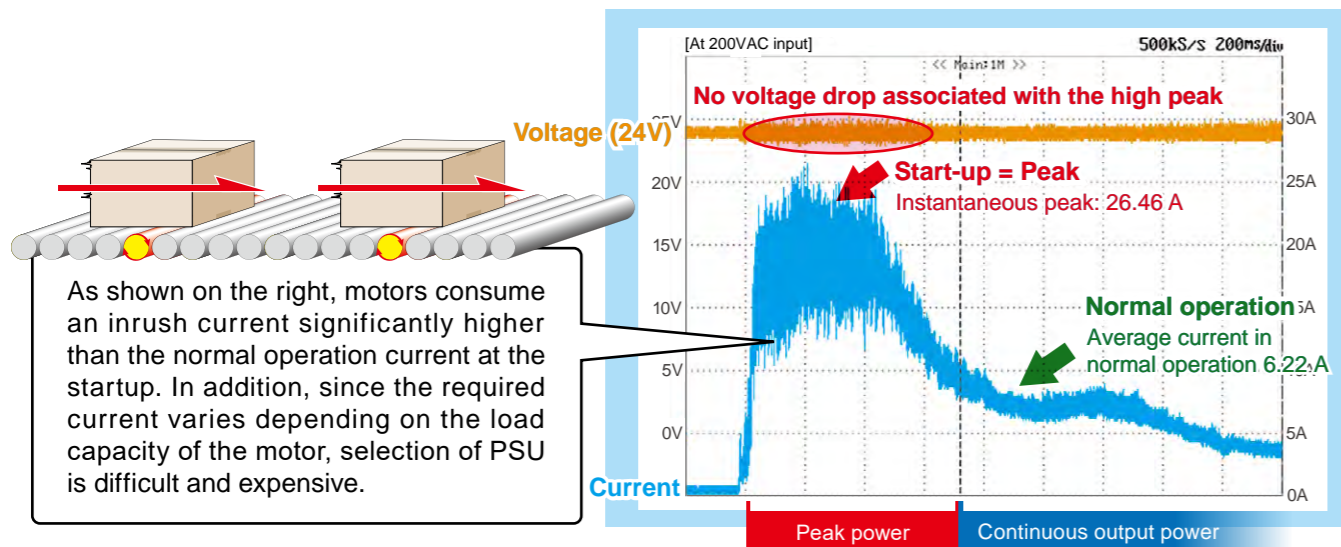
Continuous: 240W
Peak: 600W

OZP-240/600P series



OZP-240/600P series have achieved the peak power of 600W at 200VAC which is 2.5 times as high as its continuous power, 240W. It is an optimum choice for motor loads, which require large power for the start-up.

OZP-240/600P series enables amazing cost reduction.



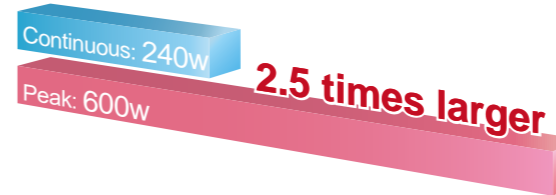
As shown on the right, motors consume an inrush current significantly higher than the normal operation current at the startup. In addition, since the required current varies depending on the load capacity of the motor, selection of PSU is difficult and expensive.

A high peak power support PSU is a power supply unit capable of supplying an output power exceeding the continuous output power for a certain period. It enables an operation matching the load, in which the load at the startup is handled by the peak power while load for normal operation is managed by the continuous output power. For this reason, it eliminates the need to select a PSU based on the peak inrush current and enables selection of a PSU with a smaller capacity and a small size matching the load for normal operation.

	High peak power support PSU OZP-240/600P	PSUs without the support for high peak power	
Continuous output power	240W	240W	600W
Peak power	600W	-	-
Number of motor rollers driven capacity			
	Economical and small	Expensive and large	

Features

- ▶ Amazing support for the high peak load approx. 2.5 times larger



- ▶ Instantaneous power failures can be addressed by connecting a capacitor unit or pack.*



Capacitor unit
CB03A-EC400/801F



Capacitor pack
BS13A-EC400/422F

*Safety standard is compliant.

- ▶ The power supply unit clears VCCI ClassB for the conducted emission
- ▶ With remote ON/OFF feature
- ▶ With blackouts detection signal
- ▶ Double-sided through-hole plated circuit board adopted
- ▶ A variable register for adjusting output voltage provided

Reduction of leakage current

As the number of PSUs increases, the leakage current will accumulate and could trip the earth leakage circuit breaker unexpectedly. With the low leakage current of OZP-240/600P, the total leakage can also be reduced even with multiple number of PSUs, making it easy to select an earth leakage circuit breaker.

Leakage current characteristics (an example of measurement)

Input voltage	Rated load	Min. load
200VAC	0.19mA	0.23mA
100VAC	0.09mA	0.11mA

Specifications

Model	OZP-240/600P-24	OZP-240/600P-48
Output voltage	+24V	+48V
Max. current/Max. power (continuous) 200VAC	10A 240W	5A 240W
Peak current/Peak power (within 5 s) 200VAC	25A 600W	12.5A 600W
Max. current/Max. power (continuous) 100VAC	8.4A 201.6W	4.2A 201.6W
Peak current/Peak power (within 5 s) 100VAC	16.7A 400.8W	8.4A 403.2W
Efficiency	200VAC	90%typ
	100VAC	86%typ
Power factor	200VAC	95%typ
	100VAC	99%typ
Input voltage	85-264VAC (with PFC, worldwide range)	
Safety standard	UL (cUL) 60950-1, IEC62368-1, CE marking approved PSE (ordinance item 2) compliant	

Models with optional features can be arranged

Depending on the customers' needs, models with optional features can be arranged. Please consult us.

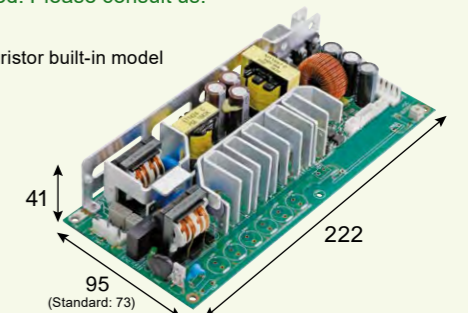
- ▶ Parallel operation feature
- ▶ Standby output
- ▶ Measures against instantaneous power failure (extension of hold-up time)
- ▶ Regenerative load supported
- ▶ Built-in arrester + varistor for enhanced resistance to lightning surges (Common mode: actual performance $\pm 8kV$)



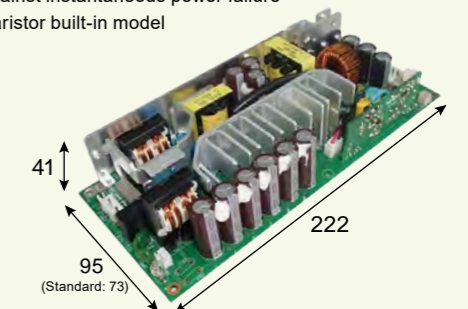
Arrester

An arrester is built in as a surge protector and the resistance to external surges caused by lightning and other reasons is enhanced.

■Arrester + varistor built-in model

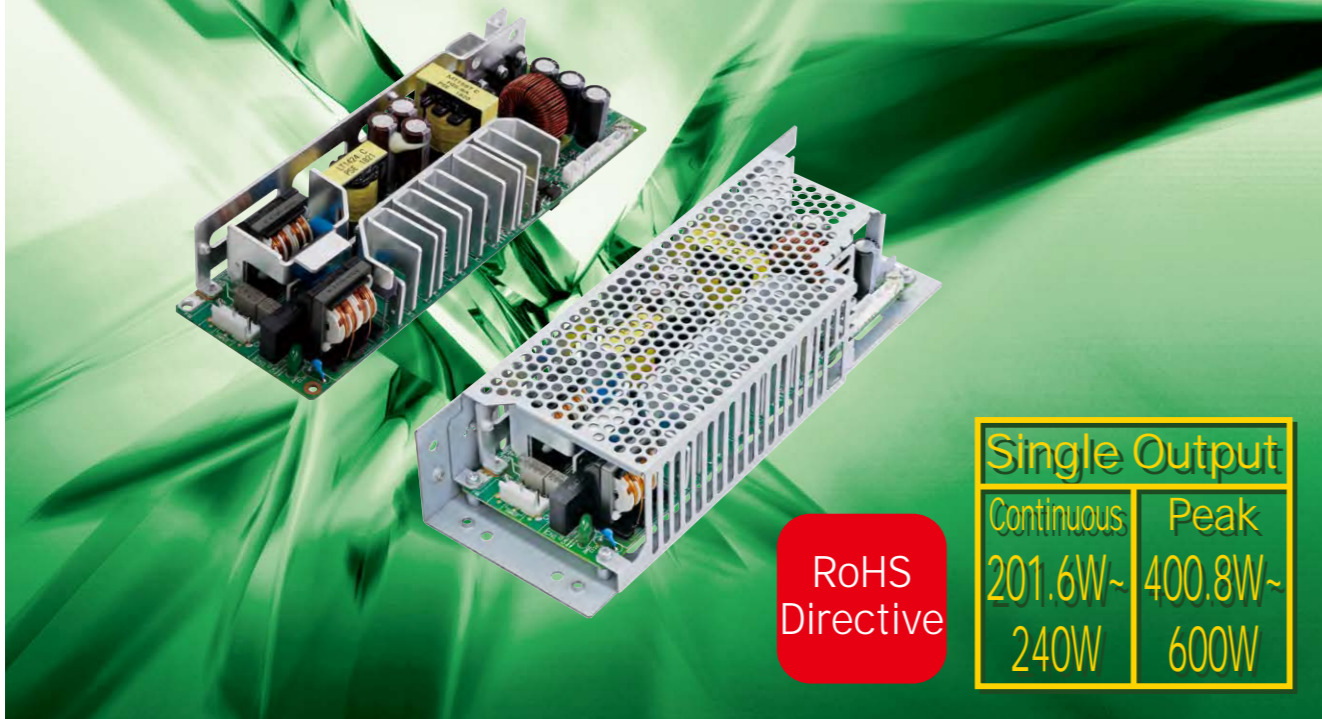


■Parallel operation + Standby output + Measures against instantaneous power failure + arrester + varistor built-in model



Single Output Power Supply OZP-240/600P series

Power supply featuring enhanced peak power with continuous 240W and peak 600W



Structure and I/O connector	Model	Output voltage	Output current *1 (100VAC/200VAC)	Output power *1 (100VAC/200VAC)
Open frame type/ Nylon connector	OZP-240/600P-24-J0E	24V	8.4A (16.7A)/10A (25A)	201.6W (400.8W)/240W (600W)
	OZP-240/600P-48-J0E	48V	4.2A (8.4A)/5A (12.5A)	201.6W (403.2W)/240W (600W)
Structure	Model			
With chassis	'-C' is added after open frame model name (Ex: OZP-240/600P-24-J0E-C)			
With chassis and cover	'-K' is added after open frame model name (Ex: OZP-240/600P-24-J0E-K)			

① Series name ⑤ 24:24V ⑦ O:Without current balance function ⑩ Blank:Without chassis and cover
 ② Peak output ⑥ Input/Output connector ⑧ E:Reduction of standby power function equipped C:With chassis
 ③ Output power J:Nylon connector ⑨ Modification K:With chassis and cover
 ④ Peak output power

*1 Values in () above show peak current and power.

- Features**
- Remote ON/OFF feature is available.
 - Equipped with a variable resistor to adjust output voltage
 - With blackouts detection signal

Safety standard	UL	CSA	EN	CE	CCC
Reliability grade	HFA	FA	HQA	QA	

●Function

TTL PFC RoHS Directive

●Input

AC input	85-264 VAC (Worldwide range)
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●Dimension

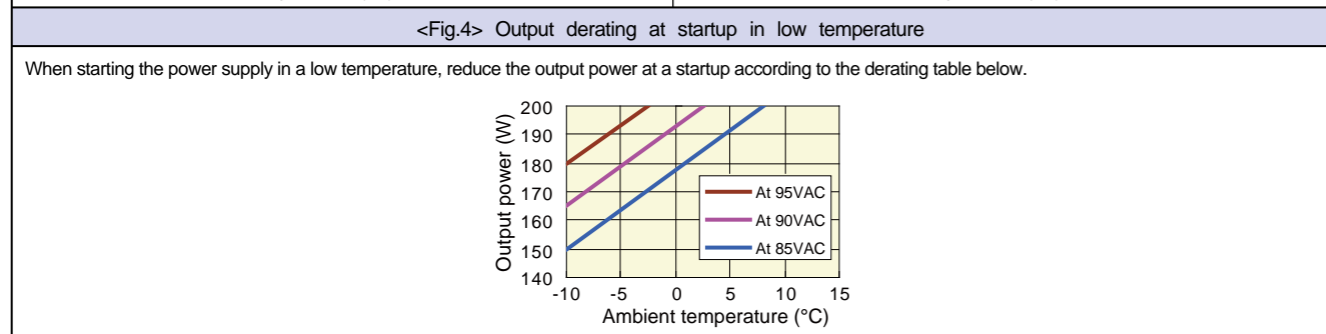
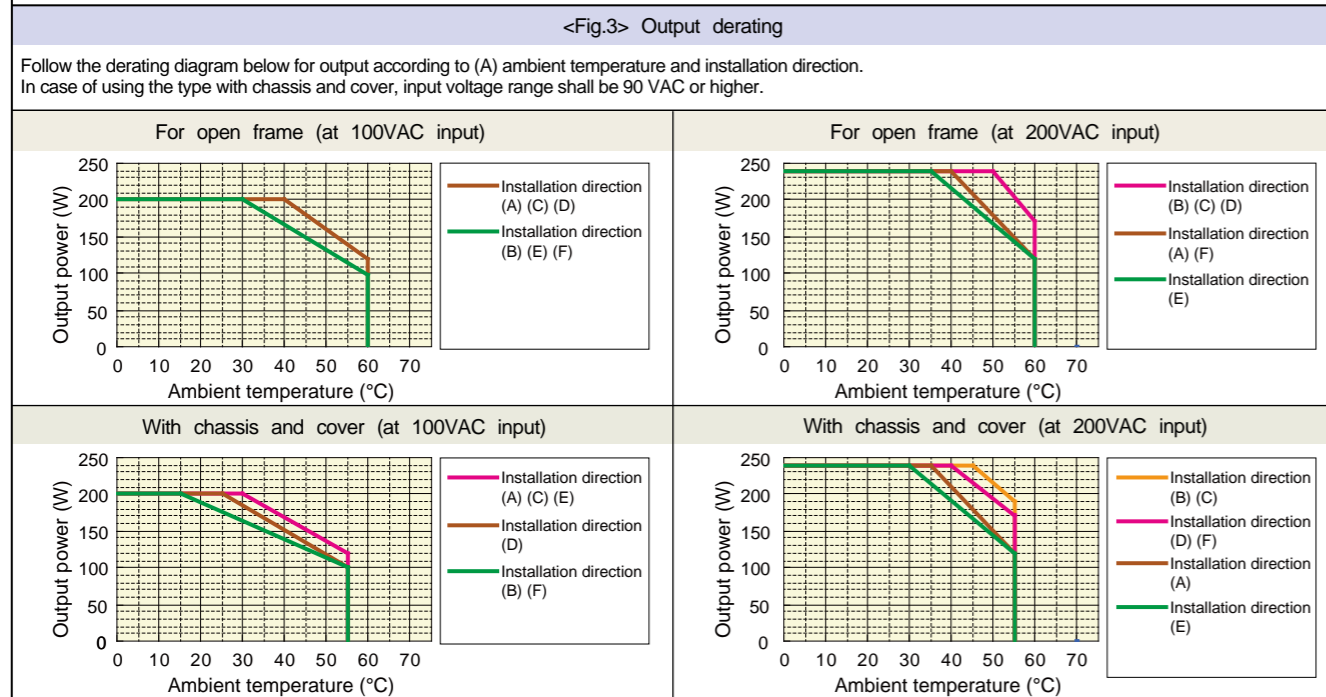
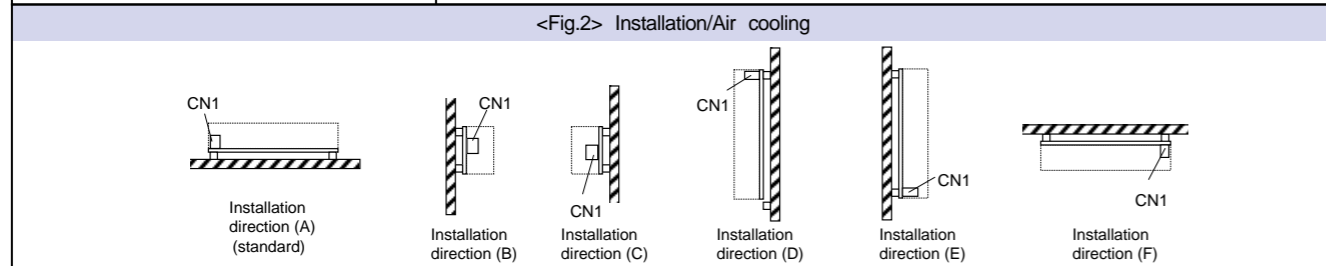
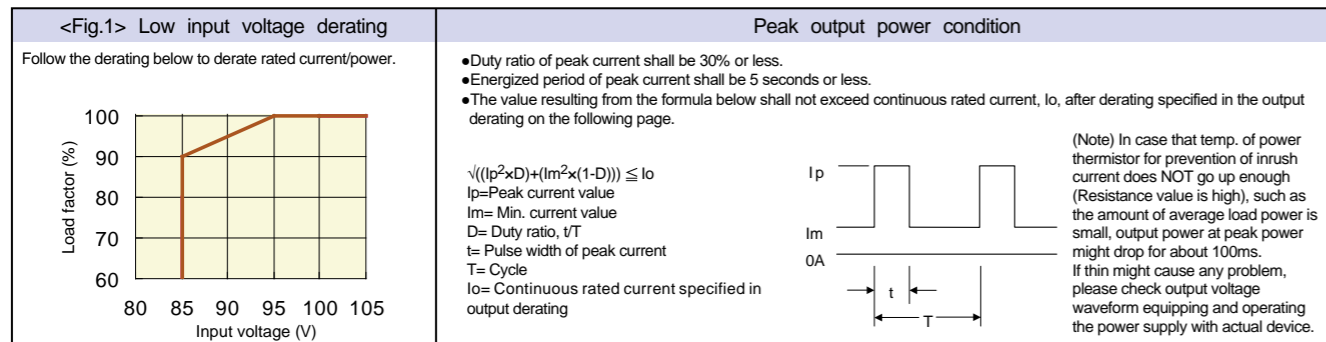
WxHxD (mm)	Without chassis and cover	73x41x222
	With chassis and cover	83x51x252

Output the peak power of 600W as high as 2.5 times the continuous maximum power.

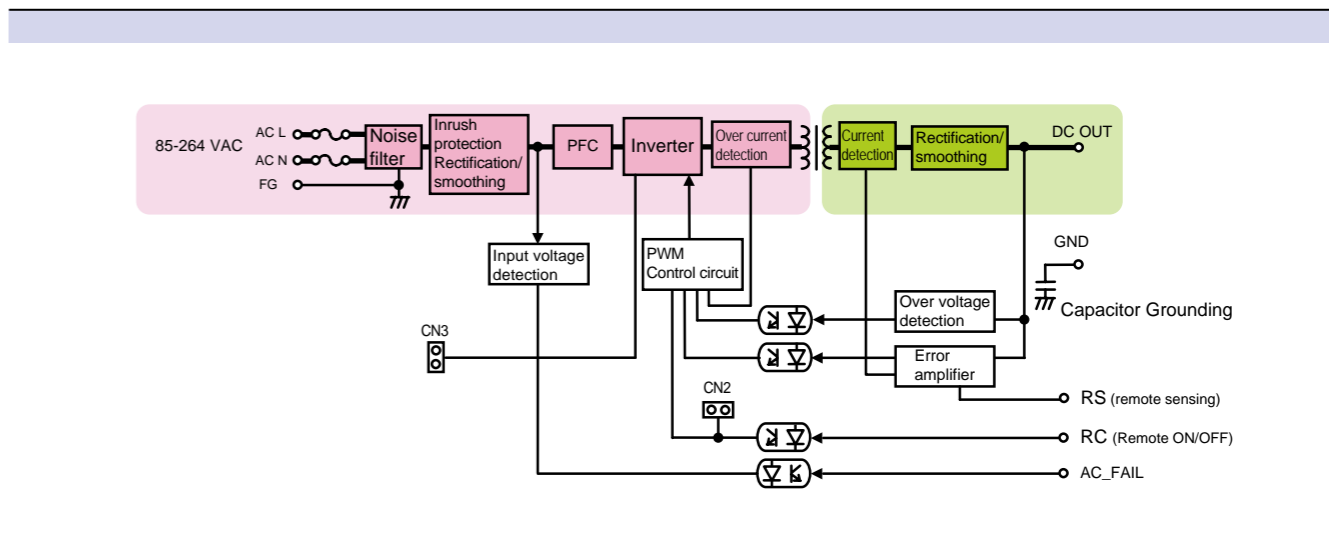
General Specification (Items are provided at normal temperature and humidity unless otherwise specified.)

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	Frequency range 47-63Hz	
	Efficiency	100VAC	86% typ	At rated input/output (natural air cooling)
		200VAC	90% typ	*Characteristic data: Fig.5
	Power Factor	100VAC	99% typ	At rated input/output (natural air cooling)
		200VAC	95% typ	*Characteristic data: Fig.6
	No load power	100VAC	1.4W typ	Power consumption at no load
		200VAC	1.4W typ	
	Standby power	100VAC	60mW typ	Power consumption at RC signal OFF
		200VAC	200mW typ	
Inrush Current	100VAC	25A max.	Power thermistor system at rated output and cold start (25°C) *Characteristic data: Fig.7	
	200VAC	50A max.		
Input Current	100VAC	2.3A typ	At rated input/output, max.output (25°C)	
	200VAC	1.4A typ	*Characteristic data: Fig.5	
Output	Model	OZP-240/600P-24	OZP-240/600P-48	
	Rated Voltage	+24V	+48V	
	Rated Current/Power	100VAC	8.4A	4.2A
		200VAC	201.6W	201.6W
	Peak Current/Power	100VAC	10A	5A
		200VAC	240W	240W
	Factory Setting	100VAC	16.7A	8.4A
		200VAC	400.8W	403.2W
	Adjustable Voltage Range	100VAC	25A	12.5A
		200VAC	600W	600W
	Static Input Regulation		24V±2%	48V±2%
	Static Load Regulation		24V	48V
Temperature Regulation		+20%/-20%	+15%/-15%	
Max. Ripple Voltage	0-70°C	94mV max.	192mV max.	
	-10-0°C	150mV max.	300mV max.	
Max. Spike Voltage	0-70°C	150mV max.	250mV max.	
	-10-0°C	180mV max.	400mV max.	
Protection	Over Current Protection	OCP point (A) 101% min. of peak rated current		
	Method	Hold-down current limiting→Blocking oscillation *Characteristic data: Fig.19		
	Recovery	Automatic recovery		
	Over Voltage Protection	OVP point (V)	30.0V-35.0V	56.2-63.0V
Environment	Operating Temp./Humidity	Open Frame	-10-60°C/20-90%RH	
	With Chassis and Cover		-10-55°C/20-90%RH	
	Storage Temp./Humidity		-20-75°C/10-95%RH	
Insulation	Dielectric Strength	3kVAC/1minute between input and output/RC/AC_FAIL 2kVAC/1minute between input and FG 500VAC/1minute between each output /RC/AC_FAIL/FG		
	Insulation Resistance	50MΩmin. between each input/output/RC/AC_FAIL/FG		
EMC	Leakage Current	0.15mA max. (at 100VAC), 0.3mA max. (at 200VAC) *Characteristic data: Fig.8		
	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)		
	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		
Others	Voltage dips/Regulation	EN61000-4-11 compliant		
	Conducted Emmission	VCCI-B, FCC-B, CISPR32-B, EN55032-B compliant *Characteristic data: Fig.9,10		
	Harmonic Current Regulations	IEC61000-3-2 (edition 2.1) classD, EN61000-3-2 (A14) classD compliant.		
	Safety Standard	UL60950-1, CSA60950-1 (c-UL), IEC62368-1, CE Marking (LVD,EMCD) approved PSE (Ordinance item 2) compliant		
	Cooling System	Natural air cooling		
	Output Grounding	Capacitor grounding		
	Output Hold-up Time	20ms min. *Characteristic data: Fig.15		
	Reliability Grade	FA (Industrial equipment grade to use double-sided PWBs with through holes)		
	Weight	530g typ (without chassis and cover), 830g typ (with chassis and cover)		
	Warranty	Three years after delivery: If any defects belong to us, the defective unit shall be repaired or replaced at our cost.		

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



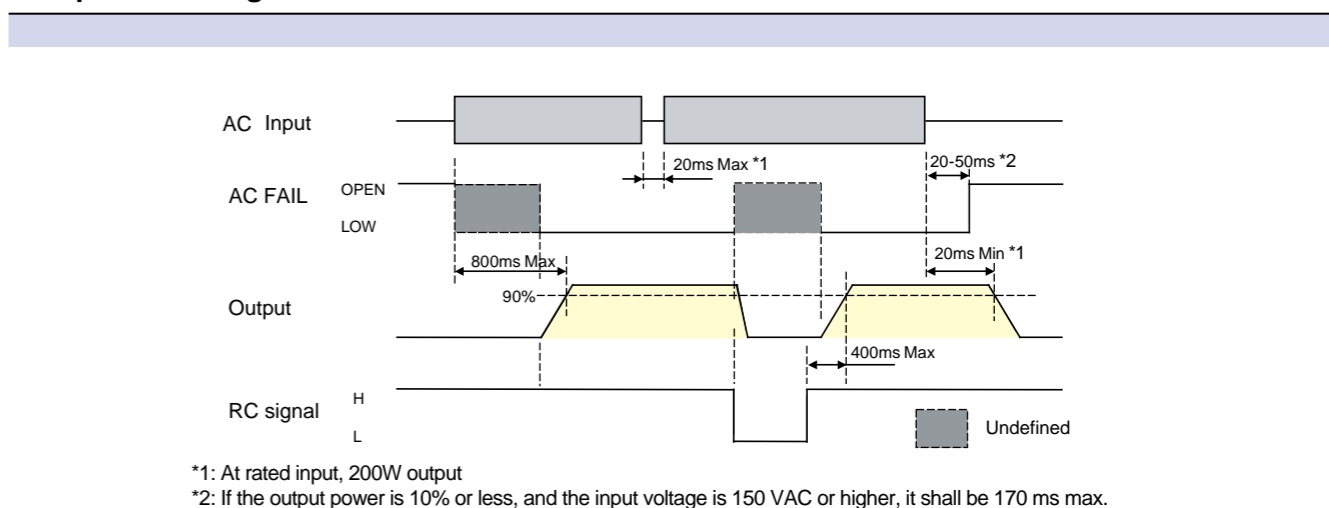
Block Diagram



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 (RC signal) *Remove the shorting plug of CN2 in using RC signal.	<table border="1"> <tr> <th colspan="2">Operating mode</th> <th colspan="2">External power supply and Load-limiting resistor</th> </tr> <tr> <td>Between +RC and -RC</td> <td>Output</td> <td>External power supply: E</td> <td>Load-limiting resistor: R</td> </tr> <tr> <td>SW ON (4.5V or higher)</td> <td>ON</td> <td>4.5 ~ 12.5Vdc</td> <td>Not required</td> </tr> <tr> <td>SW OFF (0.8V or lower)</td> <td>OFF</td> <td>12.5 ~ 30Vdc</td> <td>1.5kΩ</td> </tr> <tr> <td></td> <td></td> <td>30 ~ 48Vdc</td> <td>8.2kΩ</td> </tr> </table>	Operating mode		External power supply and Load-limiting resistor		Between +RC and -RC	Output	External power supply: E	Load-limiting resistor: R	SW ON (4.5V or higher)	ON	4.5 ~ 12.5Vdc	Not required	SW OFF (0.8V or lower)	OFF	12.5 ~ 30Vdc	1.5kΩ			30 ~ 48Vdc	8.2kΩ
	Operating mode		External power supply and Load-limiting resistor																			
Between +RC and -RC	Output	External power supply: E	Load-limiting resistor: R																			
SW ON (4.5V or higher)	ON	4.5 ~ 12.5Vdc	Not required																			
SW OFF (0.8V or lower)	OFF	12.5 ~ 30Vdc	1.5kΩ																			
		30 ~ 48Vdc	8.2kΩ																			
Remote sensing signal (RS signal)	Input terminal for detection of output voltage. Connecting RS signal to positive side of devices, it shall compensate line drop at positive side such as output cable.	<p>Shorting Plug</p> <p>With shorting plug (CN2) connected, output starts up when AC input is applied regardless of RC signal. To control Start/Stop of output by RC signal, uncap shorting plug of CN2. Note: Shorting plug (CN2) and radiating fin next to it are primary circuit components. Make sure to operate the plug after the AC input is turned off.</p>																				
Output Signal	Blackout detection signal (AC_FAIL)	The signal goes "OPEN" at low AC input voltage and power failure detection. Undefined at RC signal OFF. Detection voltage: 80 VAC typ. Detection delay time: 20-50 ms after AC input failure.																				
Input Signal Circuit	(RC Signal)																					
	(AC_FAIL)																					

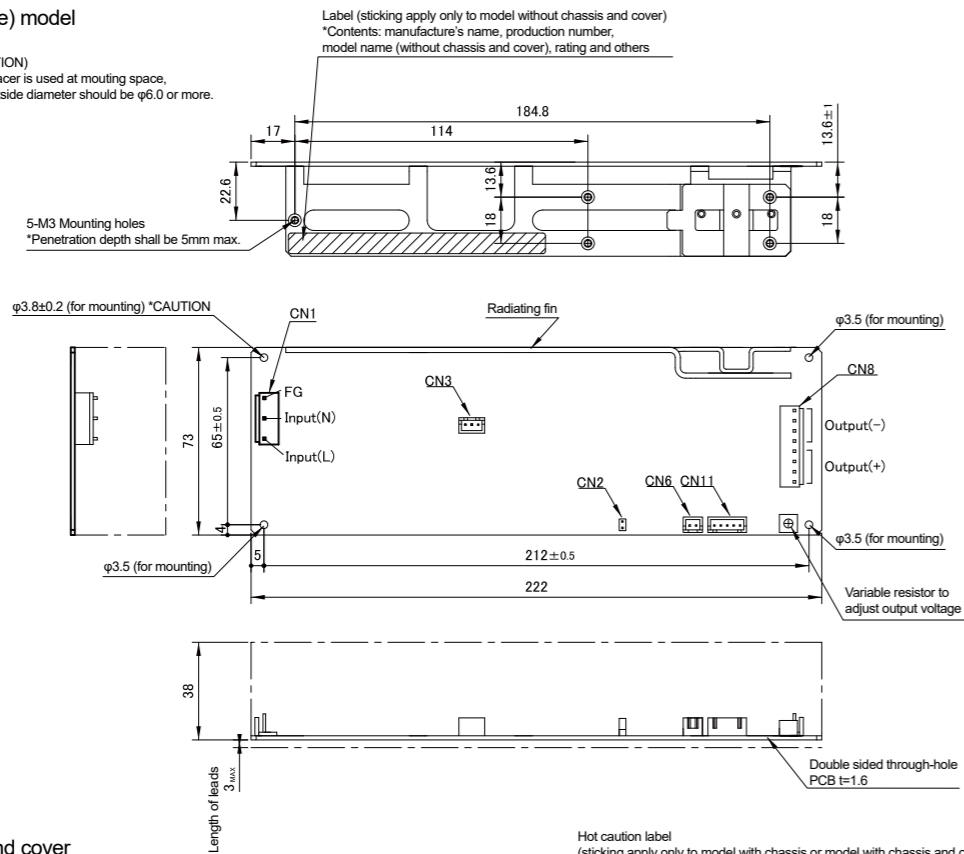
Sequence Timing Chart



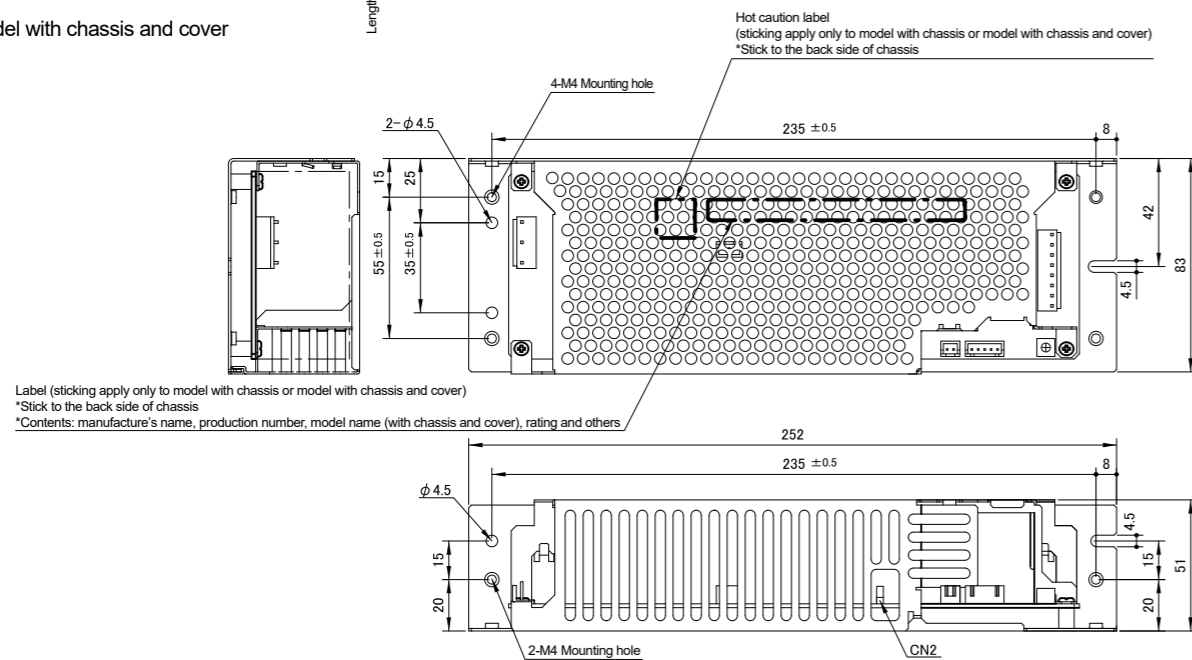
Outline Drawing

■ PCB type (open frame) model

(CAUTION)
If a spacer is used at mounting space,
the outside diameter should be $\phi 6.0$ or more.



■ Model with chassis and cover



■ Connector pin allocation

CN1 (Input)		
PIN No.	FUNCTION	CONNECTOR TYPE
1	AC(L)	B3P5-VH(JST)
2	—DC	
3	AC(N)	
4	AC(N)	
5	FG	

*CN1 Applicable housing: VHR-5N (JST)
Applicable terminals: Reel: SVH-21T-P1.1(JST)
Bulk: BVH-21T-P1.1(JST)

CN8 (Output)		
PIN No.	FUNCTION	CONNECTOR TYPE
1~4	—DC	B3P-VH (JST)
5~8	+DC	

*CN8 Applicable housing: VHR-8N (JST)
Applicable terminals: Reel: SVH-21T-P1.1(JST)
Bulk: BVH-21T-P1.1(JST)

CN6 (ON/OFF Control)		
PIN No.	FUNCTION	CONNECTOR TYPE
1	+RC	B2B-XH-A(JST)
2	—RC	

*CN6 Applicable housing: XHP-2 (JST)
Applicable terminals: Reel: SXH-001T-P0.6(JST)
Bulk: BXH-001T-P0.6(JST)

CN11 (Output signal)		
PIN No.	FUNCTION	CONNECTOR TYPE
1	RS	B5B-XH-A(JST)
2	CB	
3	OVP	
4	+AC FAIL	
5	—AC FAIL	

*CN11 Applicable housing: XHP-5 (JST)
Applicable terminals: Reel: SXH-001T-P0.6(JST)
Bulk: BXH-001T-P0.6(JST)

CN3 (Capacitor package Input/Output)		
PIN No.	FUNCTION	CONNECTOR TYPE
1	380V(Pr)	B3B-XH-A(JST)
2	0V(Pr)	
3	0V(Pr)	

*CN3 Applicable housing: XHP-3 (JST)
Applicable terminals: Reel: SXH-001T-P0.6(JST)
Bulk: BXH-001T-P0.6(JST)

Options (Sold separately)

Cable	Model	Category	Description
	WH-C05VH-800	Input harness	For nylon connector.
	WH-C05VH-800-01	Input harness (with ferrite core)	For nylon connector.
	WH-C08VH-500	Output harness	For nylon connector.
	WH-02XH02XH-500	Signal harness	Output ON/OFF control signal (RC signal) for output
	WH-05XH05XH-500	Signal harness	Remote sensing (RS), AC_FAIL signal for output

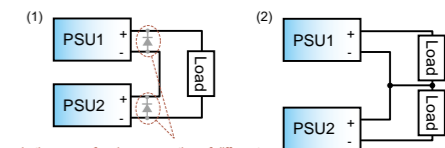
Connection in Series and Parallel

■ 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.

Note: In the case that different voltages are connected in series as in figure (1) on the right;

- The output current shall be the rated current or less of the smaller rated current among the PSU1 and PSU2 connected in series.
- Connect diodes for protection as show 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.

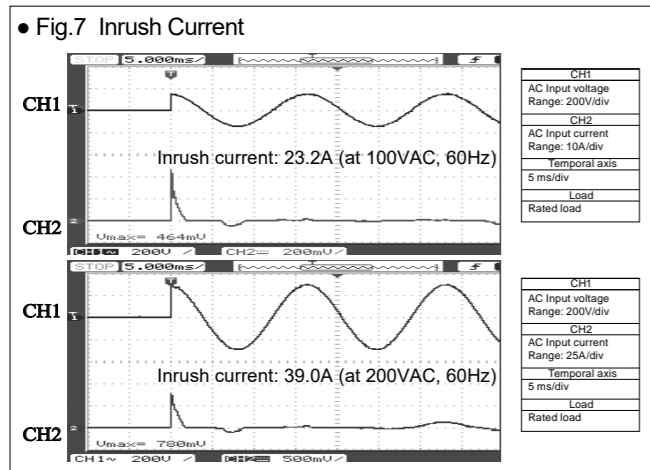
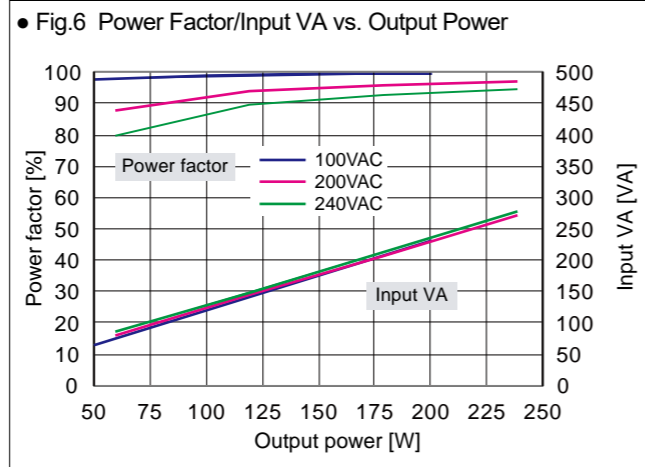
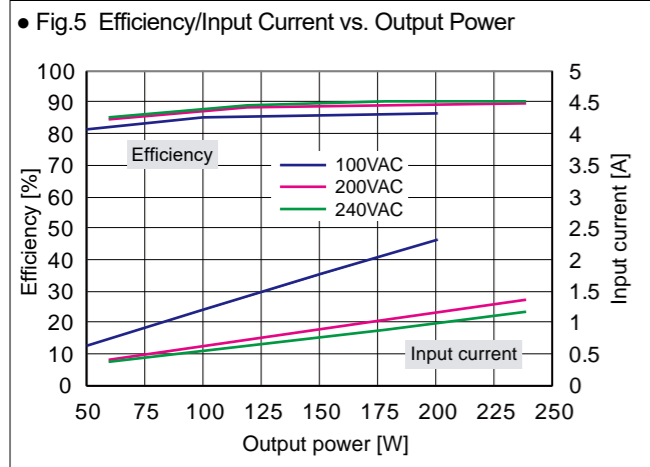


In the case of series connection of different output voltages, connect diodes shown as above.

■ Parallel operation

It can be arranged depending on the customers' needs.
Please consult us for details.

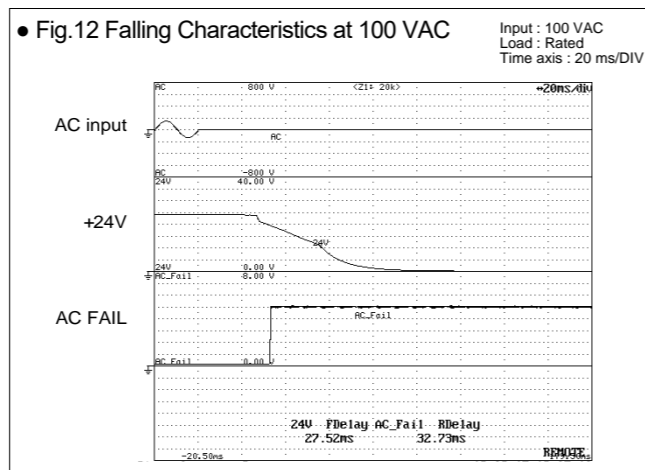
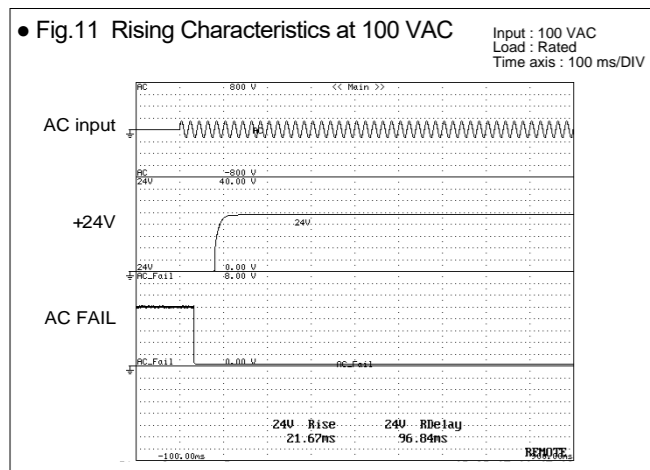
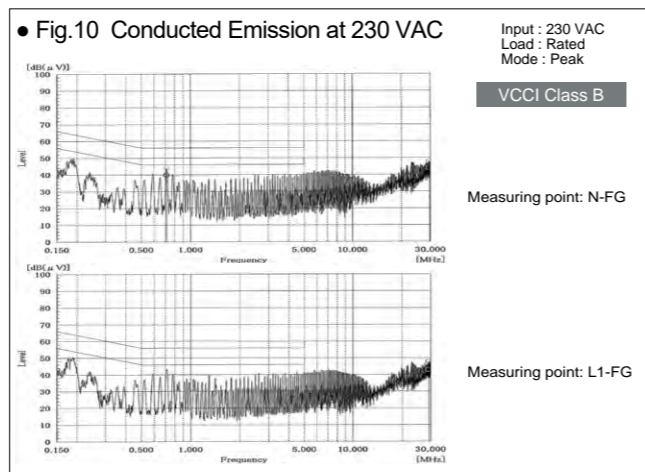
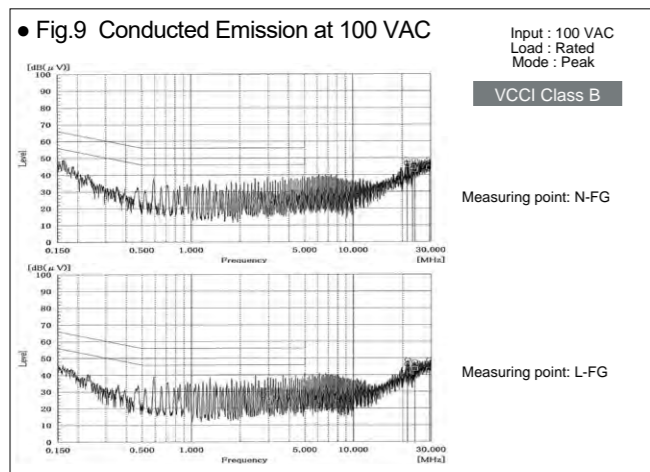
Characteristics Data (Typical features of the product series) **OZP-240/600P-24** (Examples of actual measurement)



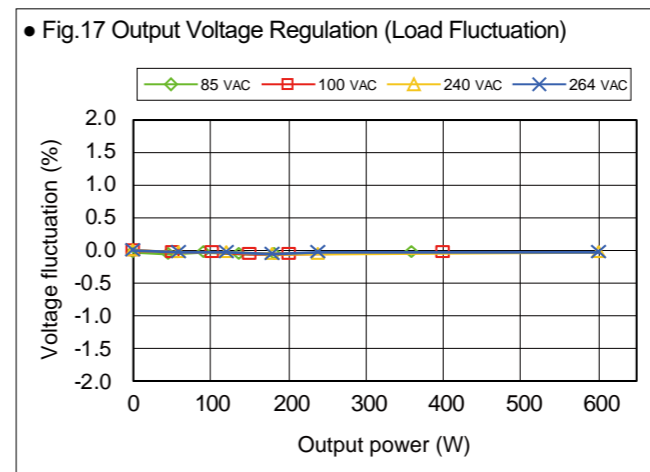
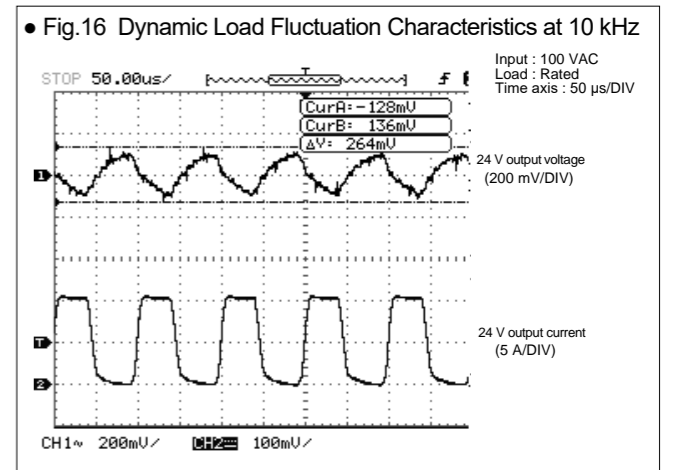
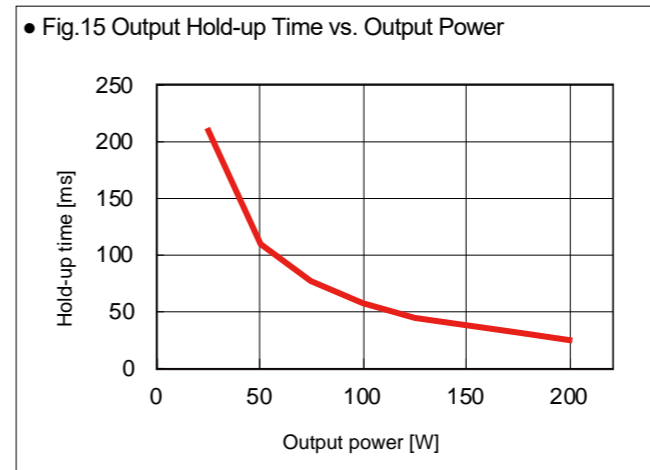
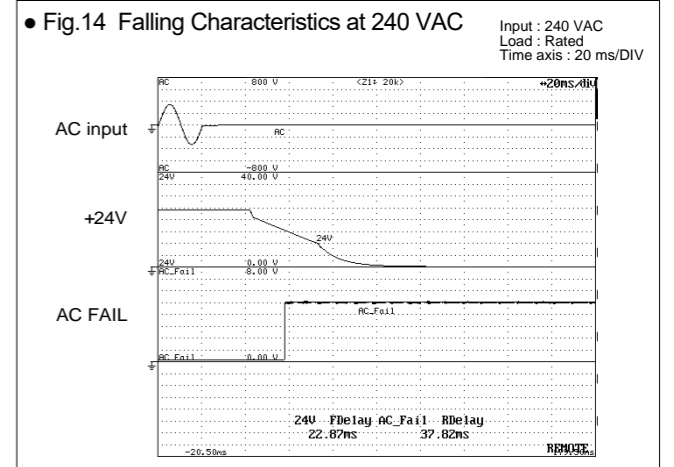
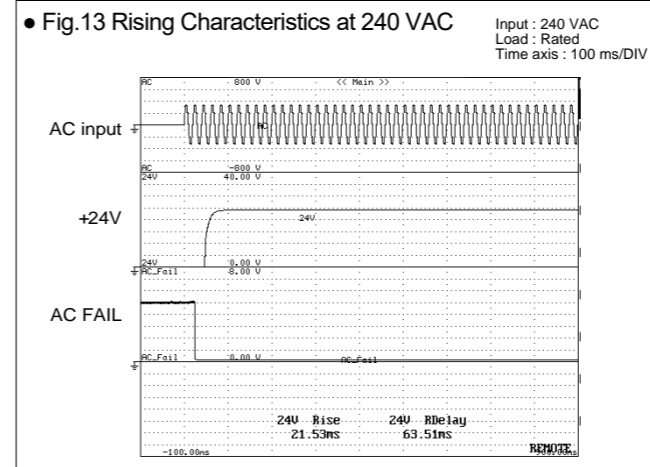
• Fig.8 Leakage Current

Input : 100, 200 VAC
Load : Rated load and Min. load

	Rated load	Min. load
100 VAC	0.09mA	0.11mA
200 VAC	0.19mA	0.23mA

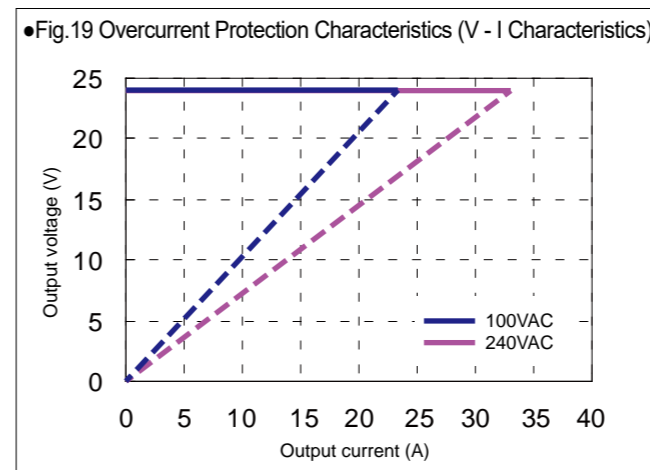


Characteristics Data (Typical features of the product series) **OZP-240/600P-24** (Examples of actual measurement)



• Fig.18 Ripple and Spike Voltage

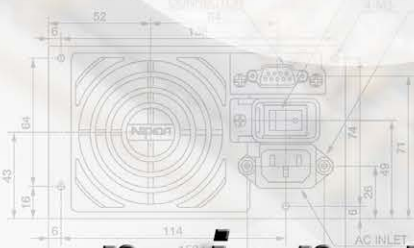
Temperature	AC Input voltage	CH1 24V					
		Minimum load		50% load		Rated load	
		Ripple(mV)	Noise(mV)	Ripple(mV)	Noise(mV)	Ripple(mV)	Noise(mV)
-15°C	85V	4.3	12.7	20.1	84.1	26.2	78.2
	100V	4.2	12.7	20.1	82.8	25.8	74.2
	240V	4.0	11.5	19.7	78.2	25.3	67.6
	264V	4.0	11.7	19.6	76.7	25.3	65.9
25°C	85V	3.2	14.3	16.1	100.9	20.2	93.2
	100V	3.1	14.8	16.2	99.5	19.8	92.5
	240V	3.2	14.4	15.1	104.4	19.6	77.2
	264V	3.1	12.8	15.1	103.8	19.5	75.2
45°C	85V	3.2	13.5	14.8	100.2	19.0	91.3
	100V	3.2	14.1	14.4	99.8	18.2	86.0
	240V	3.0	13.5	14.9	96.8	18.5	78.2
	264V	3.0	12.8	14.8	99.2	18.6	76.8
65°C	85V	2.5	13.6	11.1	83.5	14.2	91.8
	100V	3.2	13.0	10.8	82.2	13.9	91.8
	240V	3.1	12.5	10.9	75.6	13.7	90.1
	264V	3.1	12.1	10.8	79.4	13.6	90.0





Nipron Co., Ltd.

●Sales department and R&D department
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●Design tolerance of dimension is ± 0.5
 ●Unit: mm

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●Contact us



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