Scope

This specification applies to built-in DC stabilized power supply, UZP-400-A**-****-*.
In addition, all items in this specification shall be provided at normal temperature and humidity unless otherwise specified.

Model Name Coding

Example : UZ P-400-A 24-J B H □-C
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①Series Name ..... "UZ": UZ series
②Peak power ..... "P": Peak power
③Continuous output power ..... "400": 400W
④Arrester..... "A": With Arrester
△ ⑤Output voltage ..... "12" : 12V, "24" : 24V, "36" : 36V, "48" : 48V
△ ⑥Input/Output connector type ..... "J": Nylon connector, "T": Block terminal
⑦Optional joint connector ..... "0": Without connector, "B": With connector
⑧Presence or absence of function....."H" : High-efficiency type
△ ⑨Modification ....."Blank" : Standard, "C" : Coating
⑩Chassis ..... "C": With Chassis, "K": With Chassis and Cover, "Blank": Without Chassis and Cover.

General Specification

Items			Specification △ UZP-400-A 12	24	36	48	Measurements conditions, etc.
AC input	Rated Voltage		100−240 VAC				Worldwide range
	Voltage Range		85−264 VAC				Load factor shall be 90 - 100% in range of 85 - 90 VAC input
	Current	At 100VAC	3.6A typ.	4.4A typ.			At rated output (Convection cooling)
			5.0A typ.	5.5A typ.			At rated output (Forced air cooling)
		At 200VAC	1.9A typ.	2.4A typ.			At rated output (Convection cooling)
			2.6A typ.	3.0A typ.			At rated output (Forced air cooling)
	Rated Frequency		50−60 Hz				Frequency range 47 - 63Hz
	Inrush Current	At 100VAC	18A typ.				Power thermistor system At cold start (25°C)
		At 200VAC	35A typ.				
	Efficiency	At 100VAC	90% typ.	92% typ.			At 300W load
		At 200VAC	92% typ.	94% typ.			
	Power Factor	At 100VAC	99% typ.				At rated output (Convection cooling)
		At 200VAC	92% typ.	94% typ.			
	Hold-up Time		20ms min.				At 300W output

Note

北図 24.1.15 (株)ニプロン 技術 Ishibashi
A×6:2024.01.09

Drawn by	Checked by	Approved by	Model: △	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700−01−4−520A

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

Items			Specification △A UZP-400-A 12	24	36	48	Measurements conditions, etc.
Environment	Operating Temp.	Convection Cooling	-10 to 70°C (Open frame)				Refer to "Output derating specification."
			-10 to 60°C (With Chassis and Cover)				
		Forced Air Cooling	-10 to 70°C (Open frame)				Refer to "Output derating specification."
			-10 to 70°C (With Chassis and Cover)				
	Operating Humidity		20 to 90% RH				There shall be no condensation.
	Storage Temp. / Humidity		-20 to 75°C / 10 to 95% RH				
	Vibration		To endure the vibration acceleration of 2G with vibration frequency of 10 to 55Hz for 10 sweep cycles in each X, Y, Z direction.				Follow JIS-C-60068-2-6 at no operation
	Surface Dropping		Lift one bottom edge of the unit 50mm high with the opposite edge placed on the test bench, and let it fall. Repeat 3 times for each of four bottom edges, and no malfunction shall be observed.				Follow JIS-C-60068-2-31 at no operation
Insulation	Dielectric Strength		1.5kVAC/1min. between input /output and RC ※1 △A	3kVAC/1min. between input and output/RC	1.5kVAC/1min. between input and output/RC ※1		Cut-off current 10mA
			1.5kVAC/1min. between input and FG ※2				Cut-off current 10mA
			500VAC/1min. between each output/RC/FG				Cut-off current 10mA
	Insulation Resistance		50MΩ min. between each input/output/RC/FG				At 500 VDC
	Leakage Current		0.06mA typ. (at 100VAC) 0.12mA typ. (at 200VAC)				
Others	Electrostatic Discharge		IEC61000-4-2 test level 3 compliant (Contact discharge: ±6kV, 10 times)				Apply to FG and chassis. There shall be no malfunction, nor failure.
	Fast Transients Burst		IEC61000-4-4 test level 3 compliant				There shall be no malfunction, nor failure.
	Impulse Voltage Immunity		IEC61000-4-5 (installation environment class 4 or above) compliant; Apply 5 times each of Common mode ±4kV and Normal mode ±2kV				There shall be no malfunction, nor failure.
	Conducted Emission		VCCI, FCC, CISPR32, and EN55032 Class B compliant				Rated Input and output (Convection) with chassis
	Harmonic Current Regulations		IEC61000-3-2 (Ed. 2.1) Class A, and EN61000-3-2 (A14) Class A compliant				Rated input and output (Convection)
Note							

A×3:2024.01.09 N.Ishibashi

Drawn by	Checked by	Approved by	Model: △A	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700-01-4-520A

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

Items		Specification △A UZP-400-A 12	24	36	48	Measurements conditions, etc.
Others	Safety Standard	UL62368-1, CSA62368-1(c-UL)				
		EN62477-1 OVCⅢcompliant				
		CE marking, UKCA marking				
		PSE (Ordinance item 2) compliant				
	SEMI Standard	SEMI-F47 compliant				Input 200 VAC
	Cooling	Convection cooling				
	Dimensions and Weight	84×45×180 (W×H×D) ／550g typ.				Without Chassis and Cover
		97.2×57.5×212 (W×H×D) ／870g 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.				Except for errors caused by operation not specified in this specification.

Note

※1. The dielectric strength between input and output/RC is 3k VAC for 1 min., but please refer to the above specifications to prevent the arrester from operating due to the voltage dividing effect of the grounding capacitor's capacitance (between input, FG/output, and FG).

※2. The dielectric strength between input and FG is 2k VAC for 1min., but please refer to the above specifications because an arrester is installed between input and FG.

△A ※3. There is a protruding part for the screw terminal block type.
Please refer to the outline drawing for details.

出図
24.1.15
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A×3:2024.01.09 N.Ishibashi

Drawn by	Checked by	Approved by	Model: △A	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700－01－4－520A

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

Output Specification

Items			Specification △A UZP-400-A 12	24	36	48	Measurements conditions, etc.
Output Rating	Rated Voltage		12V	24V	36V	48V	
	Continuous Rating 1 (convection)	Current	26.7A	16.8A	11.2A	8.4A	Rated input Refer to "Output derating based on ambient temperature, installation direction and cooling condition"
		Power	320.4W	403.2W	403.2W	403.2W	
	Continuous Rating 2 (forced air)	Current	36A	21A	14A	10.5A	
		Power	432W	504W	504W	504W	
	Peak Rating (10 seconds or less)	Current	42A	25A	16.7A	12.5A	Refer to "Peak output specification" convection and forced air.
		Power	504W	600W	601.2W	600W	
Output Characteristics	Factory Setting		12V ±2%	24V ±2%	24V ±2%	48V ±2%	At rated output
	Adjustable Voltage Range		12V +10% −5%	24V +10% −5%	36V +10% −5%	48V +5% −5%	At more than rated voltage setting, Use it within rated output power.
	Static Input Regulation		48mV max.	94mV max.	144mV max.	192mV max.	
	Static Load Regulation		100mV max.	150mV max.	220mV max.	300mV max.	
	Temperature Regulation		0.02%／℃ max.				
	Ripple Voltage	0 to+70℃	120mV max.			150mV max.	Connect 150mm max. lead wire to output connectors, and then connect a 10uF electrolytic capacitor with a 0.1uF ceramic capacitor in parallel to the other ends of the wires to measure by an oscilloscope with 100MHz frequency band. Rated output
		-10 to 0℃	160mV max.			200mV max.	
	Spike Noise Voltage	0 to +70℃	150mV max.			250mV max.	
		-10 to 0℃	180mV max.			400mV max.	
Protection circuit	Over Current Protection	OCP point	101%min. of peak rated current				
		Method	Blocking oscillation				
		Recovery	Automatic recovery				
	Over Voltage Protection	OVP point	13.8 to 16.2V	30.0 to 35.0V	41.4 to 49.4V	55.2 to 64.8V	
		Method	Output shutdown				
		Recovery	Reclosing of AC input				

出図 24.1.15 (株)ニプロン 技術管理

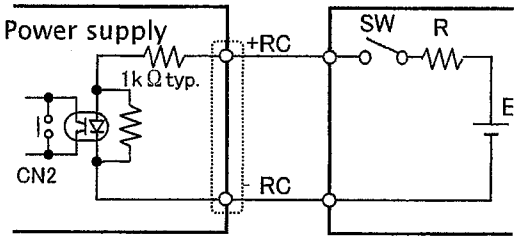
Note

A×2:2024.01.09 N.Ishibashi

Drawn by	Checked by	Approved by	Model: △A	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700−01−4−520A

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

Signal Input/Output specification

Items		Specification	Signal input/output circuit diagram and others
Input Signal	Output ON/OFF Control Signal (RC signal) △A	Operating mode Between +RC and -RC / Output SW ON (4.5V min.) / ON SW OFF (0.8V max.) / OFF External power supply and Load-limiting resistor External power supply: E / Load-limiting resistor: R 4.5 to 12.5Vdc / Not required 12.5 to 30Vdc / 1.5kΩ 30 to 48Vdc / 8.2kΩ Shorting Plug 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) is primary circuit components. Make sure to operate the plug after the AC input is turned off.	Connecting example in the case of using external power supply 

Note

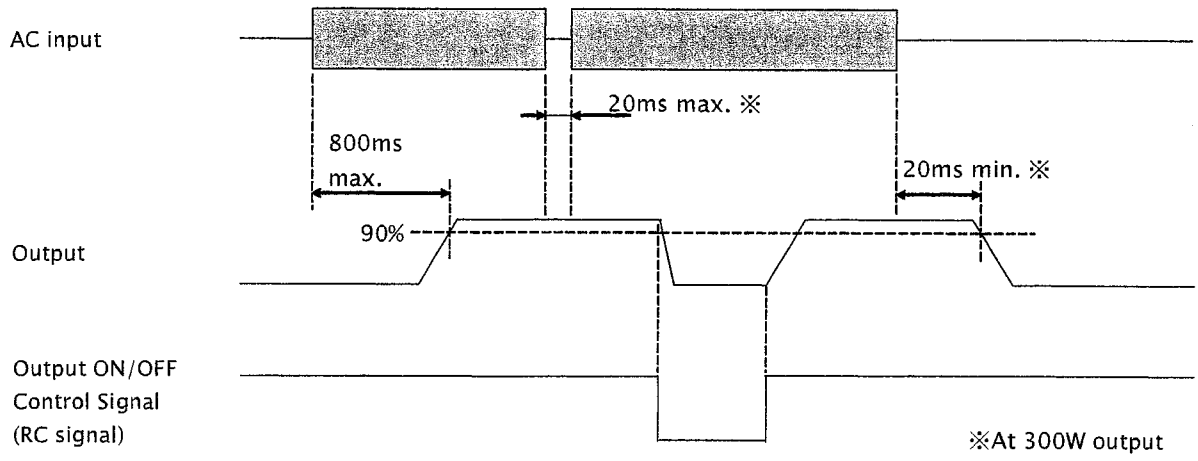
出図 24.1.15 (株)ニプロン 技術管理

B×1:2024.01.09 N.Ishibashi
A×1:2022.04.06 K.Nakagawa I-340412

Drawn by	Checked by	Approved by	Model: △B	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700-01-4-520B

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

●Sequence Timing diagram



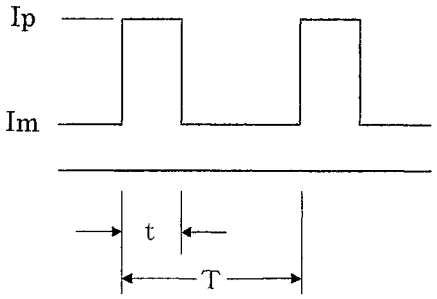
●Peak output specification

Peak output current shall meet the conditions below.

- Duty ratio of peak current shall be 30% or less.
- Energized period of peak current shall be 10 seconds or less.
- In the case that the ambient temperature is 50℃ or higher with convection cooling, the energized period of peak current shall be 5 seconds or less.
- The value resulting from the formula below shall not exceed the continuous rated current, Io, after derating specified in the clause, "Output derating."

$$\sqrt{((Ip^2 \times D) + (Im^2 \times (1-D)))} \leqq Io$$

Ip=Peak current value
Im=Min. current value
D=Duty ratio, t/T
t=Pulse width of peak current
T=Cycle
Io=Continuous rated current specified in the clause "Output derating"



(Note)
If the temperature of the power thermistor for limiting inrush current does not rise enough (and its resistance value is too large), such as when the normal average load power is small, the output voltage at peak output might drop about 100 ms. If this might cause any problem, please check the output voltage waveform while the power supply is installed on an actual device at operation.

Note

出図 24.1.15 ㈱ニプロン 技術管理

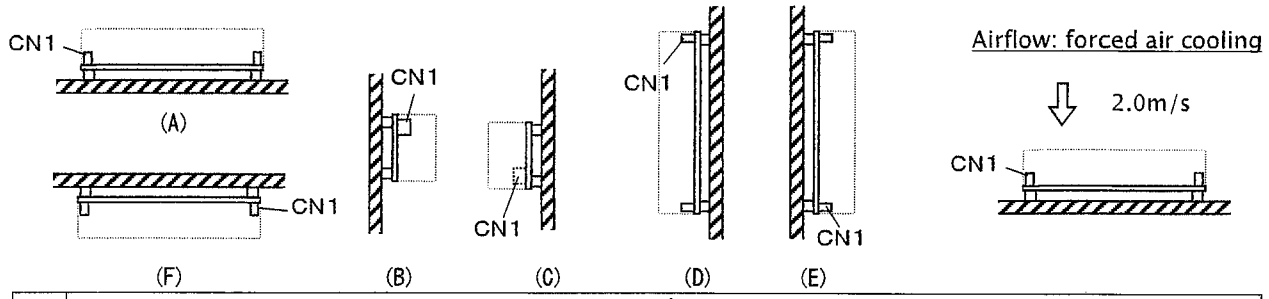
A×1:2024.01.09 N.Ishibashi

Drawn by	Checked by	Approved by	Model: △A	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700-01-4-520A

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

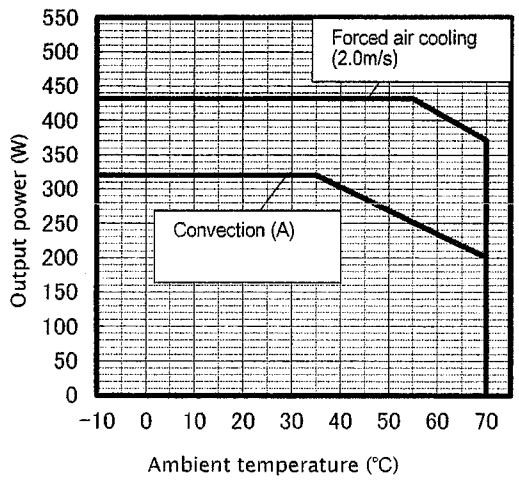
●Output derating based on ambient temperature, installation direction and cooling condition

For the mounting direction (A), follow the derating diagram below depending on the ambient temperature of the power supply. For the mounting direction (B)-(F), please contact us. Also, the airflow shall be 2.0m/s for the forced air cooling as shown below. △A

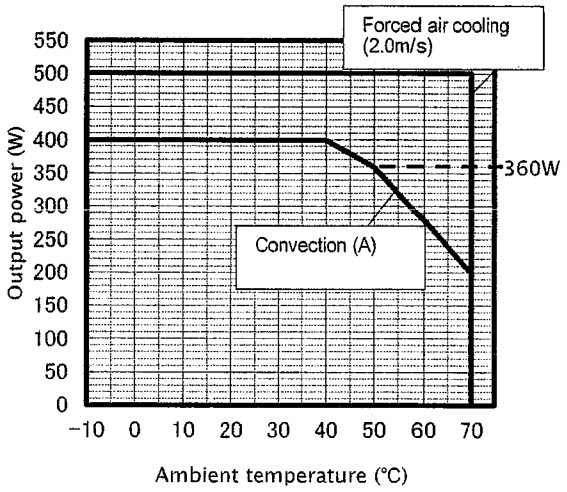


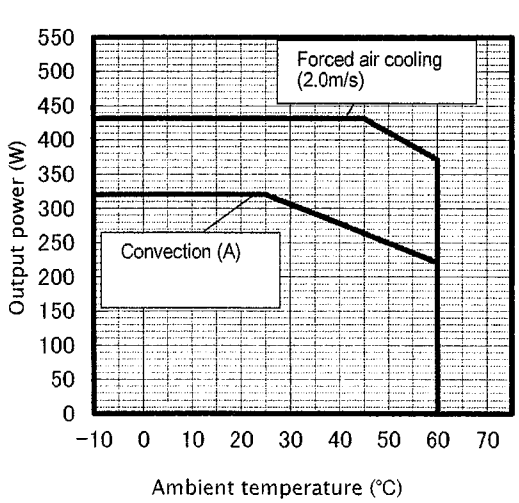
Output derating

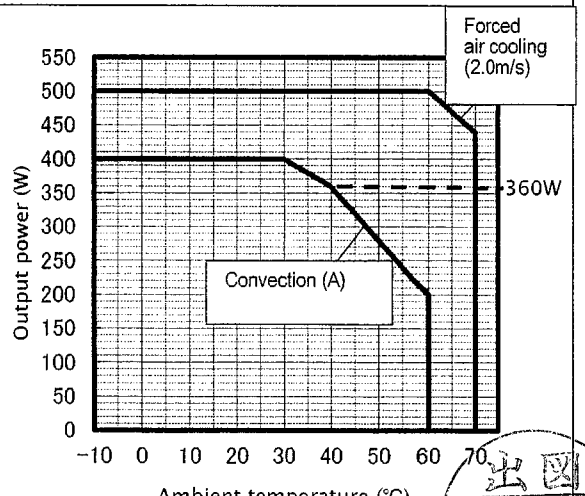
△A UZP-400-A12



UZP-400-A24/-A36/-A48







出図 24.1.15

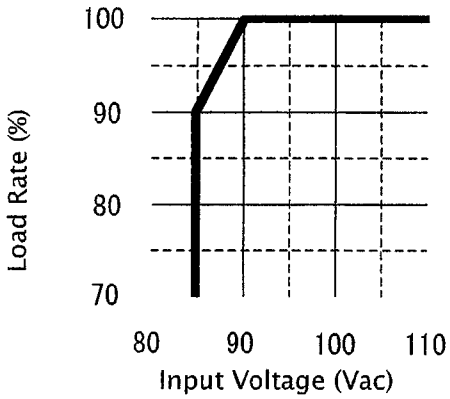
A×3:2024.01.09 N.Ishibashi

Drawn by	Checked by	Approved by	Model:	Drawing No.
Ono	Ishibashi	Yamamoto	△A UZP-400-A**-*****-*	3700-01-4-520A

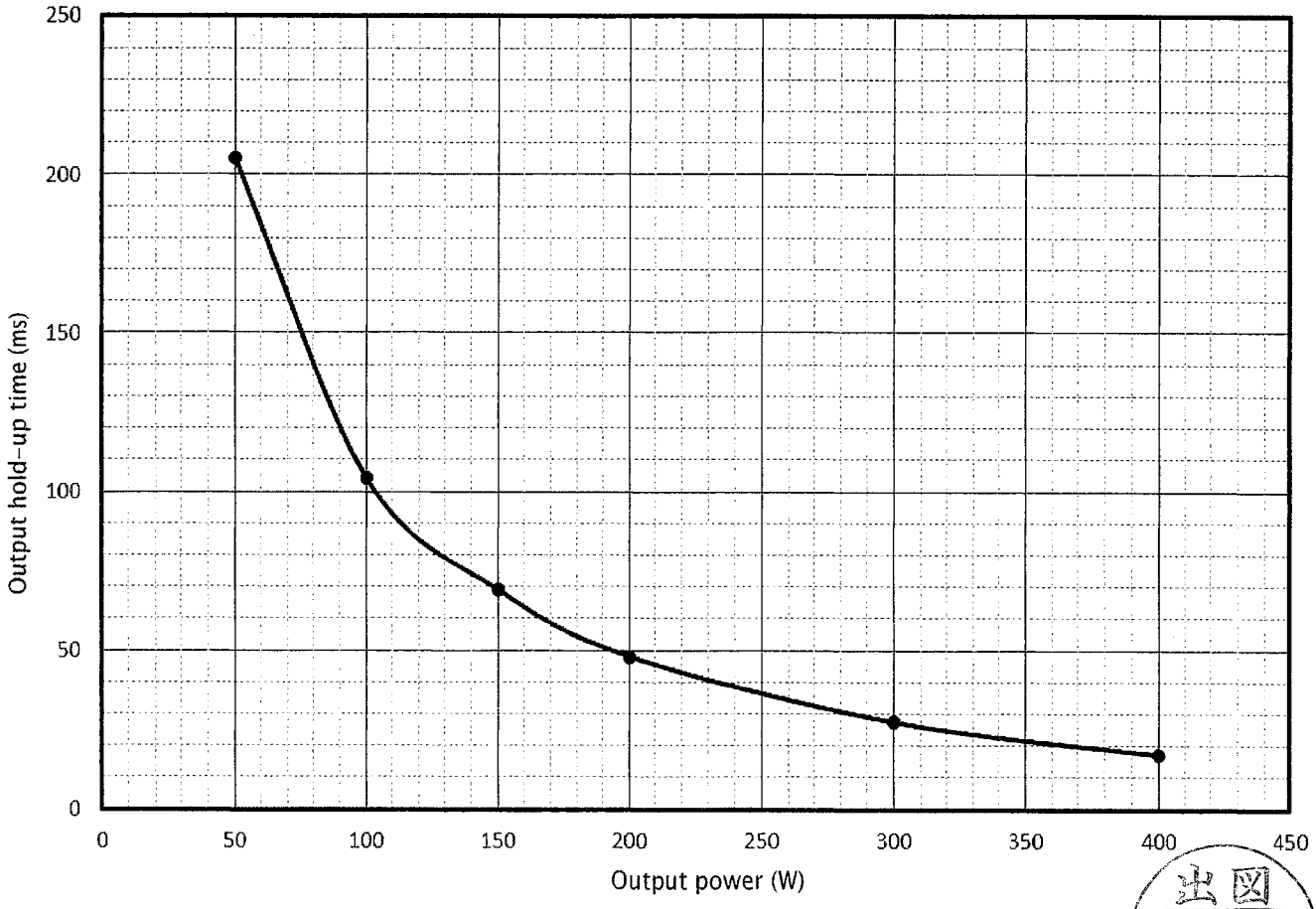
Due to the technical improvement, the specifications and functions are subject to change without notice.

●Output derating based on input voltage

When input voltage is 90VAC or lower, follow the derating diagram below to reduce the continuous rated current and power.



●Output hold-up time characteristics (※UZP-400-A24-**H-*, reference value) △A



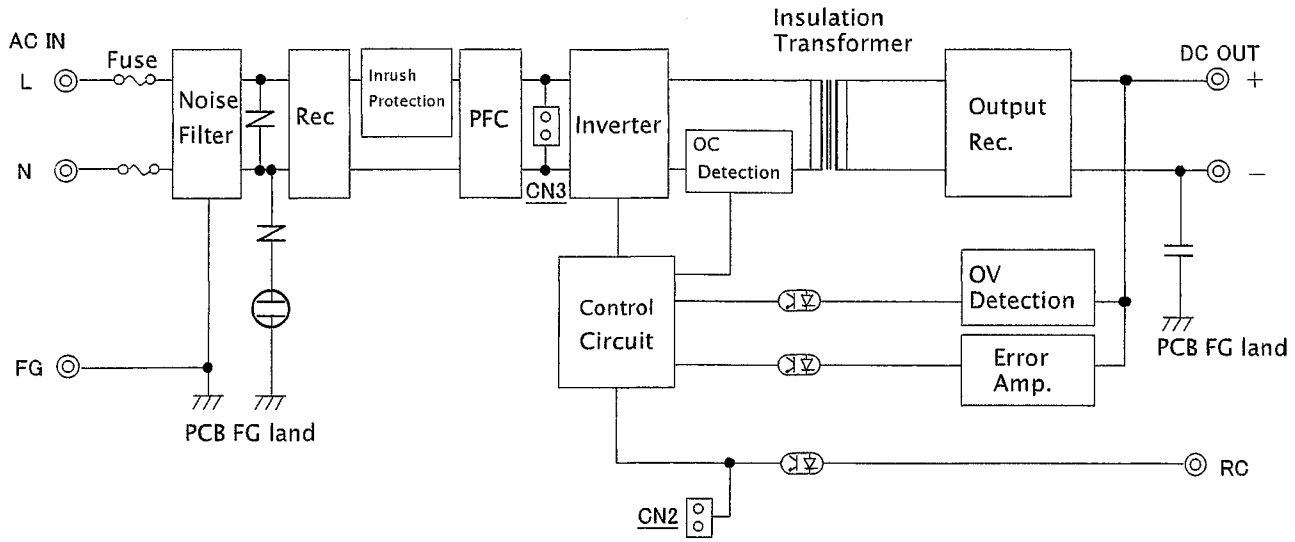
Note

A×2:2024.01.09 N.Ishibashi

Drawn by	Checked by	Approved by	Model: △A	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700－01－4－520A

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

●Circuit block diagram



Note

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24.1.15
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A×1:2024.01.09 N.Ishibashi

Drawn by	Checked by	Approved by	Model:	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700−01−4−520A

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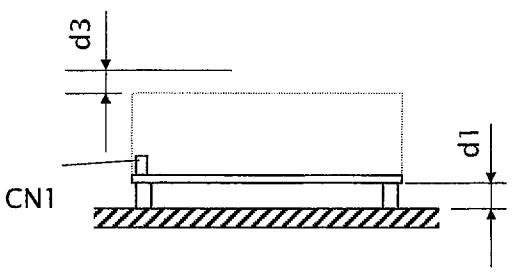
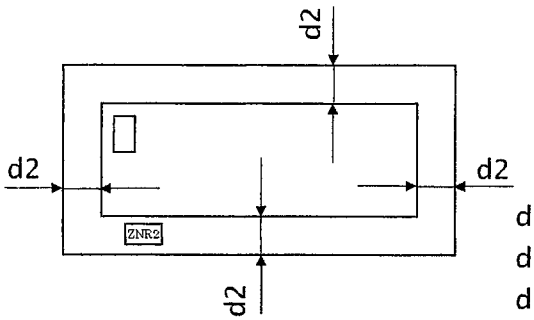
Due to the technical improvement, the specifications and functions are subject to change without notice.

●Power supply installation

- To meet the standard of insulation and dielectric strength, the space (d1, d2, and d3) shown below is necessary around the power supply.
- Sufficient convection and ventilation are required to prevent the ambient temperature of the power supply from rising.
- Keep flammable materials at least 13mm away from the varistor (ZNR2). (A)

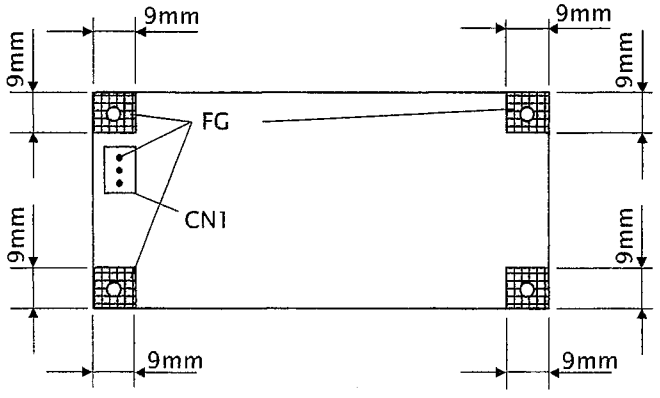


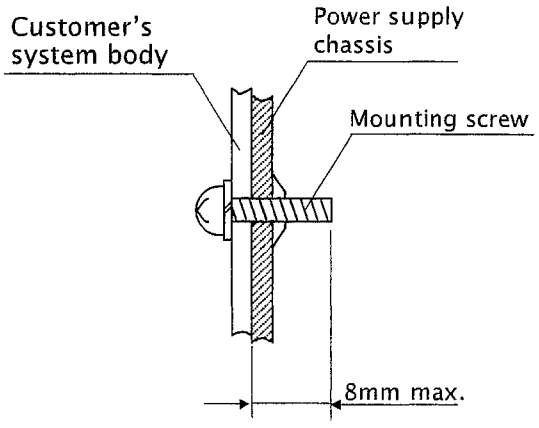


d1=8mm min.
d2=4mm min.
d3=5mm min.

●Mounting screws and grounding of power supply

- Tighten screws firmly on all 4 mounting holes of the power supply.
- Use 3mm diameter screws for mounting the power supply.
- Do not use the metal mounting parts that exceed the hatched area shown below.
- In mounting the unit with chassis and cover, do not use any screws that exceed the area shown below.
- Make sure to connect FG terminal of CN1 or the FG part of the PCB to the safety ground of the end application. The FG terminal of CN1 shall be connected to the safety ground of the end application when applying it for safety standards.
- It is recommended to connect the FG part of the soldered side of the board to the metal case of the end application with metal parts such as metal spacers to reduce noise.





Note

出図 24.1.15 (株)ニプロン 技術管理

B×1:2024.01.09 N.Ishibashi
A×1:2022.04.06 K.Nakagawa I-340412

Drawn by	Checked by	Approved by	Model: (B)	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700-01-4-520B

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

●Precautions before use

1. Grounding ⚠ Warning
This unit is designed and produced to meet Class 1 equipment. Make sure to connect the grounding terminal of the unit to grounding in a proper way for safety.

2. Electric shock ⚠ Warning
This unit is designed and produced as built-in equipment and has high-voltage part inside.
Make sure to securely install in the equipment in a proper way to prevent electric shock.
Also, shorting plug (CN2) for RC signal setting is primary circuit components. Make sure to turn off AC input before using this plug.

3. PCB handling ⚠ Caution
In handling, hold the edges of the PCB in order not to touch the component sides. Lift the PCB from the End application with spacers at installation. Besides, handle the PCB with care to prevent twisting or bending as it has SMT components.

4. Output short circuit ⚠ Caution
When the output is shorted, capacitors inside the power supply may rapidly discharge, and fire and/or spark may cause a serious accident

5. Inrush current control circuit ⚠ Caution
A power thermistor is used to prevent inrush current into rectifying capacitors when AC input is turned on. If AC is input before the temperature of the thermistor goes low after turning off, a huge inrush current may occur. Make sure to keep a 60-second period at least before reclosing of AC input.

6. Output energy ⚠ Caution
The output energy of this product is dangerous (240VA min.). Service engineers and tools shall not touch the output terminals. Make sure that the input power is shut down and the voltage on the input/output terminals drops to the safe voltage before repairing.

出図
24.1.15
㈱ニプロン
技術管理

A×1:2024.01.09 N.Ishibashi

Drawn by	Checked by	Approved by	Model: ⚠A	Drawing No.
Ono	Ishibashi	Yamamoto	UZP-400-A**-*****-*	3700-01-4-520A

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

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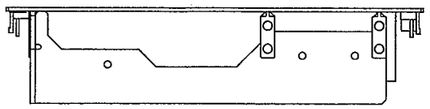
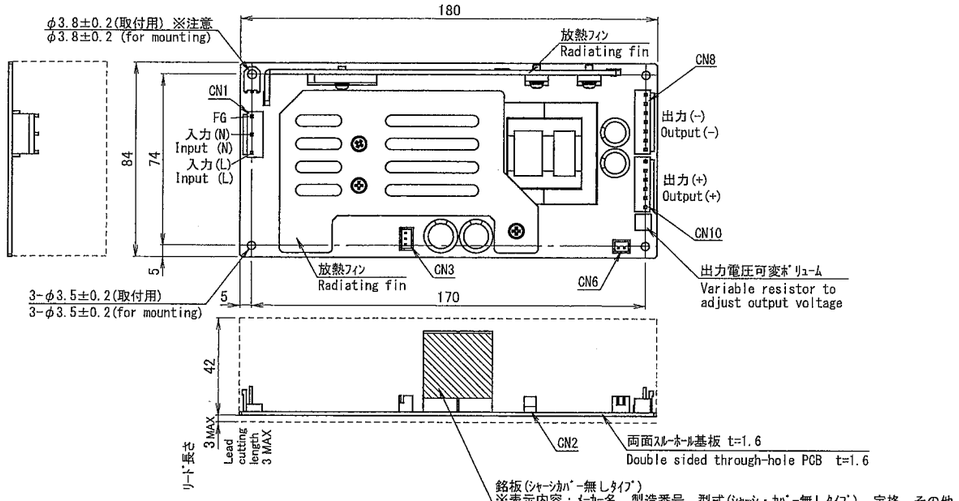
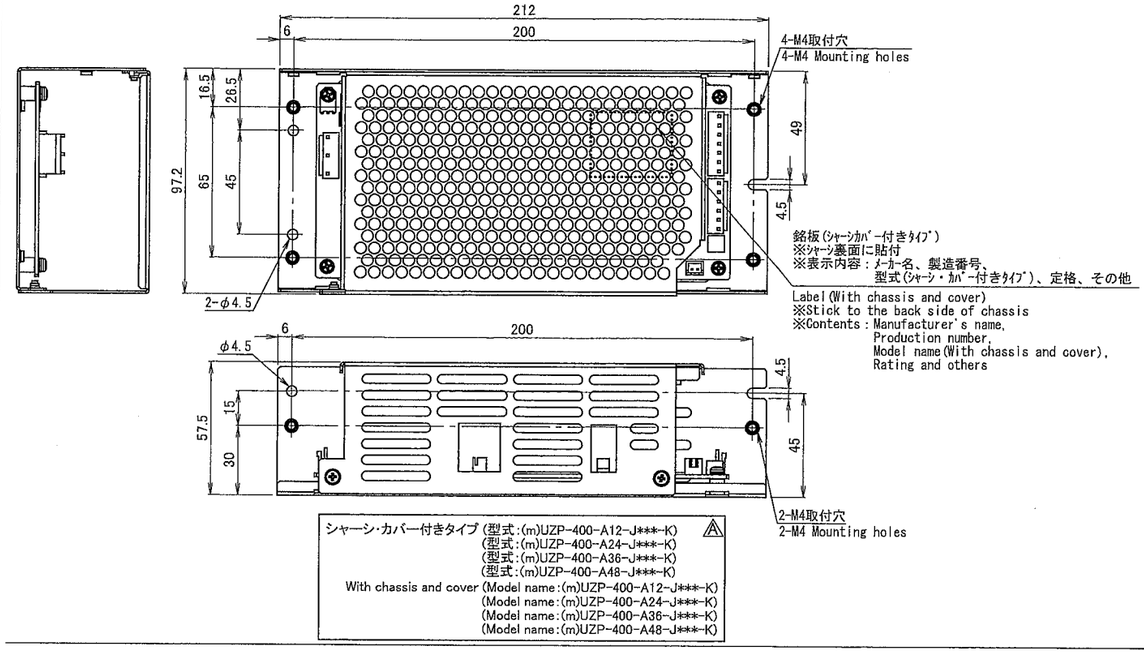
(注意)
電源の取り付け部にてセルスペーサ等を使用する場合は、外形がφ6.0以上のものをご使用ください。

(CAUTION)
If a spacer is used at mounting space, the outside diameter should be φ6.0 or more.





シャーシ・カバー無タイプ (型式:(m)UZP-400-A12-J***)
(型式:(m)UZP-400-A24-J***)
(型式:(m)UZP-400-A36-J***)
(型式:(m)UZP-400-A48-J***)
W/O chassis and cover (Model name:(m)UZP-400-A12-J***)
(Model name:(m)UZP-400-A24-J***)
(Model name:(m)UZP-400-A36-J***)
(Model name:(m)UZP-400-A48-J***)



シャーシ・カバー付きタイプ (型式:(m)UZP-400-A12-J***-K)
(型式:(m)UZP-400-A24-J***-K)
(型式:(m)UZP-400-A36-J***-K)
(型式:(m)UZP-400-A48-J***-K)
With chassis and cover (Model name:(m)UZP-400-A12-J***-K)
(Model name:(m)UZP-400-A24-J***-K)
(Model name:(m)UZP-400-A36-J***-K)
(Model name:(m)UZP-400-A48-J***-K)

※コネクタピンアサイン ※Connector pin assign

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

※CN1 適合ハウジング: VHR-5N(JST)
適合ターミナル:
リール:SVH-21T-P1.1(JST)
バルク:BVH-21T-P1.1(JST)
※CN1 Applicable housing: VHR-5N(JST)
Applicable terminals: Reel:SVH-21T-P1.1(JST) Bulk:BVH-21T-P1.1(JST)

CN10 (Output)		
PIN No.	FUNCTION	CONNECTOR TYPE
1~6	+DC	B6P-VH (JST)

※CN10 適合ハウジング: VHR-6N(JST)
適合ターミナル:
リール:SVH-41T-P1.1(JST)
バルク:BVH-41T-P1.1(JST)
※CN10 Applicable housing: VHR-6N(JST)
Applicable terminals: Reel:SVH-41T-P1.1(JST) Bulk:BVH-41T-P1.1(JST)

CN8 (Output)		
PIN No.	FUNCTION	CONNECTOR TYPE
1~7	-DC	B7P-VH (JST)

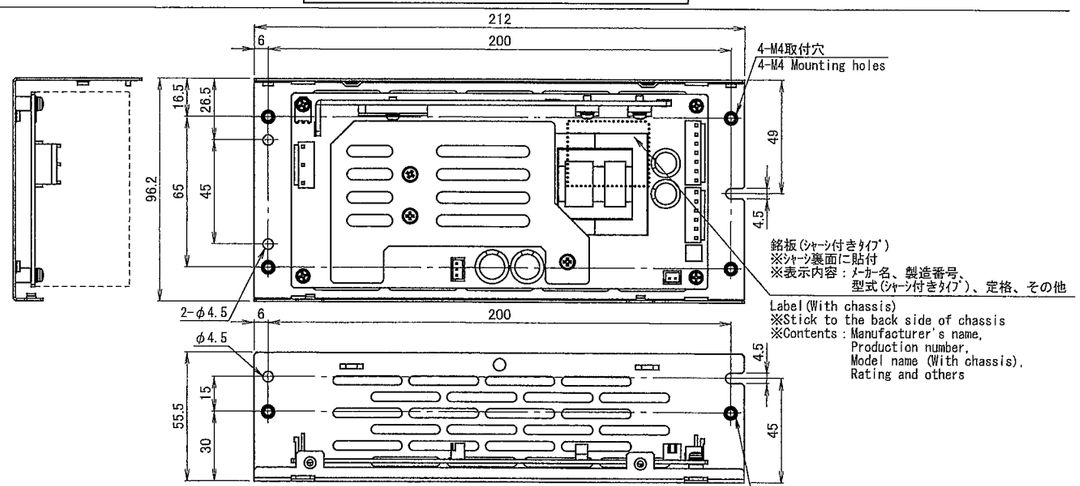
※CN8 適合ハウジング: VHR-7N(JST)
適合ターミナル:
リール:SVH-41T-P1.1(JST)
バルク:BVH-41T-P1.1(JST)
※CN8 Applicable housing: VHR-7N(JST)
Applicable terminals: Reel:SVH-41T-P1.1(JST) Bulk:BVH-41T-P1.1(JST)

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

※CN3 適合ハウジング: XHP-3(JST)
適合ターミナル:
リール:SXH-001T-P0.6(JST)
バルク:BXH-001T-P0.6(JST)
※CN3 Applicable housing: XHP-3(JST)
Applicable terminals: Reel:SXH-001T-P0.6(JST) Bulk:BXH-001T-P0.6(JST)

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

※CN6 適合ハウジング: XHP-2(JST)
適合ターミナル:
リール:SXH-001T-P0.6(JST)
バルク:BXH-001T-P0.6(JST)
※CN6 Applicable housing: XHP-2(JST)
Applicable terminals: Reel:SXH-001T-P0.6(JST) Bulk:BXH-001T-P0.6(JST)



シャーシ付きタイプ (型式:(m)UZP-400-A12-J***-C)
(型式:(m)UZP-400-A24-J***-C)
(型式:(m)UZP-400-A36-J***-C)
(型式:(m)UZP-400-A48-J***-C)
With chassis (Model name:(m)UZP-400-A12-J***-C)
(Model name:(m)UZP-400-A24-J***-C)
(Model name:(m)UZP-400-A36-J***-C)
(Model name:(m)UZP-400-A48-J***-C)

- 寸法公差：±1(但し取付寸法は±0.5)
- Dimensional tolerance：±1(±0.5 for mounting dimension)
- シャーシの取付穴(M4)締め付けトルク：1.5N･m MAX
- Tightening torque for chassis mounting hole (M4)：1.5N･m MAX

出図
22.7.06
㈱ニプロン
技術管理

A版 △×3:2022.06.07 奥平 I-340513(12V品追加)

DRAWN BY	CHECKED BY	CHECKED BY	APPROVED BY	SCALE	×	MATERIALS	TITLE	(m)UZP-400-***-J***
小野	奥平	石橋	山本	UNITS	m/m	FINISH		外観図
ISSUED 2021.09.28				3RD ANGLE PROJECTION			DRAWING NO.	3700-01-3-050 A

株式会社ニプロン

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