

Scope

This specification applies to DC stabilized power supply, UDP-240-A24-****-* for DIN rail mounting. In addition, all items in this specification shall be provided at normal temperature and humidity unless otherwise specified.

Model Name Coding

Example : UDP - 240 - A 24 - E 0 0 - B
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- ①Series Name..... “UDP” : High-efficiency DIN-rail compatible series
- ②Continuous output power..... “240” : 240W
- ③Arrester..... “A” : With Arrester
- ④Output voltage..... “24” : 24V
- ⑤Input/output connector type..... “E” : European terminal, “T” : Screw terminal
- ⑥Optional joint connector..... “0” : Without connector, “B” : With connector
- ⑦Optional function..... “0” : Without
- ⑧Modification..... “Blank” : Standard
- ⑨Bracket..... “Blank” : Without DIN-rail bracket, “B” : With DIN-rail bracket

General Specification

Items		Specification	Measurements conditions, etc.	
Input specification	Rated Voltage	100—240VAC	Worldwide range	
	Voltage Range	85—264VAC	Load factor shall be 95-100% in range of 85-90VAC input	
	Current	At 115VAC	2.3A typ	At rated output
		At 230VAC	1.2A typ	
	Rated Frequency	50—60 Hz	Frequency range 47—63Hz	
	Inrush Current	At 115VAC	20A typ	Power thermistor system At cold start (25°C)
		At 230VAC	41A typ	
	Efficiency	At 115VAC	92% typ	At rated output
		At 230VAC	94% typ	
	Power Factor	At 115VAC	99% typ	At rated output
At 230VAC		91% typ		

Note



Drawn by	Ono	Checked by	Yamada	Approved by	Yamamoto	Model: UDP-240-A24-****-*	Drawing No. 3 6 2 2 - 0 1 - 4 - 5 2 0 1/11
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Product Specification

Created: July 2, 2024

Items		Specification	Measurements conditions, etc.
Environment	Operating Temp.	-20 to 70°C *1 Available to start-up at -40°C	Refer to "Output derating with respect to ambient temperature."
	Operating Humidity	20 to 90%RH	No Dewdrop.
	Storage Temp./Humidity	-30 to 85°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 (in each 1 hour) X, Y, Z direction.	Follow JIS-C-60068-2-6 at no operation
Mechanical Shock	Left one bottom edge of the unit 50mm high with the opposite edge placed on the test bench, and let it fall. Repeat 3times 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/1minute between input and output *2	Cut-off current 10mA
		1.5kVAC/1minute between input and PE *2	Cut-off current 10mA
		500VAC/1minute between each output/PE	Cut-off current 100mA
Insulation Resistance	50MΩmin. between each input/output/PE	At 500VDC	
Leakage Current	0.20mA typ(At 100VAC), 0.40mA typ(At 200VAC)		
Others	Electrostatic Discharge	IEC61000-4-2 compliant (Contact discharge ±6kV, 10 times)	Apply to PE and case. 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	IEC-61000-4-5 compliant 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	At rated input and rated output
	Harmonic Current Regulations	IEC61000-3-2(Ed. 2.1) Class A, and EN61000-3-2(A14) Class A compliant.	At rated input and rated output
	Safety Standards	UL62368-1, CSA62368-1(c-UL) *3	Recognition
		UL508	Listing
		PSE compliant CE marking	
	SEMI Standard	SEMI-F47 compliant	Rated up to 240W
	Cooling	Convection cooling	
Dimensions and Weight	41mm×124mm×112mm (W×H×D) /660g typ	Without bracket	
	41mm×124mm×117.5mm (W×H×D) /700g typ	With bracket	
Warranty	If a defect is occurred due to our responsibility within three years after delivery, it shall be repaired or replaced at our cost.	However, fault caused by the misuse exceeding the specification is out of warranty.	

Note *1. When starting up at -15°C or lower, it may take several seconds for the output voltage to stabilize. Please evaluate the product on the actual machine before use.

*2. The withstand voltage between the input terminal and output terminal is 3 kV AC / min, but the test should be limited to 1.5 kV AC / min because an arrester is mounted between the input terminal and the protective earth terminal.

*3. Annex R performed with SQUARE D Q01P.



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Output Specification				
Items		Specification		Measurement conditions, etc
Output Rating	Rated Voltage		24V	At rated input. Refer to "Output derating with respect to ambient temperature" Refer to "Peak output specification"
	Continuous Rating	Current	10A	
		Power	240W	
	Peak Rating (10 seconds or less)	Current	16.7A	
Power		400.8W		
Output Characteristics	Factory Setting		24V±2%	At rated output
	Adjustable Voltage Range		22.8V(95%) ~ 28.8V(120%)	
	Static Input Regulation		94mV Max.	
	Static Load Regulation		150mV Max.	
	Temperature Regulation		0.02%/°C Max.	
	Ripple Voltage	0 to +70°C	120mVp-p Max.	Connect 150mm max. lead wire to output connectors, and then connect a 10µF electrolytic capacitor with a 0.1µF ceramic capacitor in parallel to the other ends of the wires to measure by an oscilloscope with 100MHz frequency band.
		-10 to 0°C	160mVp-p Max.	
		-20 to -10°C	240mVp-p Max.	
	Spike Noise Voltage	0 to +70°C	150mVp-p Max.	
		-10 to 0°C	180mVp-p Max.	
		-20 to -10°C	300mVp-p Max.	
Start up time		800ms Max.		
Output Hold-up time		20ms typ	At rated output	
PWK_OK LED		Output ON : Green Output OFF : off		
Protection Circuit	Over Current Protection	OCP point	101%min. of peak rated current	
		Method	Blocking oscillation	
		Recovery	Automatic recovery	
	Over Voltage Protection	OVP point	30 to 36V	
		Method	Output shutdown	
		Recovery	Reclosing of AC input	
Note				



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●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°C 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, I_o , after derating specified in the clause, "Output derating."

$$\sqrt{((I_p^2 \times D) + (I_m^2 \times (1-D)))} \leq I_o$$

I_p =Peak current value

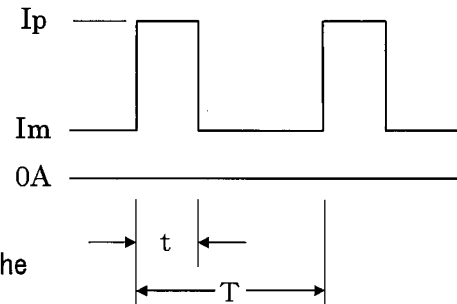
I_m =Minimum current value

D =Duty ratio, t/T

t =Pulse width of peak current

T =Cycle

I_o =Continuous rated current specified in the clause "Output derating"

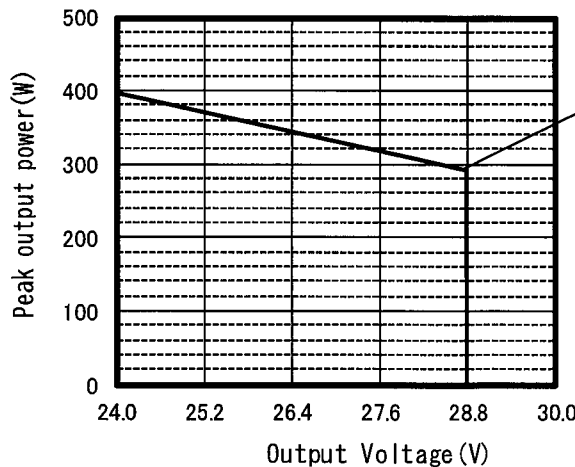


(Note)

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.

- Peak output derating against the output voltage

Use this product by reducing the peak power according to the preset output voltage, as shown in the derating diagram shown below.



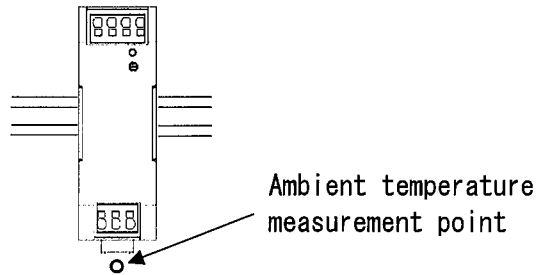
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●Output derating against ambient temperature

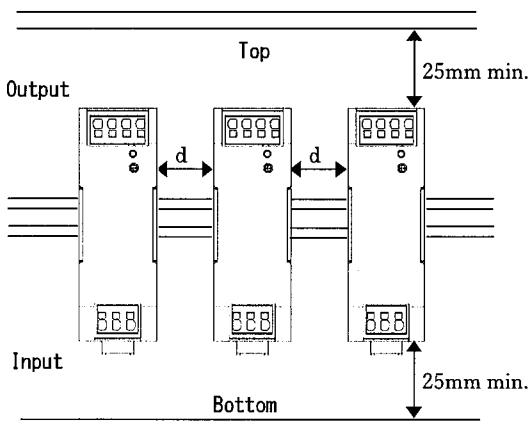
Reduce output power as indicated by the derating diagram, depending on ambient temperature and installation direction of the power supply.

When installing on a DIN rail, there shall be at least 25 mm of space above and below the product. In addition, reduce the output power depending on the distance between the product and adjacent objects, as shown in the derating diagram.

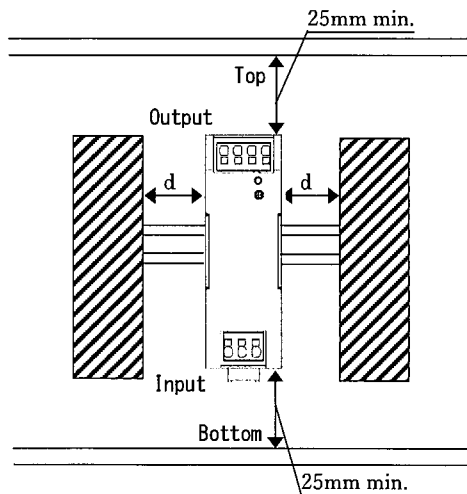
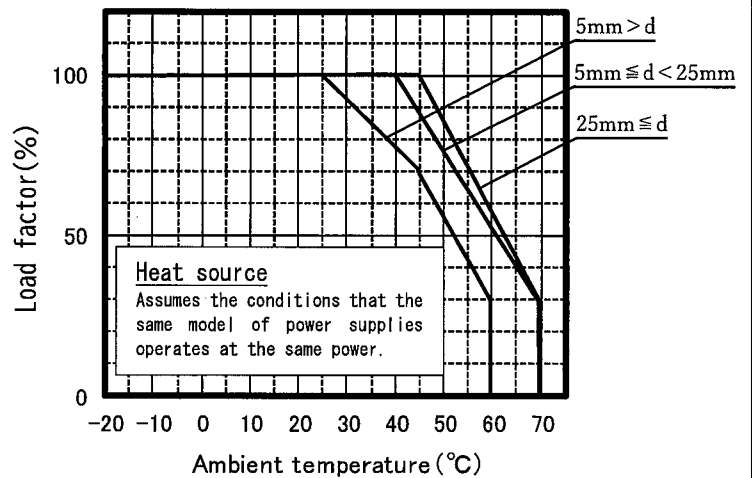
The ambient temperature of the power supply installed on a DIN-rail means the temperature measured at the point where convection air enters the power supply.



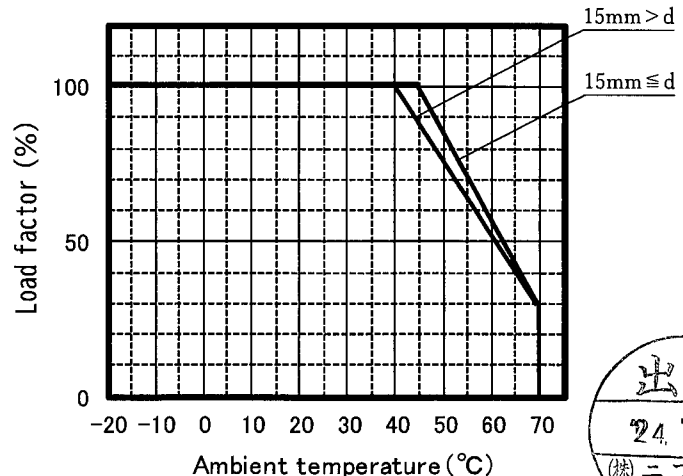
▪ Mounting (A)



When the adjacent object is a heat source

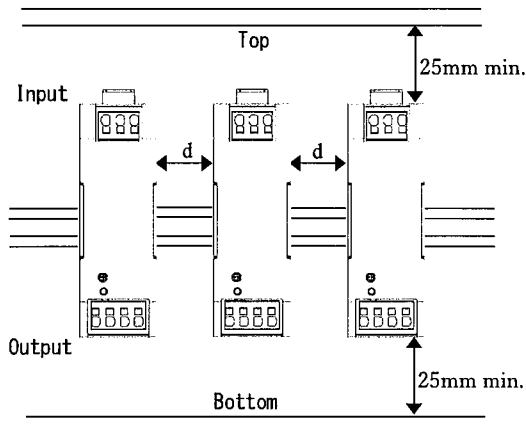


When the adjacent object is not a heat source

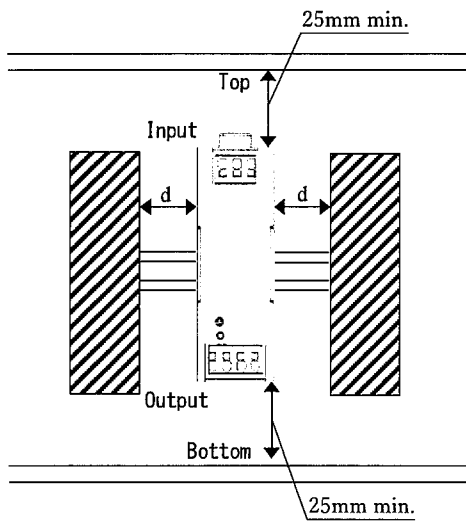
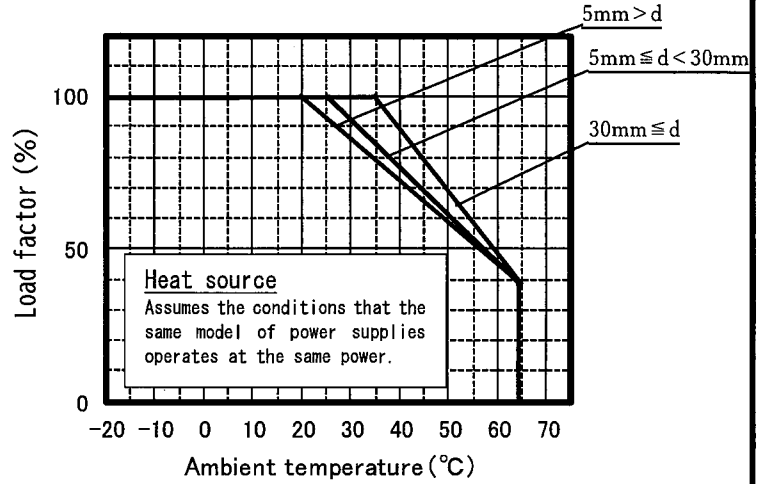


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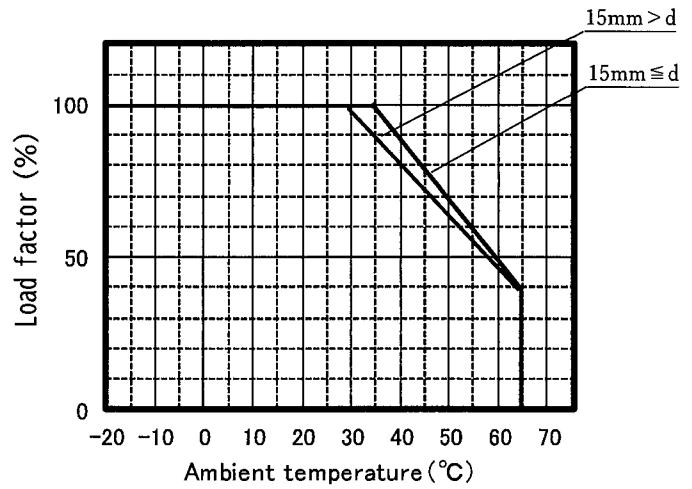
Mounting (B)



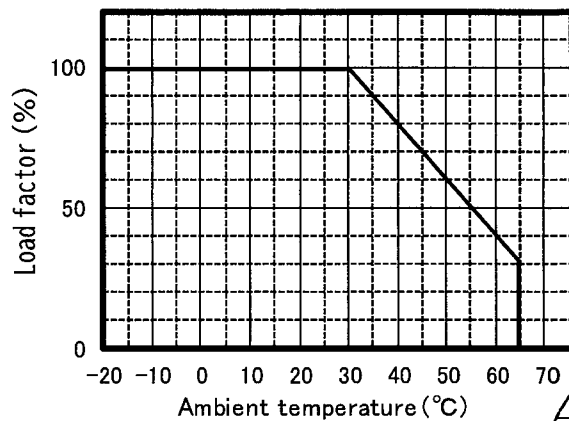
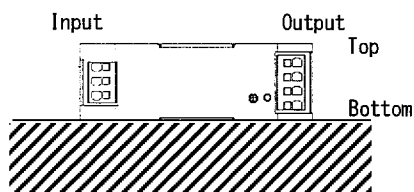
When the adjacent object is a heat source



When the adjacent object is not a heat source



Mounting (C)

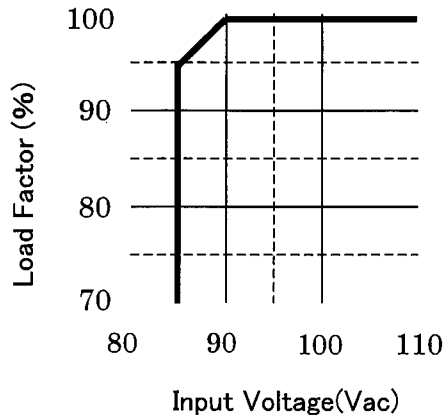


出図
24.7.02
技術管理

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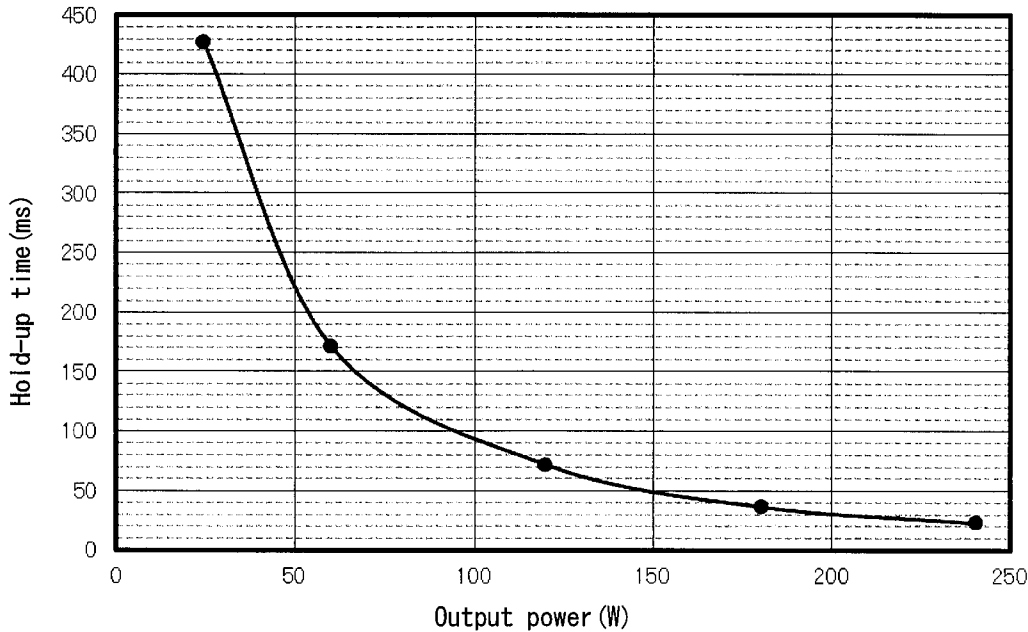
● Output derating against input voltage

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



● Output Hold-up Time vs. Output Power (Reference)

*Input:100VAC, Output:24V

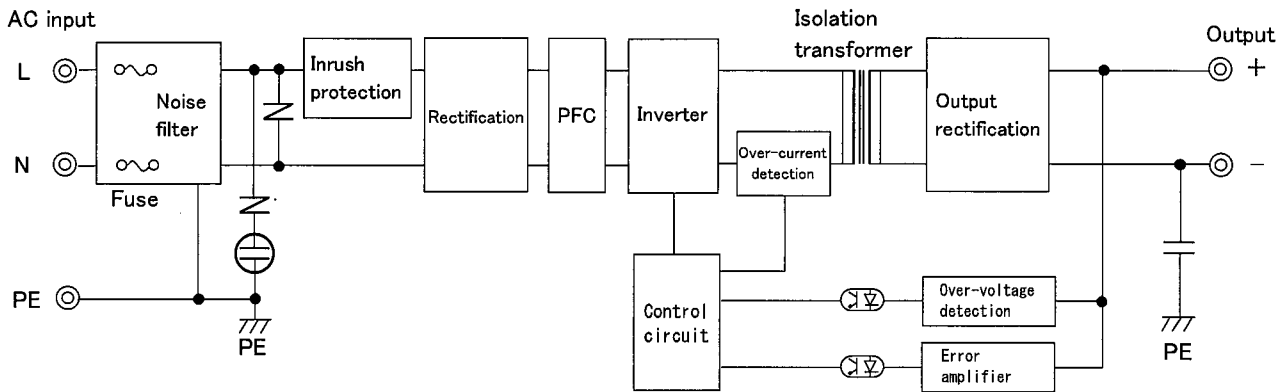


Note



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●Circuit block diagram



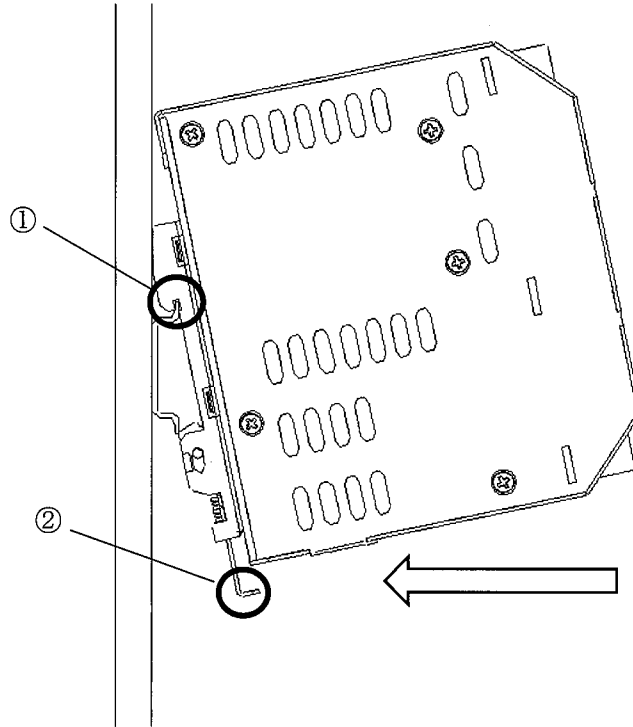
Note



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●Attach to or Detach from a DIN-Rail

- To attach the product to a DIN-rail, hook part 1 (shown below) first and then push the product in the direction indicated by the arrow until it snaps in.
- To detach the product from a DIN-rail, pull down part 2 first and then remove the product.



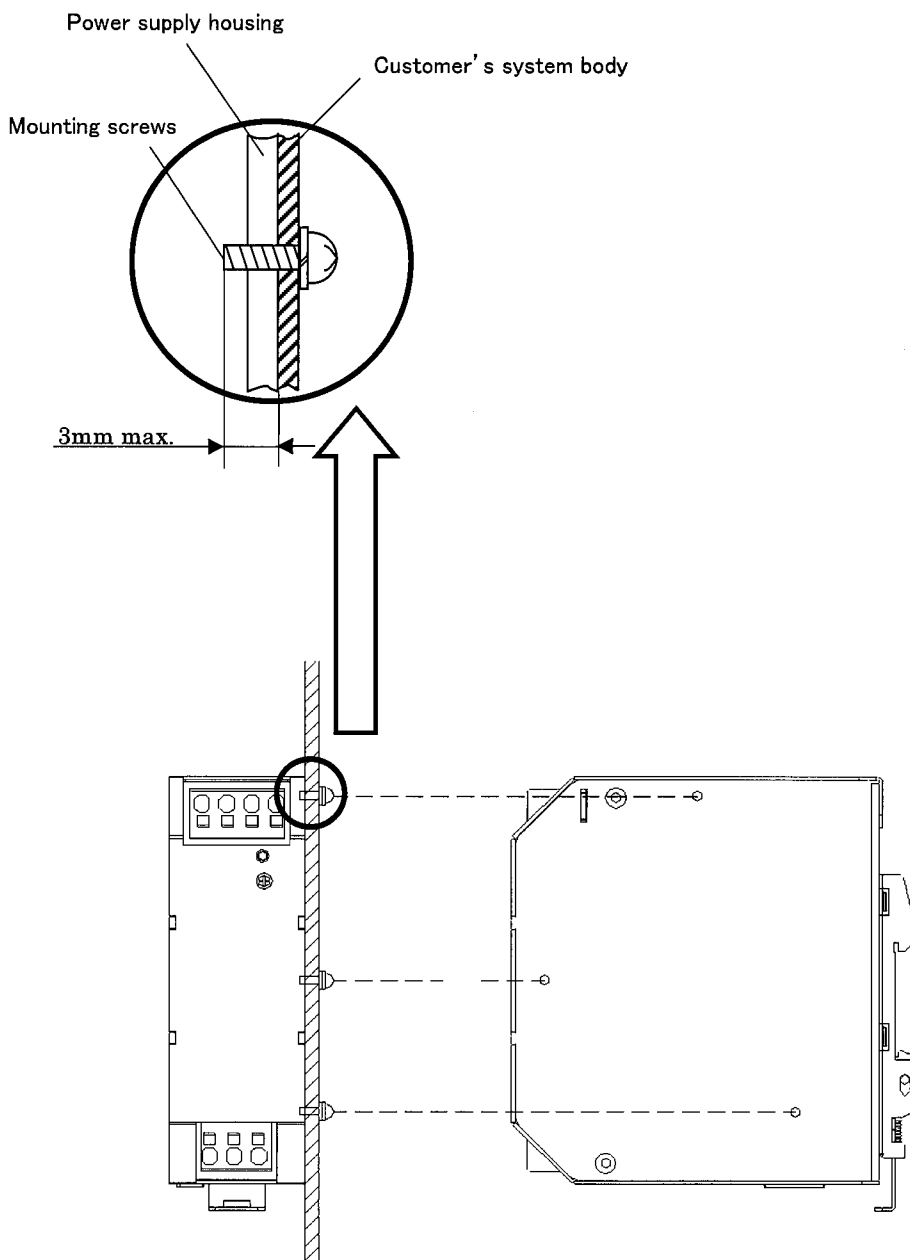
Note



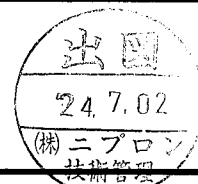
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●Power Supply Mounting Screws and Grounding

- When using the power supply mounting holes, secure the power supply to all three holes.
- Use 3-mm-diameter screws to secure the power supply.
- Be sure to connect the protective earth terminal on the input terminal block to the safety ground.








Note



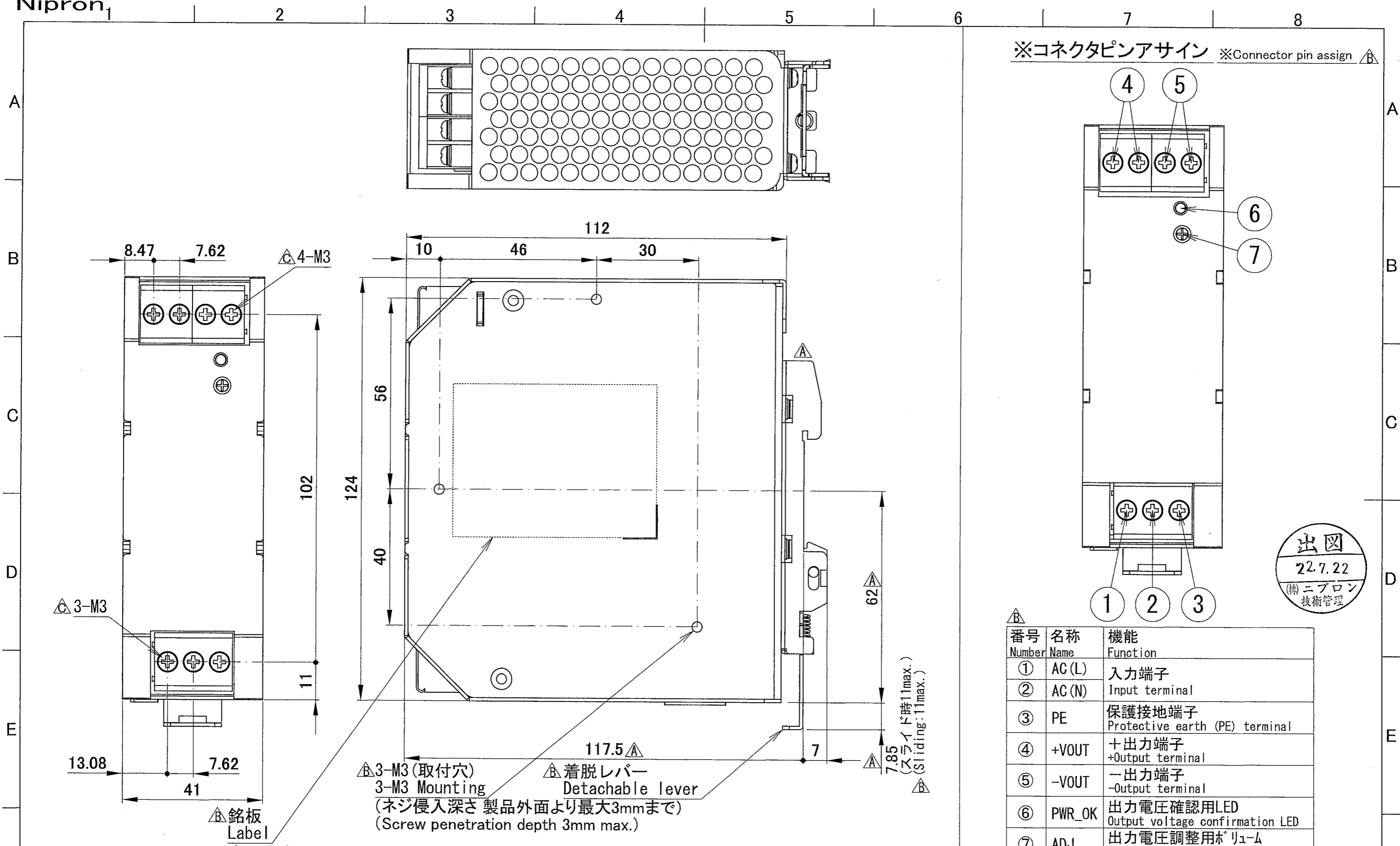
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Precautions before use

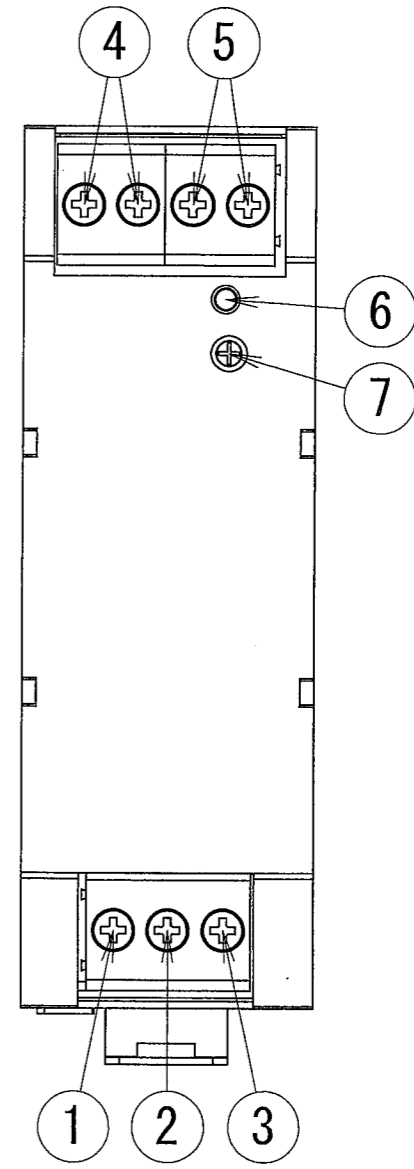
1. Grounding  WARNING
This unit is designed and produced to meet Class1 equipment. Make sure to connect the protective earth(PE) terminal of the unit to grounding in a proper way for safety
2. Electric shock  WARNING
Do not disassemble or modify the product. There is a risk of electric shock or malfunction. In addition, there is a risk of electric shock due to missing wiring, so please use it after confirming that it is fixed.
3. 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.
4. 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.
5. 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.



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※コネクタピンアサイン ※Connector pin assign



出図
22.7.22
ニプロン
技術管理

番号 Number	名称 Name	機能 Function
①	AC (L)	入力端子 Input terminal
②	AC (N)	入力端子 Input terminal
③	PE	保護接地端子 Protective earth (PE) terminal
④	+VOUT	+出力端子 +Output terminal
⑤	-VOUT	-出力端子 -Output terminal
⑥	PWR_OK	出力電圧確認用LED Output voltage confirmation LED
⑦	ADJ	出力電圧調整用ボリューム Output voltage adjustment trimmer

表示内容：メーカー名、製造番号、型式、定格、その他
Contents: Manufacturer's name, Production number, Model name, Rating and others

・寸法公差：±1(但し取付寸法は±0.5)
・Dimensional tolerance: ±1 (±0.5 for mounting dimension)

B版 7:2021.01.05 奥平(麻) I-320722(型式変更、英訳追記)
A版 4:2019.09.05 中川 I-310904(DINレール金具変更、寸法値変更) C版 2:2022.06.24 中川 I-340629(端子台のネジ径追加)

DRAWN BY	CHECKED BY	CHECKED BY	APPROVED BY	SCALE	MATERIALS	UDP-240-***-T00*-B
小野	平田	石橋	山本	UNITS m/m	FINISH	外観図
ISSUED	2019.08.01	3RD ANGLE PROJECTION		DRAWING NO.	3622-03-3-050 C	