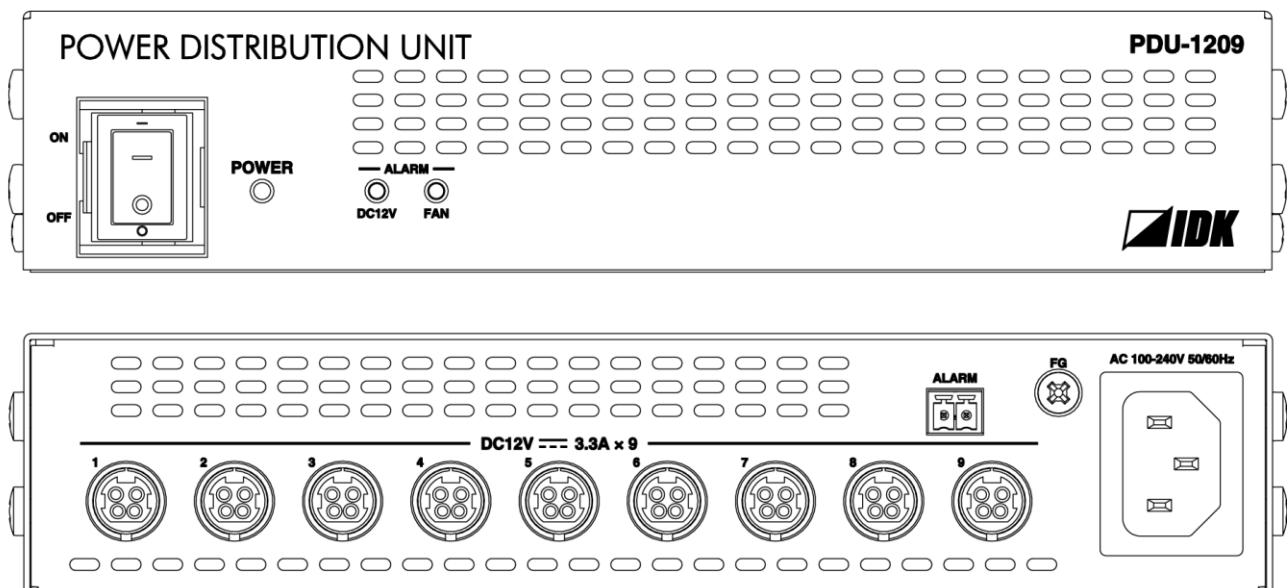


## IP-NINJAR Power Distribution Unit

# PDU-1209

<User Guide>

Ver. 2.3.0



- Thank you for choosing our product.
- To ensure the best performance of this product, please read this user guide fully and carefully before using it and keep this manual together with the product for future reference as needed.

## **Trademarks**

- Blu-ray Disc and Blu-ray are trademarks of Blu-ray Disc Association.
- The terms HDMI and HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc. in the United States and other countries.
- IP-NINJAR is a registered trademark of IDK Corporation in Japan.
- All other company and product names mentioned in this manual are either registered trademarks or trademarks of their respective owners. In this manual, the “®” or “™” marks may not be specified.

# Before reading this manual

- All rights reserved.
- Some information contained in this User guide such as exact product appearance, and so on may differ depending on the product version.
- This User guide is subject to change without notice. You can download the latest version from IDK's website at: [www.idkav.com](http://www.idkav.com)

## FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

## CE MARKING

This equipment complies with the essential requirements of the relevant European health, safety and environmental protection legislation.

## WEEE MARKING











Waste Electrical and Electronic Equipment (WEEE), Directive 2002/96/EC  
(This directive is only valid in the EU.)

This equipment complies with the WEEE Directive (2002/96/EC) marking requirement.  
The left marking indicates that you must not discard this electrical/electronic equipment in domestic household waste.

# Safety Instructions


Read and understand all safety and operating instructions before using this product. Follow all instructions and heed all warnings/cautions.

Enforcement Symbol	Description
 <b>Warning</b>	Indicates the presence of a hazard that may result in death or serious personal injury if the warning is ignored or the product is handled incorrectly.
 <b>Caution</b>	Indicates the presence of a hazard that may cause minor personal injury or property damage if the caution is ignored or the product is handled incorrectly.



Symbol	Description	Example
 Caution	This symbol is intended to alert the user. (Warning and caution)	 Hot surfaces Caution
 Prohibited	This symbol is intended to prohibit the user from specified actions.	 Do not disassemble
 Instruction	This symbol is intended to instruct the user.	 Unplug

# Warning





**■ For lifting heavy products:**

 <b>Instruction</b>	<ul style="list-style-type: none"> <li>● <b>Lifting must be done by two or more personnel.</b></li> </ul> <p>To avoid injury: When lifting the product, bend your knees, keep your back straight and get close to it with two or more persons.</p>
---	--


**■ For installing and connecting products:**

 <b>Prohibited</b>	<ul style="list-style-type: none"> <li>● <b>Do not place the product upon a surface that may give way or that may become unstable.</b></li> </ul> <p>Install the product in a secure and stable place to prevent it from falling and possibly causing injury.</p> <ul style="list-style-type: none"> <li>● <b>Secure the product if installing in locations prone to vibration or movement.</b></li> </ul> <p>Otherwise, it may move unexpectedly or it may fall and lead to injury.</p>
 <b>Instruction</b>	<ul style="list-style-type: none"> <li>● <b>Installation work must be performed by professionals.</b></li> </ul> <p>The product is intended to be installed by skilled technicians. For installation, please contact a system integrator or IDK. Improper installation may lead to the risk of fire, electric shock, injury, or property damage.</p> <ul style="list-style-type: none"> <li>● <b>Insert the power plug into an outlet that is unobstructed.</b></li> </ul> <p>Unobstructed access to the plug enables unplugging the product in case of any extraordinary failure, abnormal situation or for easy disconnection during extended periods of non-use.</p> <ul style="list-style-type: none"> <li>● <b>Insert the power plug into an appropriate outlet completely.</b></li> </ul> <p>If the plug is partially inserted, arcing may cause the connection to overheat, increasing the risk of electrical shock or fire. Do not use a damaged plug or connect to a damaged outlet.</p> <ul style="list-style-type: none"> <li>● <b>Unplug the product from the AC power source during installation or service.</b></li> </ul> <p>When connecting peripheral devices to this product, unplug all involved devices from outlets. Ground potential differences may cause fire or other difficulties.</p>

**■ For operating products:**

 <b>Prohibited</b>	<ul style="list-style-type: none"> <li>● <b>Keep out any foreign objects.</b></li> </ul> <p>To avoid fire or electric shock, do not permit foreign objects, such as metal and paper, to enter the product from vent holes or other apertures.</p> <ul style="list-style-type: none"> <li>● <b>For power cable/plug:</b></li> </ul> <ul style="list-style-type: none"> <li>▪ <b>Do not scratch, heat, or modify, including splicing or lengthening them.</b></li> <li>▪ <b>Do not pull, place heavy objects on them, or pinch them.</b></li> <li>▪ <b>Do not bend, twist, tie or clamp them together forcefully.</b></li> </ul> <p>Misuse of the power cable and plug may cause fire or electric shock. If power cables/plugs become damaged, contact your IDK representative.</p>
 <b>Do not disassemble</b>	<ul style="list-style-type: none"> <li>● <b>Do not repair, modify or disassemble.</b></li> </ul> <p>Since the product includes circuitry that uses potentially lethal, high voltage levels, disassembly by unauthorized personnel may lead to the risk of fire or electric shock. For internal inspection or repair, contact your IDK representative.</p>
 <b>Do not touch</b>	<ul style="list-style-type: none"> <li>● <b>Do not touch the product and connected cables during electrical storms.</b></li> </ul> <p>Contact may cause electric shock.</p>
 <b>Instruction</b>	<ul style="list-style-type: none"> <li>● <b>Clean the power plug regularly.</b></li> </ul> <p>If the plug is covered in dust, it may increase the risk of fire.</p> <ul style="list-style-type: none"> <li>● <b>The product must be earthed.</b></li> </ul> <p>To reduce the risk of electrical shock, ensure the product is connected to a mains socket outlet with a protective earthing connection.</p>




■ **If the following problem occurs:**

 <b>Unplug</b>	<ul style="list-style-type: none"> <li>● <b>Unplug immediately if the product smokes, makes unusual noise, or produces a burning odor.</b> If you continue to use the product under these conditions, it may cause electric shock or fire.</li> <li>● <b>Unplug immediately if the product is damaged by falling or having been dropped.</b> If you continue to use the product under these conditions, it may increase the risk of electrical shock or fire. For maintenance and repair, contact your IDK representative.</li> <li>● <b>Unplug immediately if water or other objects are directed inside.</b> If you continue to use the product under these conditions, it may increase the risk of electrical shock or fire. For maintenance and repair, contact your IDK representative.</li> </ul>
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## Caution

■ **For installing and connecting products:**

 <b>Prohibited</b>	<ul style="list-style-type: none"> <li>● <b>Do not place the product in a location where it will be subjected to high temperatures.</b> If the product is subjected to direct sunlight or high temperatures while under operation, it may affect the product's performance and reliability and may increase the risk of fire.</li> <li>● <b>Do not store or operate the product in dusty, oil smoke filled, or humid place.</b> If the product is placed near humidifiers or in a dusty area, it may increase the risk of fire or electric shock.</li> <li>● <b>Do not block the vent holes.</b> If ventilation slots are blocked, it may cause the product to overheat, affecting performance and reliability and may increase the risk of fire.</li> <li>● <b>Do not place or stack heavy items on the product.</b> Failure to observe this precaution may result in damage to the product and other property and may lead to the risk of personal injury.</li> <li>● <b>Do not exceed ratings of outlet and wiring devices.</b> Exceeding the rating of an outlet may increase the risk of fire and electric shock.</li> </ul>
 <b>No wet hands</b>	<ul style="list-style-type: none"> <li>● <b>Do not handle power plug with wet hands.</b> Failure to observe this precaution may increase the risk of electrical shock.</li> </ul>
 <b>Instruction</b>	<ul style="list-style-type: none"> <li>● <b>Use and store the product within the specified temperature/humidity range.</b> If the product is used outside the specified range for temperature and humidity continuously, it may increase the risk of fire or electric shock.</li> <li>● <b>Do not place the product at elevations of 1.24 mi. (2,000 m) or higher above sea level.</b> Failure to do so may shorten the life of the internal parts and result in malfunctions.</li> <li>● <b>When mounting the product into the rack, provide sufficient cooling space.</b> Mount the product in a rack meeting EIA standards, and maintain spaces above and below for air circulation. For your safety as required, attach an L-shaped bracket in addition to the panel mount bracket kit to improve mechanical stability.</li> <li>● <b>Never insert screws without the rubber feet into the threaded holes on the bottom of the product.</b> Never insert screws without the rubber feet into the threaded holes on the bottom of the product. Doing so may lead to damage when the screws contact electrical circuitry or components inside the product. Reinstall the originally supplied rubber feet using only the originally supplied screws.</li> </ul>

■ For operating products:

 <p><b>Hot surfaces Caution</b></p>	<p><b>For products with the hot surfaces caution label only:</b></p> <ul style="list-style-type: none"> <li>● <b>Do not touch the product's hot surface.</b></li> </ul> <p>If the product is installed without enough space, it may cause failures of other products operation. If you touch product's hot surface, it may cause burn.</p>
 <p><b>Prohibited</b></p>	<ul style="list-style-type: none"> <li>● <b>Use only the supplied power cable and AC adapter.</b></li> <li>● <b>Do not use the supplied power cable and AC adapter with other products.</b></li> </ul> <p>If non-compliant adapter or power cables are used, it may increase the risk of fire or electrical shock.</p>
 <p><b>Unplug</b></p>	<ul style="list-style-type: none"> <li>● <b>If the product won't be used for an extended period of time, unplug it.</b></li> </ul> <p>Failure to observe this precaution may increase the risk of fire.</p> <ul style="list-style-type: none"> <li>● <b>Unplug the product before cleaning.</b></li> </ul> <p>To prevent electric shock.</p>
 <p><b>Instruction</b></p>	<ul style="list-style-type: none"> <li>● <b>If cooling fan stops, power off the product and contact us.</b></li> </ul> <p>Failure to do so may rise internal temperature and increase the risk of malfunction, fire, or electric shock.</p> <ul style="list-style-type: none"> <li>● <b>Keep vents clear of dust.</b></li> </ul> <p>If the vent holes near the cooling fan or near the fan are covered with dust, internal temperature rises and it may increase the risk of malfunction. Clean the vent holes and near the fan as needed.</p> <p>If dust accumulates inside of the product, it may increase the risk of malfunction, fire, or electric shock. Periodic internal cleaning, especially before humid rainy season, is recommended. For internal cleaning, contact your IDK representative.</p>

## Table of Contents

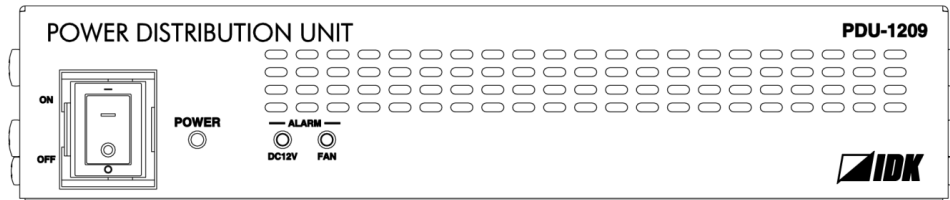
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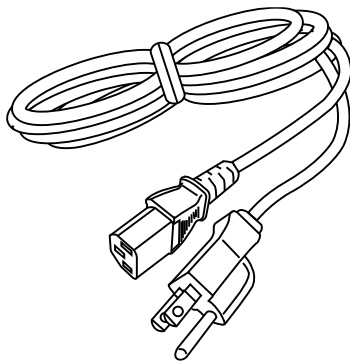


# 1 Included Items

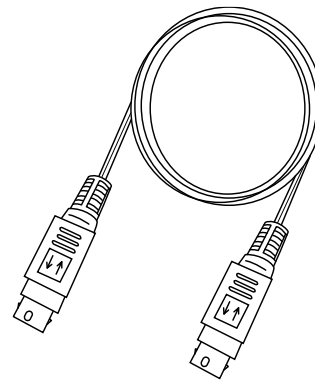
Ensure that all items below are included in the package.  
If any items are missing or damaged, please contact IDK.



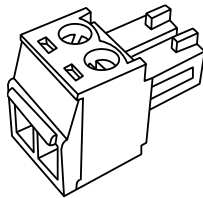
One (1) main unit (PDU-1209)



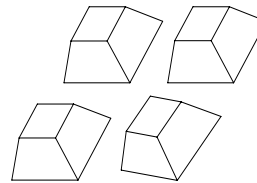
One (1) power cord, 6 ft. (1.8 m)



Nine (9) DIN plug DC cables with locking mechanism (5 ft. (1.5 m))



One (1) 2-pin captive screw connector



Four (4) Rubber feet

**[Fig. 1.1] Included items**

**Notes:**

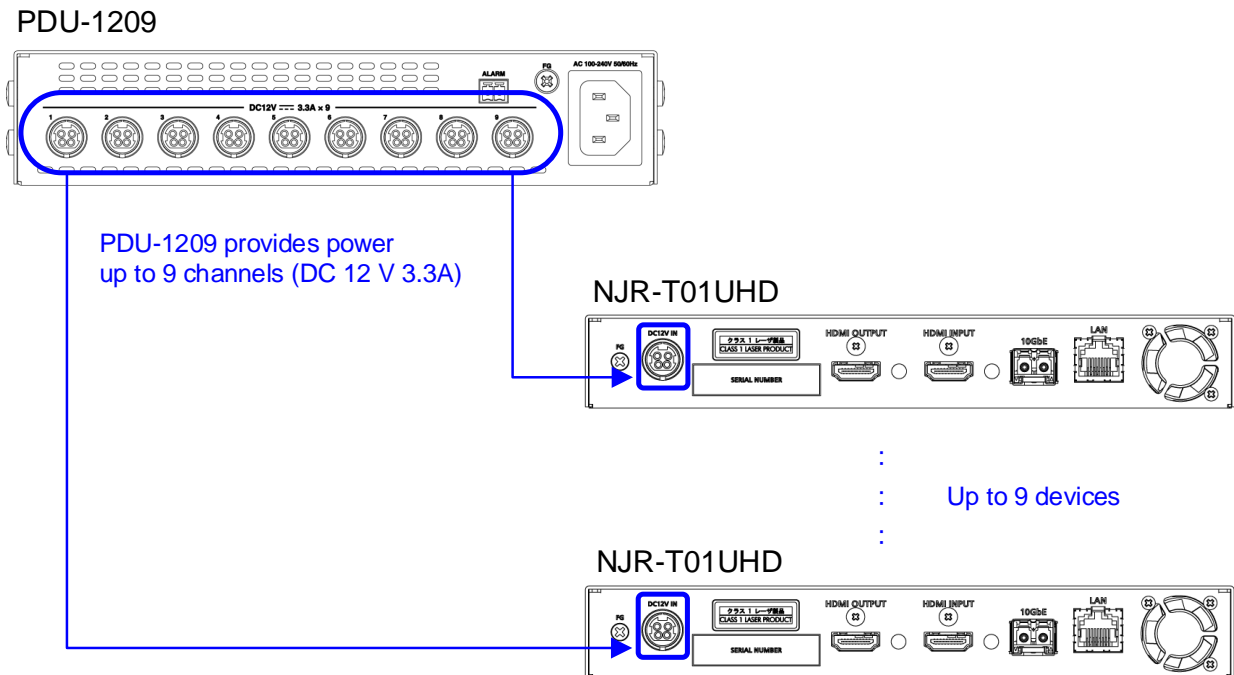
Follow the instructions below to prevent fire and electrical shock.

- Do not use any other cables than the supplied DIN-plug DC cable.
- Do not use the supplied DC cable for purpose other than power supply to the compatible products.

## 2 Product Outline

The PDU-1209 is a power distribution unit that provides power for up to nine compatible devices (12 VDC IDK's products).

The PDU-1209 has overcurrent protection. If the PDU-1209 detects a power failure or a fan failure, the appropriate front panel LED is illuminated and the PDU-1209 outputs a warning alarm.



[Fig. 2.1] Typical application diagram

**Note:**

Do not use the PDU-1209 for any purpose other than for power distribution to the products listed above.

## 3 Features

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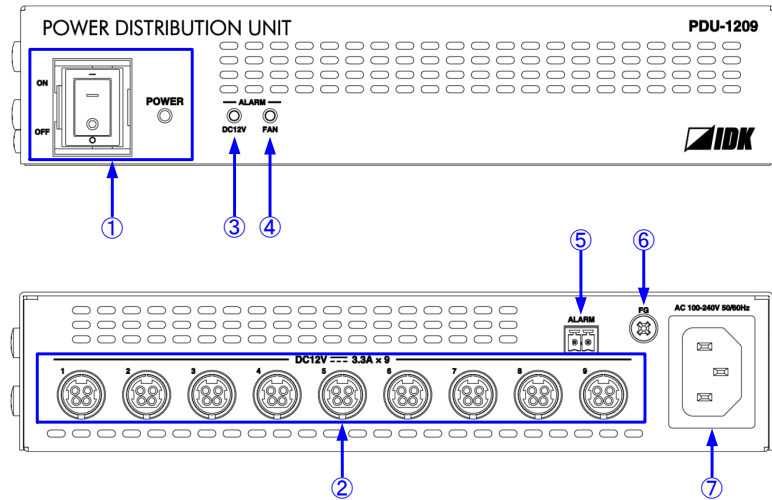
### ■ Power supply

- Multiple IP-NINJAR products power supply
- DC 12 V 3.3 A output to 9 channels
- Overcurrent protection

### ■ Others

- Alarm output (DC or fan failure)
- DC cable with locking mechanism

## 4 Front and Rear Panels



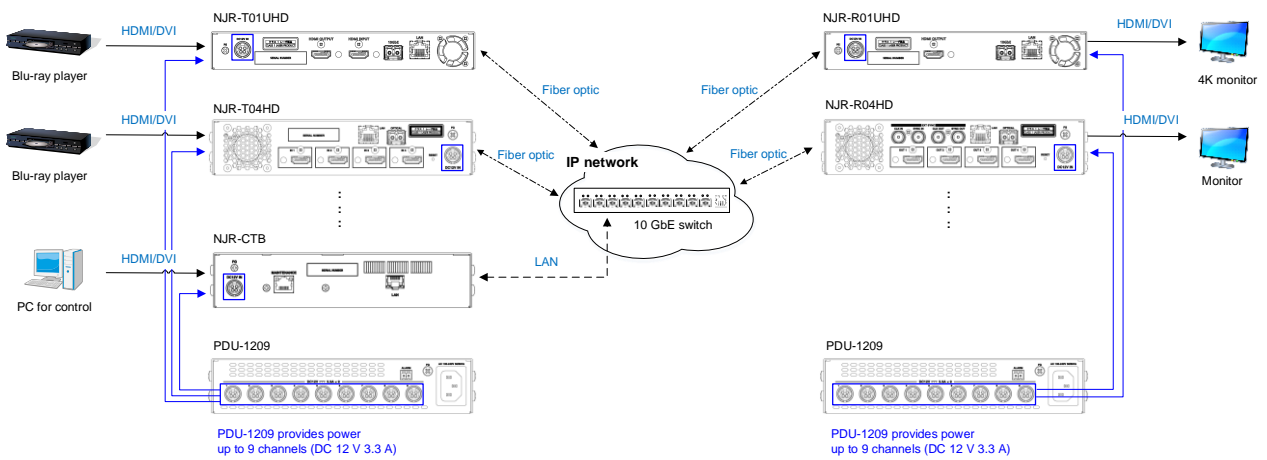
[Fig. 4.1] Panel drawing (Upper: Front panel, Lower: Rear panel)

[Table 4.1] Part names and descriptions

#	Name	Description
①	POWER switch	Powers the PDU-1209 ON/OFF. The POWER LED (green) lights when the PDU-1209 is powered on.
②	DC output connectors	Connects to target devices using DIN plug DC cables. When ① is turned ON, power is supplied to the target devices.
③	ALARM (DC12V) LED	Illuminates red if an overcurrent condition causes one or more output connectors (②) to be disabled.  【See: 7 Alarm conditions】
④	ALARM (FAN) LED	Illuminates red if the cooling fan fails to operate correctly  【See: 7 Alarm conditions】
⑤	ALARM connector	Detects abnormalities in the PDU-1209 power and its cooling fan using the supplied 2-pin terminal block.  【See: 6.3.2 Connecting alarm】
⑥	Frame ground	Ground terminal ⑥ can be used to provide an electrical bond between the PDU-1209 and surrounding equipment ground potential. An M4 screw is used.
⑦	AC power connector	For the supplied power cable

## 5 System configuration example

System configuration example: The PDU-1209 is connected to IP-NINJAR series products which are connected to source and sink devices.



[Fig. 5.1] Configuration example

## 6 Precautions and preparations

Before using the PDU-1209, follow the precautions and instructions below.

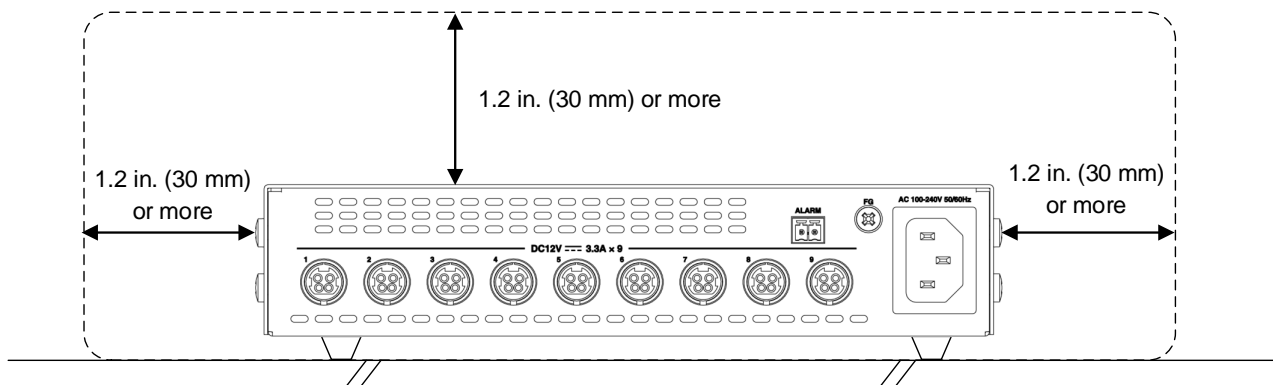
### 6.1 Attaching Rubber feet

First, clean the bottom surface of the PDU-1209 as needed, and then peel the release papers from the rubber feet and place them in each of the four corners.

### 6.2 Installation

Follow the instructions below when installing the PDU-1209.

- Do not place the PDU-1209 on another device directly. The temperature of its bottom surface is elevated after it is powered on.
- Do not block vent holes. To provide adequate ventilation, maintain sufficient clearances around the PDU-1209 (1.2 in. (30 mm) or more).
- When placing the PDU-1209 in an EIA rack-mount unit, keep 1U or more vertical clearance above and below the unit.
- Prepare ventilating equipment to keep the ambient temperature at 104°F (40°C) or lower. If inadequately vented, the life of parts may be shortened and operation may be affected.
- When you do not use an EIA rack-mount unit, maintain adequate clearances (1.2 in. (30 mm) or more) as shown below.



[Fig. 6.1] Minimum required clearances (when an EIA rack-mount unit is not used)

## 6.3 Cabling

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Follow the precautions below when connecting the PDU-1209 to target devices.

- Read the user's guides of connected devices carefully.
- When connecting a cable to the PDU-1209 or a compatible product, dissipate static electricity by touching grounded metal such as racks before handling single cables. Failure to observe this precaution may result in ESD (electrostatic discharge) damage.
- Turn off all devices.
- Be sure to fully seat all plugs and connections and dress cables to reduce stress on connectors.

**Notes:**

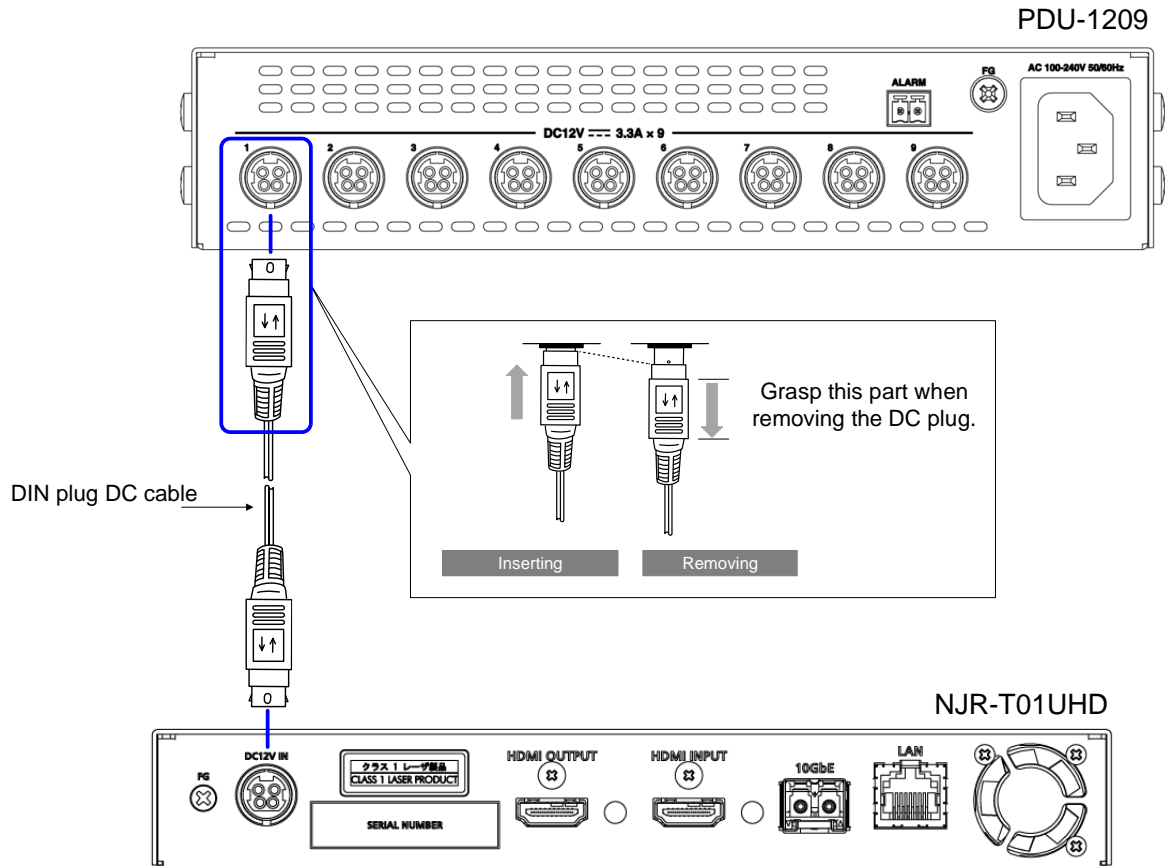
If you do not follow the precautions above, the PDU-1209 may malfunction or may be damaged.

- Do not connect the AC adapter that is supplied with the compatible products to a DC output connector of the PDU-1209.
- Do not connect the PDU-1209's DC outputs to one another using the supplied DIN plug DC cable.

### 6.3.1 Connecting to compatible products

Use a supplied DIN plug DC cable to connect the PDU-1209 to a compatible product.

Insert each DC plug into an output connector until it clicks. To remove a plug from the output connector, grasp the plug as illustrated below.

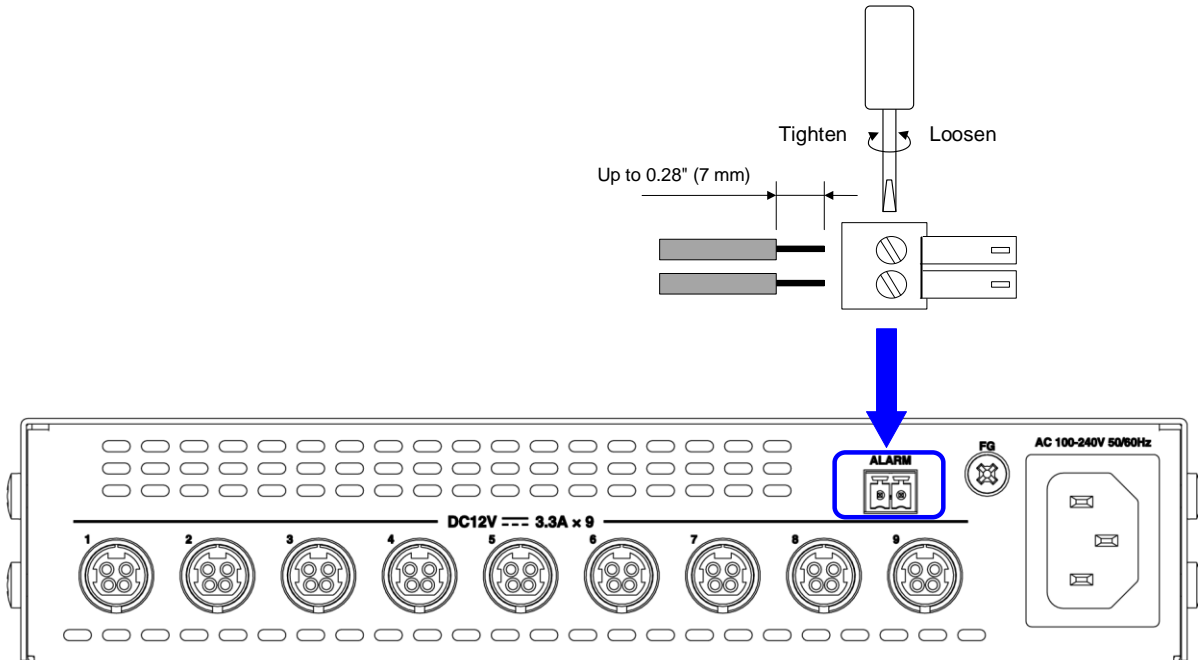


[Fig. 6.2] Connecting PDU-1209 to NJR-T01UHD



### 6.3.2 Connecting alarm

In order to activate the alarm function which warns you of a power failure and a decrease in cooling fan speed, attach the supplied 2-pin captive screw connector to a cable and connect to the ALARM connector. 28 AWG to 16 AWG conductor gauge is recommended. The maximum wire strip length is 0.28 in. (7 mm).

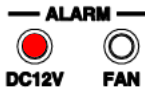



[Fig. 6.3] Connecting 2-pin captive screw connector

## 7 Alarm conditions

The PDU-1209 outputs an alarm when one of the following problems occurs. While the ALARM (DC12V) LED is illuminated, the PDU-1209 automatically interrupts power to the particular DC output connectors with an overcurrent condition. Power is automatically restored, once the overcurrent fault has been corrected.

[Table 7.1] Outputting alarm

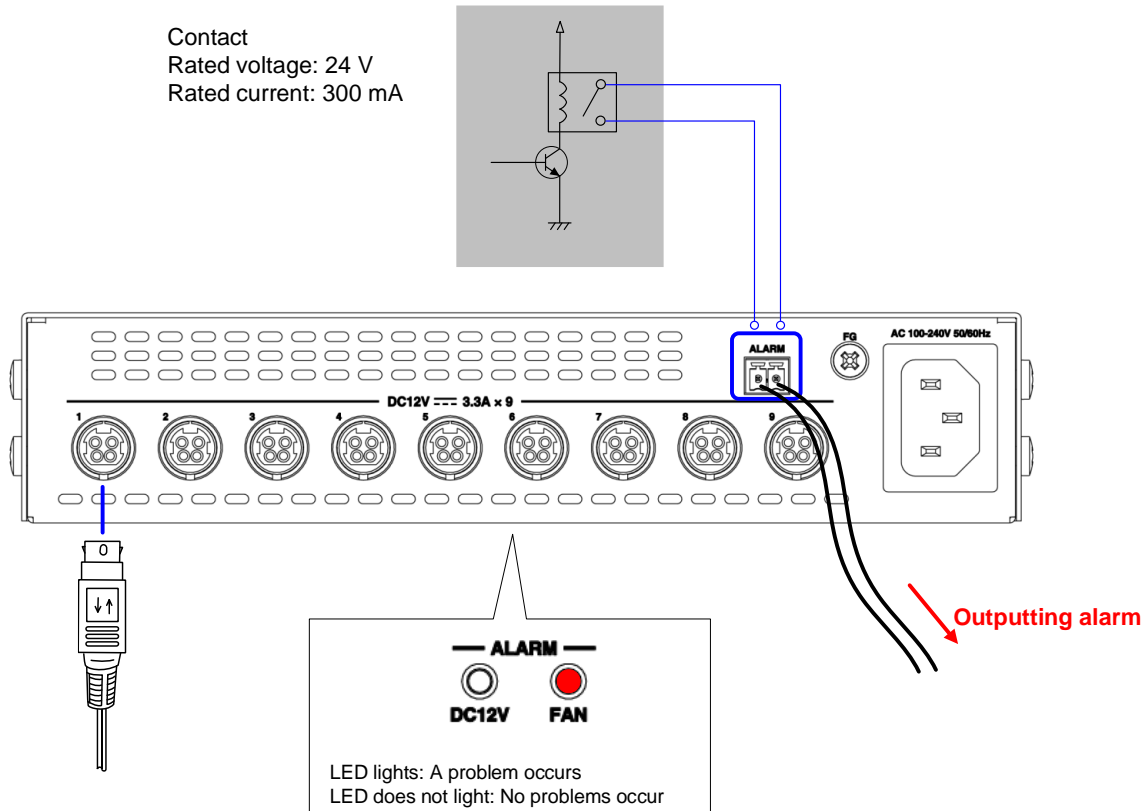
ALARM LED	Power supply	Problem
<p>— ALARM —</p>  <p>DC12V FAN</p>	Stop supplying	Malfunction and overcurrent 【See: 7.1 Overcurrent protection】
<p>— ALARM —</p>  <p>DC12V FAN</p>	Continues to supply	Failure in the fan or rotating speed slows down due to age-related deterioration 【See: 7.2 Fan rotating speed slows down】

**Note:**

In case an alarm is output, the PDU-1209 may be damaged. Power off the PDU-1209 and stop using it.

**Tip:**

ALARM (DC12V) LED lights if even one DC output connector has an overcurrent condition.



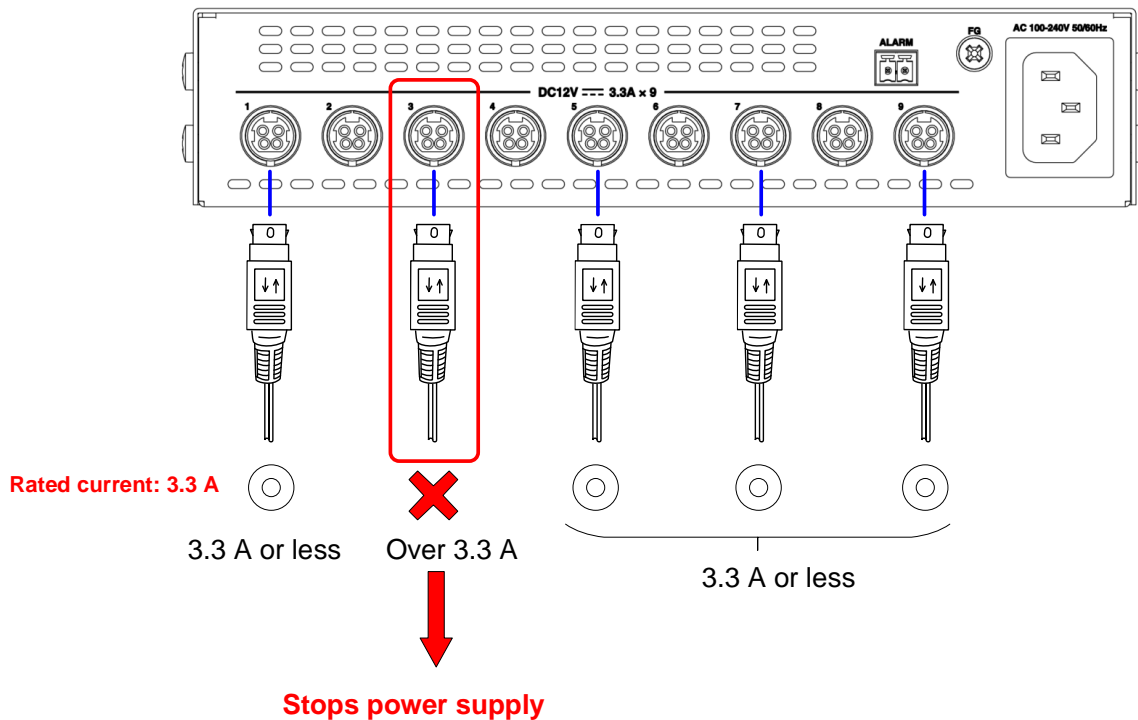
[Fig. 7.1] Outputting alarm

## 7.1 Overcurrent protection

Each DC output connector can source up to a maximum rated current of 3.3 A.

If a short circuit occurs due to a damaged DIN plug DC cable or if a DC output connector is connected to a device other than compatible products, 3.4 A or larger current may be output.

Once an overcurrent condition is detected, the PDU-1209 stops supplying power from the affected DC output connector temporarily. In order to notify you of the problem, the PDU-1209 outputs an alarm and it lights the ALARM (DC12V) LED. When the overcurrent condition is corrected, the PDU-1209 re-establishes power to the DC output connector automatically.



[Fig. 7.2] Overcurrent protection

## **7.2 Fan rotating speed slows down**

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If the fan's rotational speed decreases due to age-related deterioration or other causes, the PDU-1209 may not operate correctly. If the fan's rotational speed is insufficient to maintain the correct internal temperature, the PDU-1209 outputs an alarm and lights the ALARM (FAN) LED.

## 8 Product Specification

Item		Description
Output		9 outputs Connector: Female DIN (4-pin)
DC power output		12 VDC, 3.3 A (designated DC cables are provide)
Function		Overcurrent protection
Alarm output		1port/captive screw connector (2-pin) signal for letting know abnormality of DC output and fan
General	Power	100 - 240 VAC $\pm$ 10%, 50 Hz/60 Hz $\pm$ 3 Hz
	Power consumption	About 423 Watts
	Dimensions	8.3 (W) $\times$ 1.7 (H) $\times$ 9.8 (D)" (210 (W) $\times$ 44 (H) $\times$ 250 (D) mm) (Half rack wide, 1U high) (Excluding connectors and the like)
	Weight	4.9 lbs. (2.2 kg)
	Temperature	Operating: 32°F to 104°F (0°C to +40°C) Storage : -4°F to +176°F (-20°C to +80°C)
	Humidity	Operating/Storage: 20% to 90% (Non Condensing)

## 9 Troubleshooting

In case the PDU-1209 does not work correctly, please check the following items first. Also refer to manuals for connected devices as well, since they may possibly be the cause of the problem.

- Is the PDU-1209 powered on correctly?
- Are signal cables connected correctly?
- Are there no short circuits, disconnections, or loose connections?
- Are the interconnecting cables specified correctly to support adequate bandwidth?
- Is there any nearby equipment that may cause electrical noise/RF interference?

If additional assistance is required, please perform the following tests and then contact us.

No.	Checking items	Result
1	Does the ALARM (DC12V) LED light?*	Yes or No
2	Does the ALARM (FAN) LED light?*	Yes or No

\*If yes, power off the PDU-1209 discontinue use.

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## User Guide of PDU-1209

Ver. 2.3.0

Issued on: 27 September 2021

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