

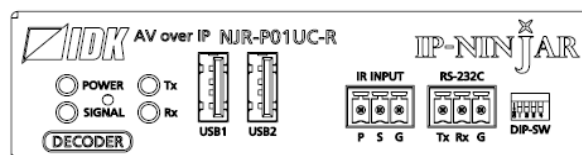
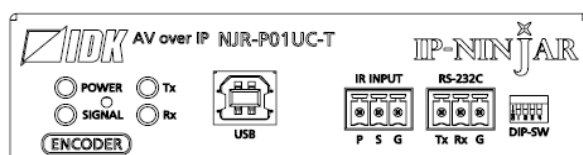
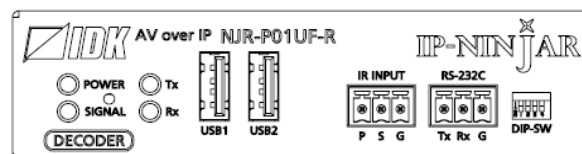
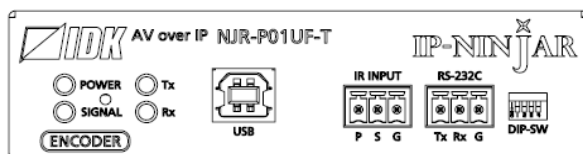
HDMI Encoder/Decoder

NJR-P01U Series

NJR-P01UF-T/NJR-P01UF-R
NJR-P01UC-T/NJR-P01UC-R

<User Guide>

Ver.1.0.0



- 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.
- Connection Reset and IP-NINJAR are registered trademarks 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, diagrams, menu operations, 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: <http://www.idkav.com>

The reference manual consists of the following two volumes:

- User guide (this document):
Provides explanations and procedures for operations, installation, connections among devices, I/O adjustment and settings.
- Command guide: Please download the command guide from the website above.
Provides explanations and procedures for external control using RS-232C and LAN communications.



The lasers in this product meet Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 laser safety standards which specifies design safety.

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
 Warning	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.
 Caution	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)	 Electrical Hazard
 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:

 Instruction	<ul style="list-style-type: none"> ● Lifting must be done by two or more personnel. <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>
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■ For installing and connecting products:

 Prohibited	<ul style="list-style-type: none"> ● Do not place the product upon a surface that may give way or that may become unstable. <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"> ● Secure the product if installing in locations prone to vibration or movement. <p>Otherwise, it may move unexpectedly or it may fall and lead to injury.</p>
 Instruction	<ul style="list-style-type: none"> ● Installation work must be performed by professionals. <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"> ● Insert the power plug into an outlet that is unobstructed. <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"> ● Insert the power plug into an appropriate outlet completely. <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"> ● Unplug the product from the AC power source during installation or service. <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:

 Prohibited	<ul style="list-style-type: none"> ● Keep out any foreign objects. <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"> ● For power cable/ plug: <ul style="list-style-type: none"> • Do not scratch, heat, or modify, including splicing or lengthening them. • Do not pull, place heavy objects on them, or pinch them. • Do not bend, twist, tie or clamp them together forcefully. <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>
 Do not disassemble	<ul style="list-style-type: none"> ● Do not repair, modify or disassemble. <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>
 Do not touch	<ul style="list-style-type: none"> ● Do not touch the product and connected cables during electrical storms. <p>Contact may cause electric shock</p>
 Instruction	<ul style="list-style-type: none"> ● Clean the power plug regularly. <p>If the plug is covered in dust, it may increase the risk of fire.</p>

Warning

■ **If the following problem occurs:**



Unplug

- **Unplug immediately if the product smokes, makes unusual noise, or produces a burning odor.**

If you continue to use the product under these conditions, it may cause electric shock or fire.

- **Unplug immediately if the product is damaged by falling or having been dropped.**




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.

- **Unplug immediately if water or other objects are directed inside.**

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.

Caution

■ For installing and connecting products:

 Prohibited	<ul style="list-style-type: none"> ● Do not place the product in a location where it will be subjected to high temperatures. 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. ● Do not store or operate the product in dusty, oil smoke filled, or humid place. If the product is placed near humidifiers or in a dusty area, it may increase the risk of fire or electric shock. ● Do not block the vent holes. If ventilation slots are blocked, it may cause the product to overheat, affecting performance and reliability and may increase the risk of fire. ● Do not place or stack heavy items on the product. Failure to observe this precaution may result in damage to the product and other property and may lead to the risk of personal injury. ● Do not exceed ratings of outlet and wiring devices. Exceeding the rating of an outlet may increase the risk of fire and electric shock.
 No wet hands	<ul style="list-style-type: none"> ● Do not handle power plug with wet hands. Failure to observe this precaution may increase the risk of electrical shock.
 Instruction	<ul style="list-style-type: none"> ● Use and store the product within the specified temperature/humidity range. If the product is used outside the specified range for temperature and humidity continuously, it may increase the risk of fire or electric shock. ● Do not place the product at elevations of 1.24 mi. (2,000 m) or higher above sea level. Failure to do so may shorten the life of the internal parts and result in malfunctions. ● When mounting the product into the rack, provide sufficient cooling space. 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. ● Never insert screws without the rubber feet into the threaded holes on the bottom of the product. 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.

■ For operating products:




 Prohibited	<ul style="list-style-type: none"> ● Use only the supplied power cable and AC adapter. ● Do not use the supplied power cable and AC adapter with other products. If non-compliant adapter or power cables are used, it may increase the risk of fire or electrical shock.
 Unplug	<ul style="list-style-type: none"> ● If the product won't be used for an extended period of time, unplug it. Failure to observe this precaution may increase the risk of fire. ● Unplug the product before cleaning. To prevent electric shock.
 Instruction	<ul style="list-style-type: none"> ● If cooling fan stops, power off the product and contact us. Failure to do so may rise internal temperature and increase the risk of malfunction, fire, or electric shock. ● Clean the vent holes regularly. If the vent holes of the cooling fan is covered in dust, internal temperature rises and it may increase the risk of malfunction, fire, or electric shock.

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1 About this Guide

This user guide explains how to use the NJR-P01UF/NJR-P01UC (hereafter referred to as “NJR-P”) and about external control through the IP-NINJAR Configurator and NJR-CTB. The NJR-P01UF-T/NJR-P01UC-T is an encoder while the NJR-P01UF-R/NJR-P01UC-R is a decoder.

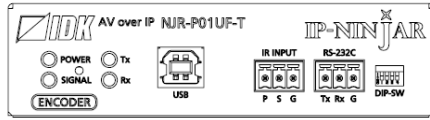
If other IP-NINJAR series products are connected, refer to each User Guide.

■ Models

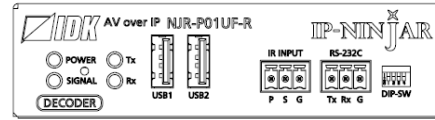
Model		Type	Model number
Fiber optic	No SFP+ optical transceiver	Encoder	NJR-P01UF-T
		Decoder	NJR-P01UF-R
	Multimode fiber	Encoder	NJR-P01UF-T-MM
		Decoder	NJR-P01UF-R-MM
	Singlemode fiber	Encoder	NJR-P01UF-T-SM
		Decoder	NJR-P01UF-R-SM
CAT (No SFP+ transceiver)		Encoder	NJR-P01UC-T
		Decoder	NJR-P01UC-R

2 Included Items

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



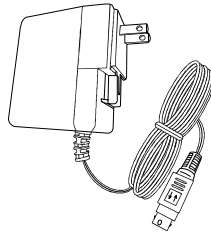
NJR-P01UF/C-T



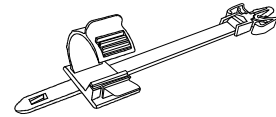
NJR-P01UF/C-R



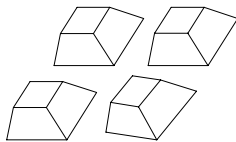
SFP+ optical transceiver



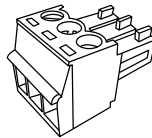
DIN plug AC adapter with locking mechanism (4 ft. (1.2 m))



Cable clamp



Rubber feet



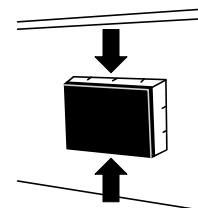
3-pin captive screw connector

Item	NJR-P01UF-T		NJR-P01UF-R		NJR-P01UC-T	NJR-P01UC-R
	—	MM/SM	—	MM/SM		
Main unit	1	1	1	1	1	1
SFP+ optical transceiver	—	1	—	1	—	—
DIN plug AC adapter with locking mechanism (3.9 ft. (1.2 m))	1	1	1	1	1	1
Cable clamp	1	1	1	1	1	1
Rubber feet	4	4	4	4	4	4
3-pin captive screw connector	2	2	2	2	2	2

[Fig. 2.1] Included items

Tip:

Dust caps are attached to SFP+ optical transceiver and the connector. These caps will be used for shipping the NJR-P unit.



3 Precautions for shipping

The MM/SM model (NJR-P01UF-T/R-MM/SM) has an SFP+ optical transceiver that is vulnerable to damage caused by mishandling during shipment if it is improperly packaged.

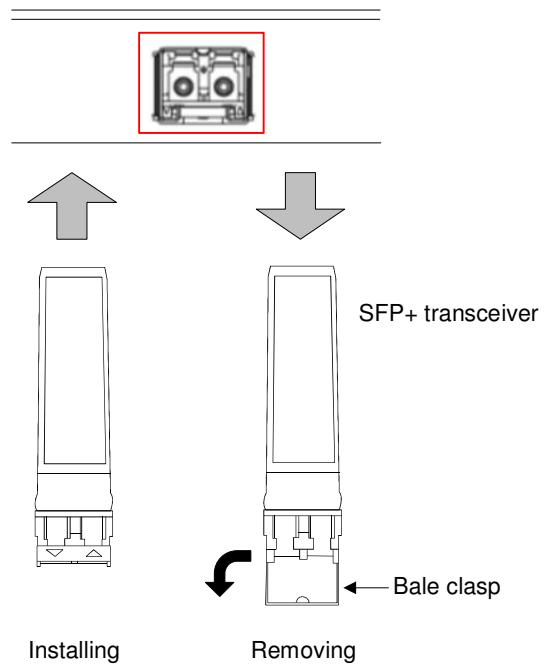
If, for any reason, you need to ship the device, remove the transceiver from the device and plug the dust cap into the transceiver and the connector. Put the removed transceiver in an electrostatic bag with enough cushion and keep the bag and device together in a box.

To install a transceiver:

Make sure the bale clasp is closed.
Line up the transceiver with the port and slide it into the port until you hear a click.

Removing a transceiver:

Open the bale clasp and pull the transceiver out of the port.



[Fig. 3.1] Removing and installing SFP+ optical transceiver

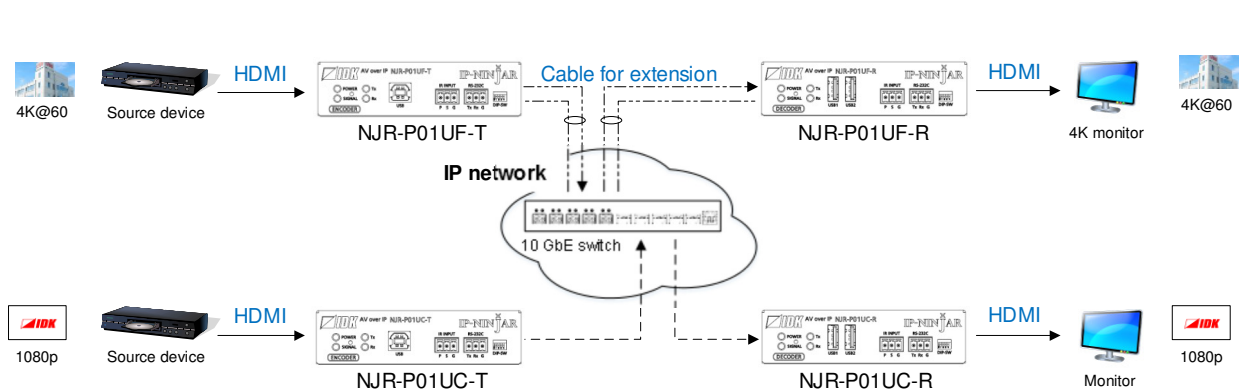
Note:

When installing the SFP+ transceiver, push it firmly and ensure that it is completely seated and the bale clasp is locked. Do not open the bale clasp except for removing the transceiver.

4 Product Outline

The NJR-P is an AV over IP solution for high definition signal transmission via fiber optic cables or category cables. This 4K solution leverages 10 Gb Ethernet switches and enables signal management of 4K@60 (4:4:4) signals with zero latency. USB HID class is also supported for KVM extension application. Additionally, via the NJR-P, the NJR-CTB can be controlled using an IR cable (IR-P01-R) and recommended remote controller. The NJR-P features LAN/RS-232C bidirectional communication.

The NJR-P01UC can be powered from PoE-supported 10 GbE switch over a Category cable; this feature eliminates the need for AC adapter.



[Fig. 4.1] HDMI signals transmission

Note:

Use this product with a combination of NJR-P or IP-NINJAR series products. It cannot be connected to OPF or FDX series.

5 Features

■ Video

- Up to 4K@60 (4:4:4)
- HDCP 1.4/2.2
- HDR
- Transmission distances
 - Fiber optic cable (NJR-P01UF-T-MM/SM, NJR-P01UF-R-MM/SM)
 - Multimode fiber (OM3) : Up to 984 ft. (300 m)
 - Singlemode fiber (OS1) : Up to 6.21 mi. (10 km) (Up to 24.85 mi. (40 km, optional))
 - Category cable (NJR-P01UC-T, NJR-P01UC-R)
 - Cat6A : Up to 328 ft. (100 m)

■ Communication

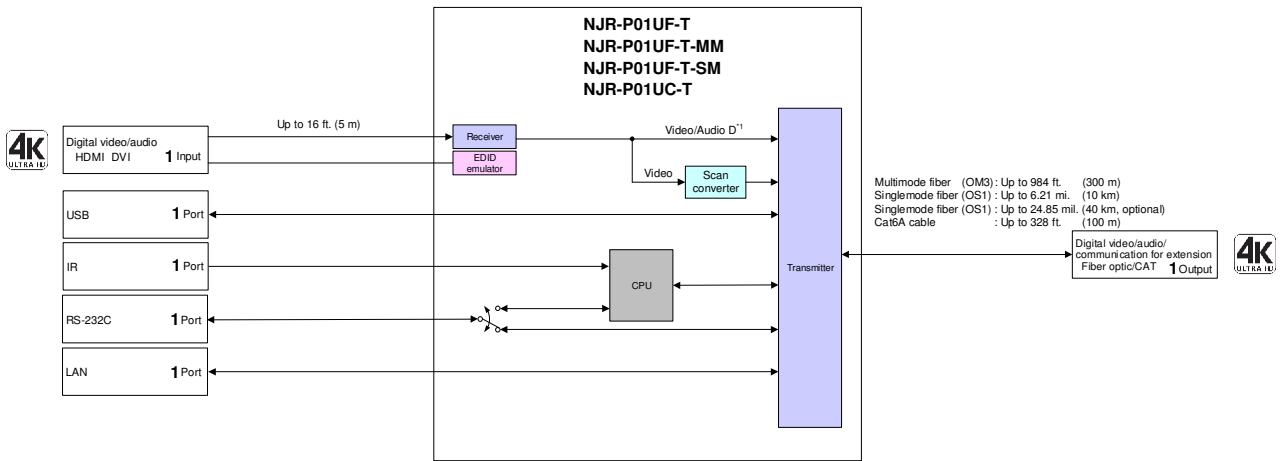
- Bidirectional RS-232C
- LAN
- USB HID class

■ Network

- 10 Gb switch allows: extension, distribution, matrix switching, videowall, and multiview
- Controllable through network using NJR-CTB
- IP-NINJAR encoders and decoders can easily be added and replaced
- Preset controls that are registered in the NJR-CTB can be executed using an IR cable (IR-P01-R) and recommended remote controller.

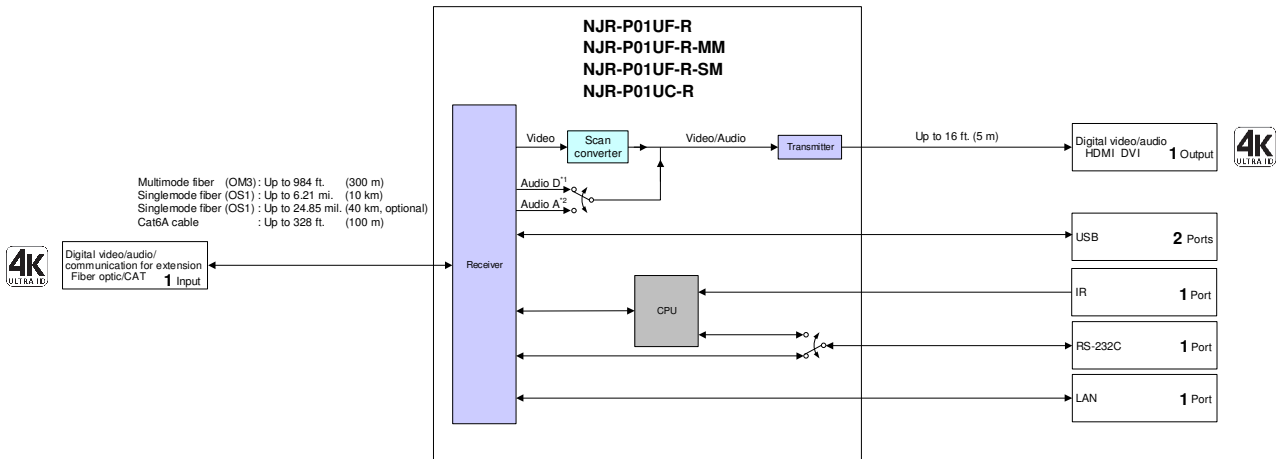
■ Others

- EDID emulation
- DDC buffer
- Connection Reset
- AC adapter with locking mechanism
- PoE power supplied (PD) (NJR-P01UC-T, NJR-P01UC-R)



¹ Audio D: Digital audio

[Fig. 5.1] NJR-P01UF/C-T diagram



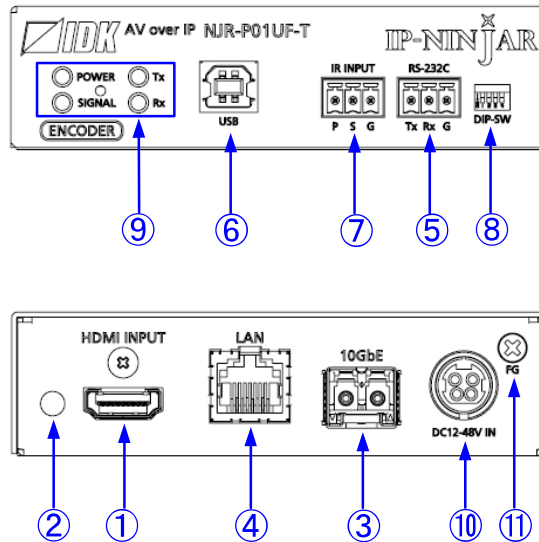
¹ Audio D: Digital audio
² Audio A: Analog audio

[Fig. 5.2] NJR-P01UF/C-R diagram

6 Panels

6.1 NJR-P01U-T (Encoder)

6.1.1 NJR-P01UF-T (Fiber optic model)



[Fig. 6.1] NJR-P01UF-T drawing

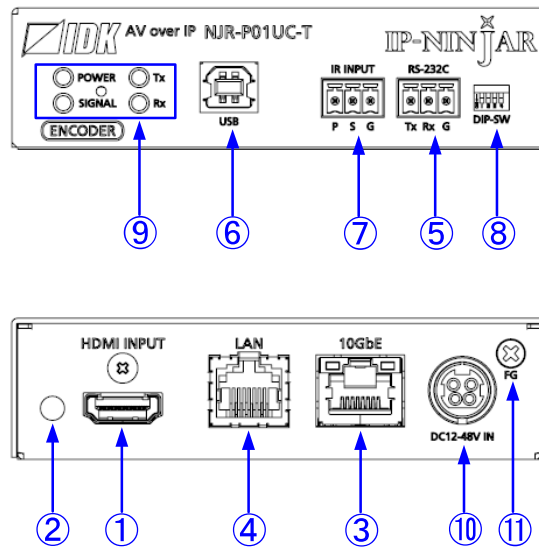
[Table 6.1] NJR-P01UF-T features

#	Feature	Description
①	HDMI input connector	Input connectors for HDMI signal to connect to a source devices, such as Blu-ray players
②	HDMI cable fixing hole	Fixes HDMI cables by inserting provided cable clamps.
③	I/O connector for extension	I/O connector for digital signal extension A fiber optic cable is used; connects to an IP-NINJAR fiber model decoder or 10 GbE switch
④	LAN connector	For LAN signals
⑤	RS-232C connector	For RS-232C signals
⑥	USB connector	Connector for USB HID signal Connects to a USB host directly.
⑦	IR connector	Connector for receiving IR signal The signal of a remote controller will be sent to the NJR-CTB over the IR cable (IR-P01-R).
⑧	DIP switch	Switches internal connections of RS-232C signals. 【See: 8.4 Setting DIP switch】

[Table 6.2] NJR-P01UF-T features (Cont'd)

#	Feature	Description
⑨	LEDs (green)	<p>POWER : Illuminates when power is supplied from the AC adapter.</p> <p>SIGNAL : Illuminates when video signals are valid; blinks when video signals cannot be transmitted correctly.</p> <p>TX : Blinks when a valid code is being sent to an IP-NINJAR fiber model decoder or 10 GbE switch.</p> <p>RX : Blinks when a valid code is being received from an IP-NINJAR fiber model decoder or 10 GbE switch.</p>
⑩	Power supply connector	For the provided AC adapter
⑪	Frame ground	Use for bonding chassis to local ground. M3 screws are used

6.1.2 NJR-P01UC-T (CAT model)



[Fig. 6.2] NJR-P01UC-T drawing

[Table 6.3] NJR-P01UC-T features

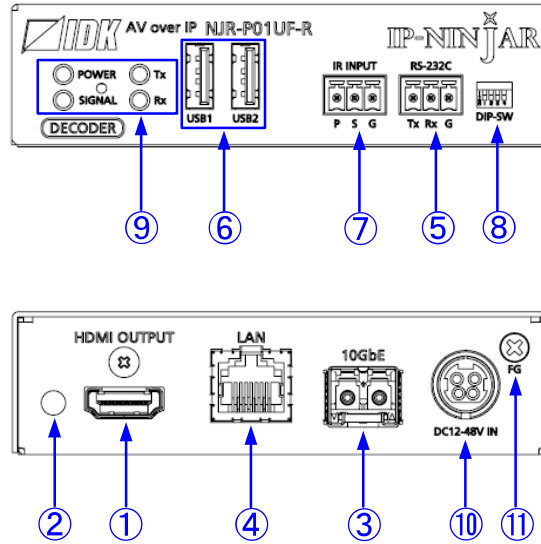
#	Feature	Description
①	HDMI input connector	Input connectors for HDMI signal to connect to a source devices, such as Blu-ray players
②	HDMI cable fixing hole	Fixes HDMI cables by inserting provided cable clamps.
③	I/O connector for extension	I/O connector for digital signal extension A category cable is used; connects to an IP-NINJAR CAT model decoder or 10 GbE switch PoE is supported. 【See: 8.3.9 Supplying power】
④	LAN connector	For LAN signals
⑤	RS-232C connector	For RS-232C signals
⑥	USB connector	Connector for USB HID signal Connects to a USB host directly.
⑦	IR connector	Connector for receiving IR signal The signal of a remote controller will be sent to the NJR-CTB over the IR cable (IR-P01-R).
⑧	DIP switch	Switches internal connections of RS-232C signals. 【See: 8.4 Setting DIP switch】

[Table 6.4] NJR-P01UC-T features (Cont'd)

#	Feature	Description
⑨	LEDs (green)	<p>POWER : Illuminates when power is supplied from the AC adapter.</p> <p>SIGNAL : Illuminates when video signals are valid; blinks when video signals cannot be transmitted correctly.</p> <p>TX : Blinks when a valid code is being sent to an IP-NINJAR CAT model decoder or 10 GbE switch.</p> <p>RX : Blinks when a valid code is being received from an IP-NINJAR CAT model decoder or 10 GbE switch.</p>
⑩	Power supply connector	For the provided AC adapter
⑪	Frame ground	Use for bonding chassis to local ground. M3 screws are used

6.2 NJR-P01U-R (Decoder)

6.2.1 NJR-P01UF-R (Fiber optic model)



[Fig. 6.3] NJR-P01UF-R drawing

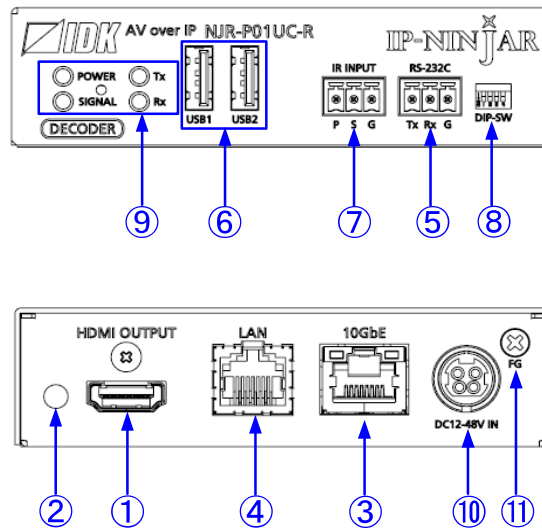
[Table 6.5] NJR-P01UF-R features

#	Feature	Description
①	HDMI output connector	Output connector for HDMI signals Connects to a sink device, such as an LCD monitor.
②	HDMI cable fixing hole	Fixes HDMI cables by inserting provided cable clamps.
③	I/O connector for extension	I/O connector for digital signal extension A fiber optic cable is used; connects to an IP-NINJAR fiber model encoder or 10 GbE switch
④	LAN connector	For LAN signals
⑤	RS-232C connector	For RS-232C signals
⑥	USB connector	Connector for USB HID signal Connects to a keyboard and mouse directly.
⑦	IR connector	Connector for receiving IR signal The signal of a remote controller will be sent to the NJR-CTB over the IR cable (IR-P01-R).
⑧	DIP switch	Switches internal connections of RS-232C signals. 【See: 8.4 Setting DIP switch】

[Table 6.6] NJR-P01UF-R features (Cont'd)

#	Feature	Description
⑨	LEDs (green)	<p>POWER : Illuminates when power is supplied from the AC adapter.</p> <p>SIGNAL : Illuminates when video signals are valid; blinks when video signals cannot be transmitted correctly.</p> <p>TX : Blinks when a valid code is being sent to an IP-NINJAR fiber model encoder or 10 GbE switch.</p> <p>RX : Blinks when a valid code is being received from an IP-NINJAR fiber model encoder or 10 GbE switch.</p>
⑩	Power supply connector	For the provided AC adapter
⑪	Frame ground	Use for bonding chassis to local ground. M3 screws are used

6.2.2 NJR-P01UC-R (CAT model)



[Fig. 6.4] NJR-P01UC-R drawing

[Table 6.7] NJR-P01UC-R features

#	Feature	Description
①	HDMI output connector	Output connector for HDMI signals Connects to a sink device, such as an LCD monitor.
②	HDMI cable fixing hole	Fixes HDMI cables by inserting provided cable clamps.
③	I/O connector for extension	I/O connector for digital signal extension A category cable is used; connects to an IP-NINJAR CAT model encoder or 10 GbE switch PoE is supported. 【See: 8.3.9 Supplying power】
④	LAN connector	For LAN signals
⑤	RS-232C connector	For RS-232C signals
⑥	USB connector	Connector for USB HID signal Connects to a keyboard and mouse directly.
⑦	IR connector	Connector for receiving IR signal The signal of a remote controller will be sent to the NJR-CTB over the IR cable (IR-P01-R).
⑧	DIP switch	Switches internal connections of RS-232C signals. 【See: 8.4 Setting DIP switch】

[Table 6.8] NJR-P01UC-R features (Cont'd)

#	Feature	Description
⑨	LEDs (green)	POWER : Illuminates when power is supplied from the AC adapter. SIGNAL : Illuminates when video signals are valid; blinks when video signals cannot be transmitted correctly. TX : Blinks when a valid code is being sent to an IP-NINJAR CAT model encoder or 10 GbE switch. RX : Blinks when a valid code is being received from an IP-NINJAR CAT model encoder or 10 GbE switch.
⑩	Power supply connector	For the provided AC adapter
⑪	Frame ground	Use for bonding chassis to local ground. M3 screws are used

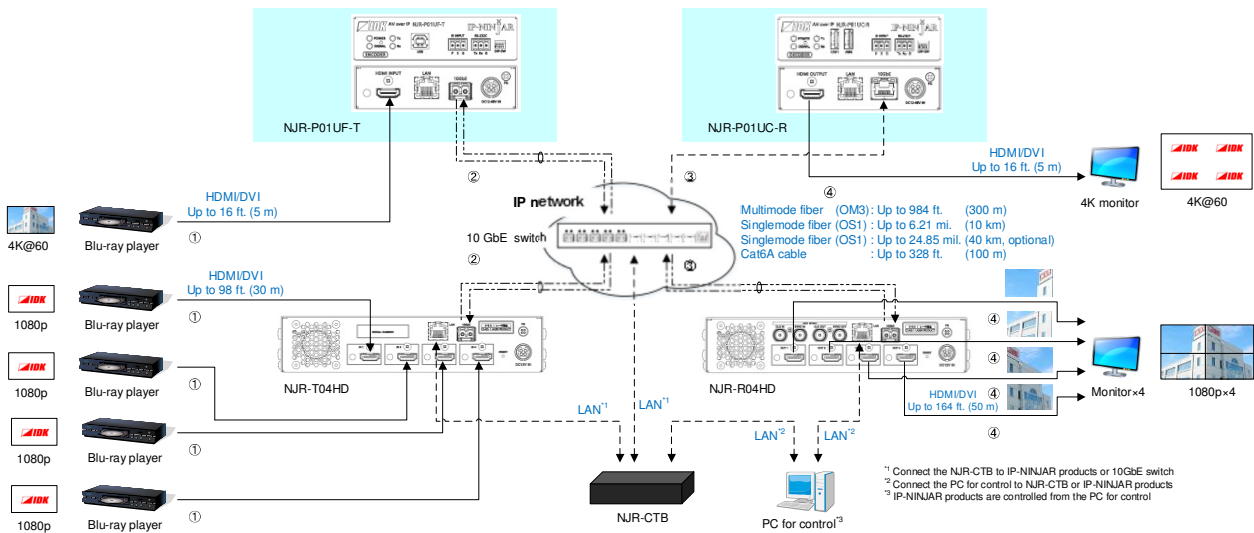
7 System configuration example

This chapter cites two system configuration examples.

7.1 Used as Network Extender

Using the NJR-P and other IP-NINJAR encoders/decoders with a 10 GbE switch enables extending, distributing, matrix switching, videowall, and multiview.

- ① Video and audio signals are input from the Blu-ray player to the HDMI input connector of NJR-P01UF-T /NJR-T04HD.
- ② NJR-P01UF-T/NJR-T04HD sends these signals over a fiber optic cable
- ③ 10 GbE switch sends video and audio signals to the NJR-P01UC-R/NJR-R04HD according to the setting of NJR-CTB.
- ④ NJR-P01UC-R/NJR-R04HD outputs received video and audio signals from the HDMI output connector to the monitor.



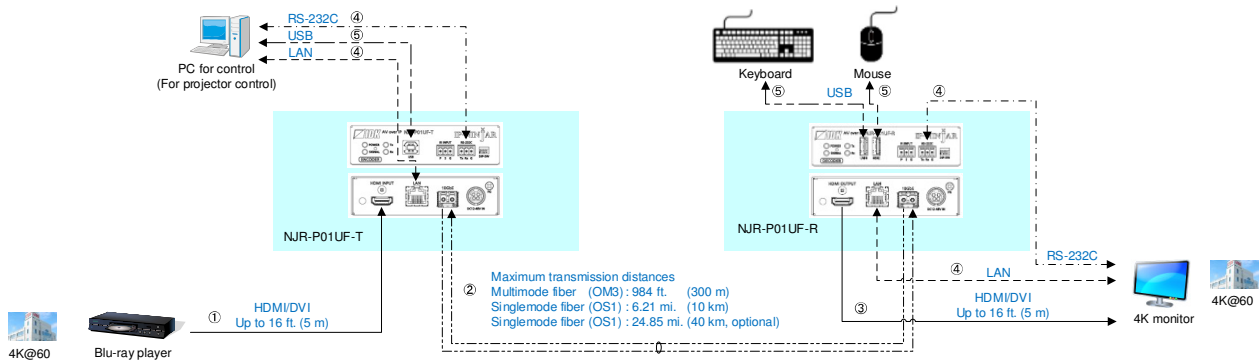
[Fig. 7.1] Used as Network extender

7.2 Used as Extender

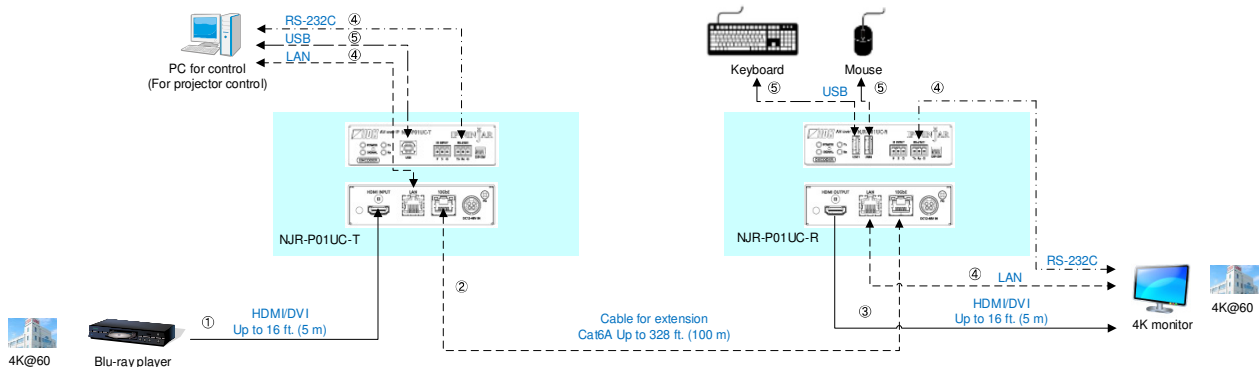
The NJR-P and other IP-NINJAR encoders/decoders are connected as Point To Point.

- ① Video and audio signals are input from the Blu-ray player to the HDMI input connector of NJR-P01UF/C-T /NJR-T04HD.
- ② NJR-P01UF/C-T/NJR-T04HD sends these signals to NJR-P01UF/C-R/NJR-R04HD over a fiber optic cable or category cable.
- ③ NJR-P01UF/C-R/NJR-R04HD outputs received video and audio signals from the HDMI output connector to the monitor.
- ④ NJR-P01UF/C-T/NJR-T04HD and NJR-P01UF/C-R/NJR-R04HD enables RS-232C communication and LAN communication for peripheral device control (such as projectors).
- ⑤ KVM application is enabled by connecting a PC and a mouse/keyboard to the NJR-P01UF/C-T and NJR-P01UF/C-R, respectively.

Using NJR-P01UF/C-T and NJR-P01UF/C-R

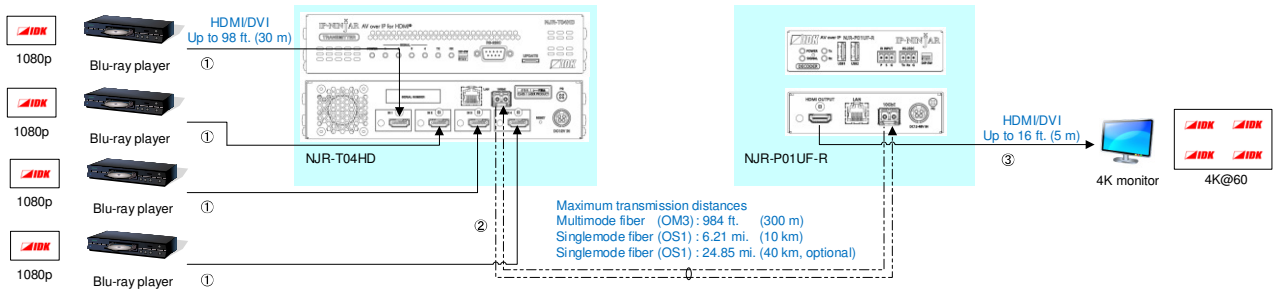


[Fig. 7.2] NJR-P01UF-T and NJR-P01UF-R (MM/SM)



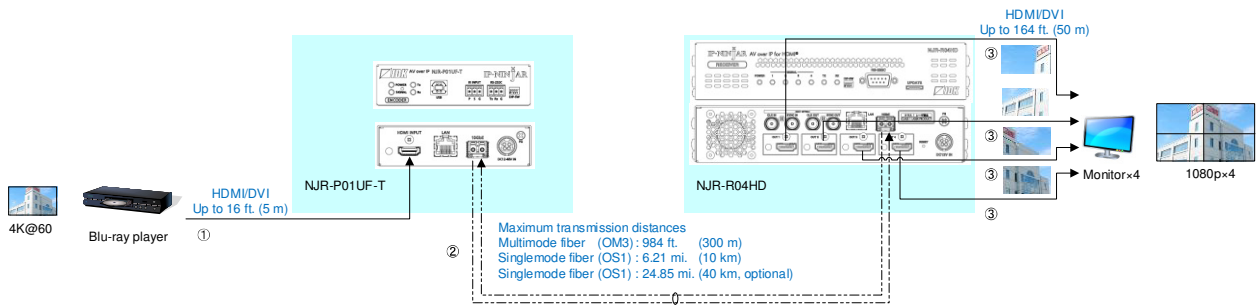
[Fig. 7.3] NJR-P01UC-T and NJR-P01UC-R (CAT)

Multiview using NJR-T04HD and NJR-P01UF-R



[Fig. 7.4] NJR-T04HD and NJR-P01UF-R: Multiview

Videowall using NJR-P01UF-T and NJR-R04HD



[Fig. 7.5] NJR-P01UF-T and NJR-R04HD: Videowall

8 Precautions

Before using NJR-P, follow the precautions and instructions below.

8.1 Attaching Rubber feet

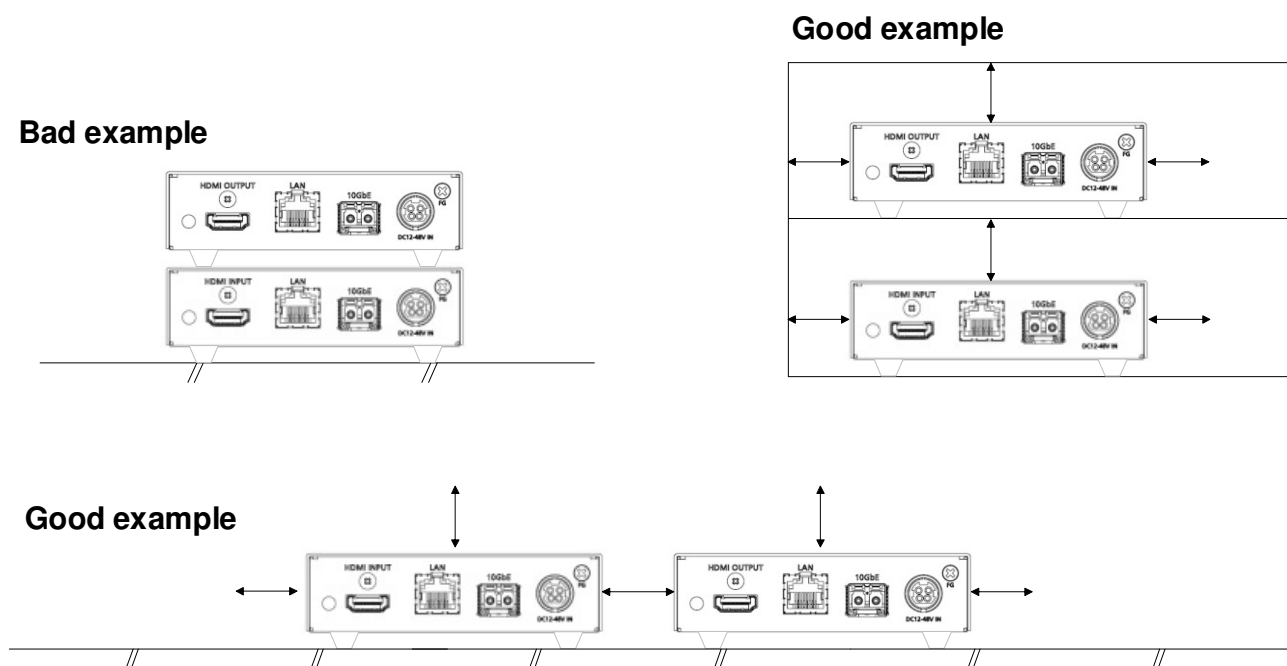
First, clean the bottom surface of the NJR-P as needed, and then peel the release papers from the rubber feet and place them in each of the four corners.

8.2 Installation

When installing the NJR-P, please observe the following precautions.

- Do not stack or place the NJR-P directly on top of another NJR-P
- Do not block vent holes. To provide adequate ventilation, maintain sufficient clearances around the NJR-P (1.2 in. (30 mm) or more)
- When the NJR-P needs to be mounted in an enclosed space or an EIA rack without using IDK's rack mounting hardware, ensure that a sufficient ventilation/cooling system is provided to keep the ambient temperature at 104 °F (40 °C) or lower. If inadequately vented, the product's service life, operation, and reliability may be affected.

Maintain adequate clearances (1.2 in. (30 mm) or more) as shown below



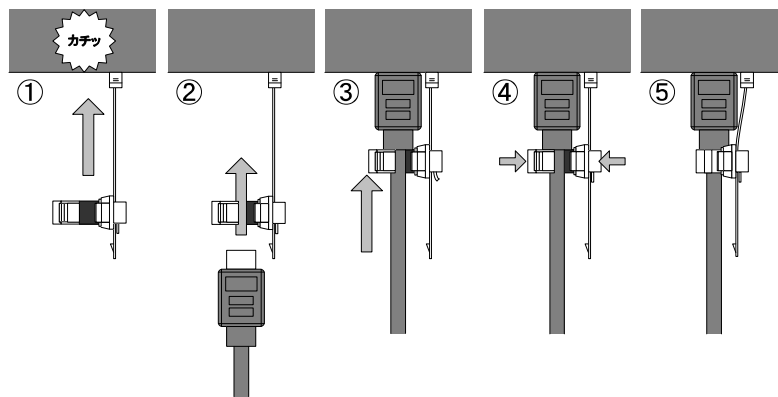
[Fig. 8.1] Necessary clearances

8.3 Cabling

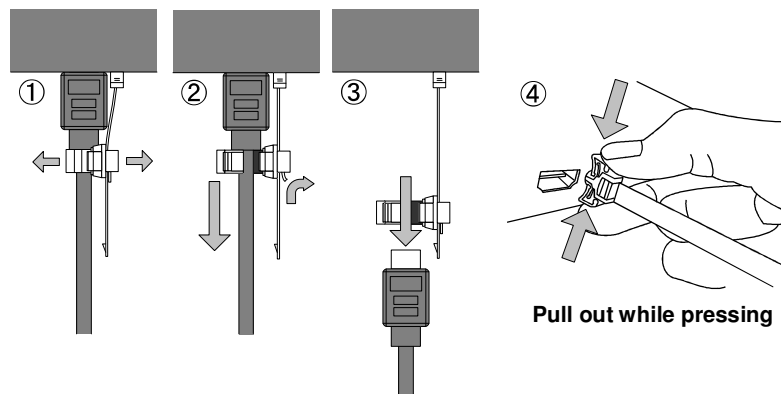
When connecting the NJR-P to external devices, please observe the following precautions.

- Read manuals for the external devices.
- Before connecting cables to the NJR-P or an external device, dissipate static electricity by touching grounded metal such as equipment racks before handling signal cables. Failure to observe this precaution may result in ESD (electrostatic discharge) damage.
- Power all units off before connecting cables.
- Be sure to fully seat all plugs and connections and dress cables to reduce stress on connectors.
- Secure HDMI cables using cable clamps to prevent connectors from being accidentally pulled out of ports.

Securing HDMI cable using cable clamp



Removing HDMI cable and cable clamp



[Fig. 8.2] How to use cable clamp

8.3.1 HDMI cable

When the video is 4K format, the maximum TMDS data rate (transmission speed) is 18 Gbps. If a high-speed HDMI cable is used, the maximum TMDS data rate of 10.2 Gbps can be transferred, and the video cannot be displayed stably.

Please select an 18 Gbps high-speed cable depending on the 4K format. The maximum transmission distance depends on the cable type, source and sink devices. You are recommended to use high quality cables.

[Table 8.1] 18 Gbps high-speed cable for 4K format

4K format	TMDS data rate (Gbps)								
	RGB, YCbCr 4:4:4			YCbCr 4:2:2			YCbCr 4:2:0		
	24 bit	30 bit	36 bit	24 bit	30 bit	36 bit	24 bit	30 bit	36 bit
3840x2160 (24/25/30)	10.2 Gbps	18 Gbps	18 Gbps	10.2 Gbps	10.2 Gbps	10.2 Gbps	—	—	—
4096x2160 (24/25/30)	10.2 Gbps	18 Gbps	18 Gbps	10.2 Gbps	10.2 Gbps	10.2 Gbps	—	—	—
3840x2160 (50/59.94/60)	18 Gbps	—	—	18 Gbps	18 Gbps	18 Gbps	10.2 Gbps	18 Gbps	18 Gbps
4096x2160 (50/59.94/60)	18 Gbps	—	—	18 Gbps	18 Gbps	18 Gbps	10.2 Gbps	18 Gbps	18 Gbps

18 Gbps: 18 Gbps high-speed cable, 10.2 Gbps: 10.2 Gbps transmission cable, —:N/A

Note:

If a cable joint (JJ) or the like is used to extend the distance, the video may not be displayed correctly.

8.3.2 Fiber optic cable for extension

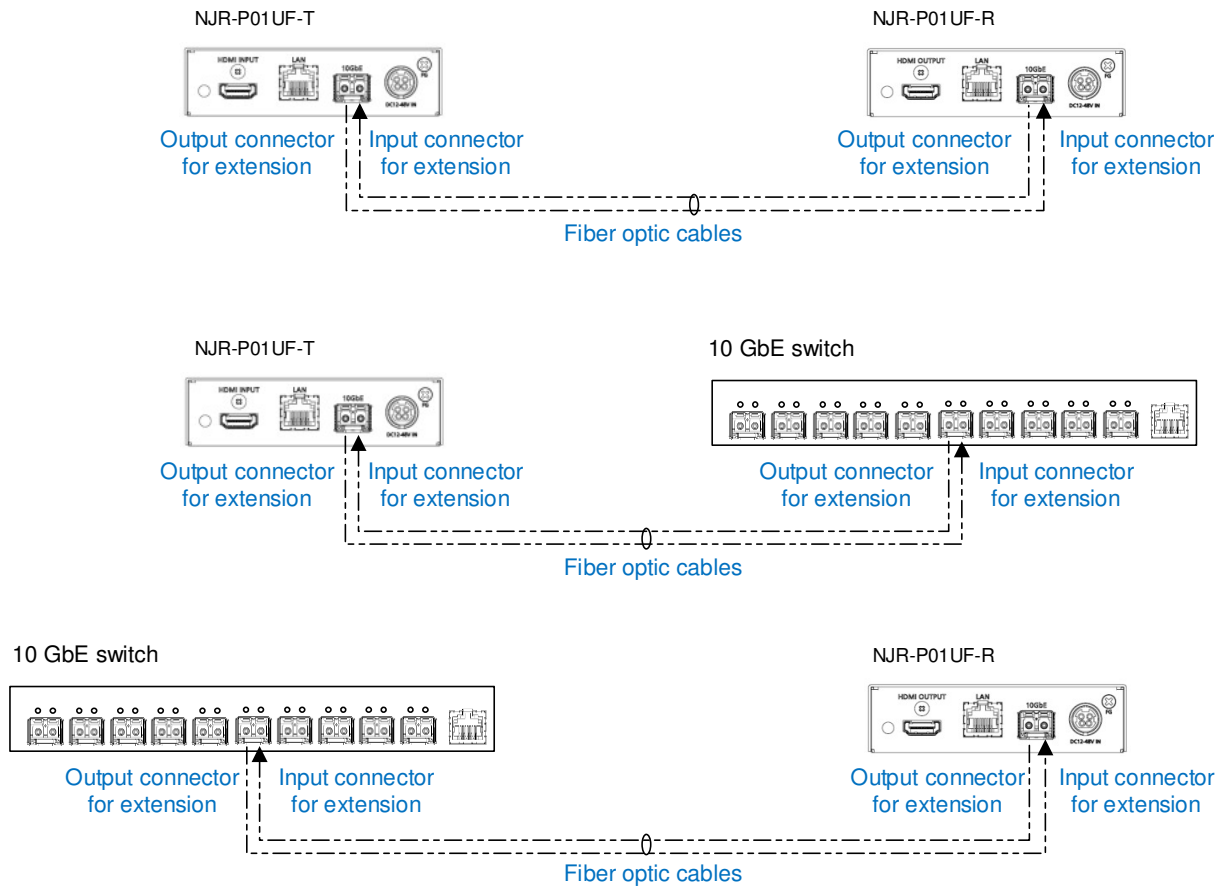
The NJR-P can reach their full potential by selecting appropriate fiber optic cables for long-haul extension and installing the cable correctly.

Connect the output connector of this device to the input connector of the target device.

Connect the input connector of this device to the output connector of the target device.

NJR-P01UF-T: The target device should be an IP-NINJAR fiber model decoder or 10 GbE switch.

NJR-P01UF-R: The target device should be an IP-NINJAR fiber model encoder or 10 GbE switch.



[Fig. 8.3] Connecting fiber optic cable

Note:

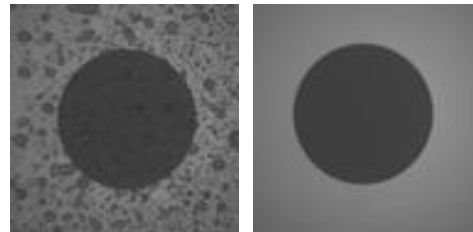
For the connectors of 10 GbE switch, refer to the switch's manual.

- To polish connectors:
 For SFP+ optical transceiver for multimode : PC polishing is recommended.
 For SFP+ optical transceiver for singlemode : UPC polishing is recommended.
Note: APC polishing is not supported.
- Transmission distance varies depending on attenuation of the fiber, connector and other contact portions.
- Make sure not to exceed the allowable tension and bend radius of fiber optic cable or the performance of the product and the life of the fiber optic cable may be affected.
- Plug the dust caps to both faces of the fiber optic cable when connecting the fiber optic cable and when not in use.
- Before inserting a fiber optic cable, make sure there is no damage or dirt on the end-face of the optical connector. Clean up it or NJR-P may not operate correctly.



Left : without dust cap
 Right : with dust cap

[Fig. 8.4] Dust caps



Before cleaning After cleaning

[Fig. 8.5] Cleaning connector

8.3.3 SFP+ optical transceiver

The fiber type and transmission distance vary depending on the SFP+ optical transceiver.

[Table 8.2] Specification of standard SFP+ optical transceiver

Item	10G-MM-SFP	10G-SM-SFP	10G-SM40-SFP (Optional)
Fiber	Multimode fiber	Singlemode fiber	Singlemode fiber
Wave length	850 nm (VCSEL laser)	1310 nm (DFB laser)	1550 nm (EML laser)
Laser safety	Class 1 (JIS C 6802, IEC60825-1)		
Max. transmission distances	OM3: 984 ft. (300 m)	OS1: 6.21 mi. (10 km)	OS1: 24.85 mi. (40 km)
Receiver sensitivity (OMA) @10.3Gbps	-11.1 dBm or higher	-12.6 dBm or higher	-16 dBm or higher
Average Launch Power	-5 dBm to -1 dBm	-8.2 dBm to +0.5 dBm	-1 dBm to +2 dBm
Max. input power	+0.5 dBm	+0.5 dBm	-1 dBm
Connector	LC (Duplex)		

- When no fiber optic cable is connected, plug dust caps.
- Do not use the SFP+ optical transceiver for other products. Also, do not connect fiber optic cables that is connected to other products to the SFP+ optical transceiver or the SFP+ optical transceiver may be damaged.
- If you need to replace the SFP+ optical transceiver, please contact us.

8.3.4 Category cable for extension

To ensure the best performance of category cables, select a correct category cable and connect it correctly.

- Cat6A is recommended for optimal performance.
- If using an STP cable, connect the FG connector to a ground source. Otherwise, the shielding feature does not work correctly. When using a UTP cable, we still recommend using the ground connector.
- The shielded STP cables are less affected by interference or external noise than UTP cables.
- Pin assignments: T568A or T568B straight
- Do not pull the cable using excessive force. The allowable tension of the category cable is 110 N.
- Do not bend the cable at a sharp angle. Keep the bend radius four times of the cable diameter or larger.
- Do not clamp or tie the cable tightly; leave some space allowing the cable to move slightly.
- If you use multiple category cables, we recommended keeping a distance between the cables or not to place the cables closely in parallel.
- Keep the category cable running as straight as possible. Looping or coiling the cable, causes it to be more easily affected by noise; especially when using longer cable run lengths.
- Do not place the cable in an electrically noisy environment, since high-speed noise impulses may couple into the category cable. Use of a high-output radio transmission device near the NJR-P or remote receivers may interfere with or interrupt video and or audio signals.

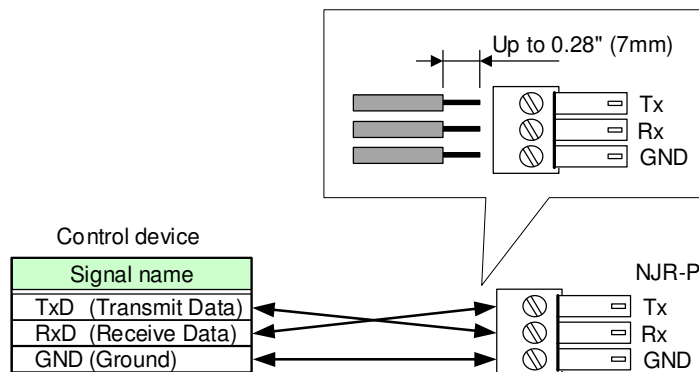
Note:

If there is a problem in the transmission path, video or audio may be interrupted. Check the precautions above. If the problem still cannot be solved, shortening the category cable may remedy the problem.

8.3.5 Connecting RS-232C cable

Insert and secure the wires from the RS-232C cable into the supplied 3-pin captive screw connector, and then insert the captive screw connector into the mating connector on the NJR-P.

28 AWG to 16 AWG conductor gauge is recommended. The recommended wire strip length is 0.28 in. (7 mm). Short RTS/CTS and DTR/DSR as needed.



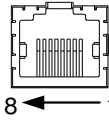
[Fig. 8.6] Connecting RS-232C cable to 3-pin captive screw connector

8.3.6 Connecting LAN cable

Pin assignment of the LAN connector is as follows.

Auto MDI/MDI-X that detecting and switching straight cable/cross cable is supported.

8-pin RJ-45
Modular connector



Pin No.	Signal name			
	MDI		MDI-X	
	1000BASE-T	100BASE-TX/10BASE-T	1000BASE-T	100BASE-TX/10BASE-T
1	TRX+ (Transmitted & Received data +)	TX+ (Transmitted data +)	TRX+ (Transmitted & Received data +)	RX+ (Received data +)
2	TRX- (Transmitted & Received data -)	TX- (Transmitted data -)	TRX- (Transmitted & Received data -)	RX- (Received data -)
3	TRX+ (Transmitted & Received data +)	RX+ (Received data +)	TRX+ (Transmitted & Received data +)	TX+ (Transmitted data +)
4	TRX+ (Transmitted & Received data +)	N.C. (Not connected)*	TRX+ (Transmitted & Received data +)	N.C. (Not connected)*
5	TRX- (Transmitted & Received data -)	N.C. (Not connected)*	TRX- (Transmitted & Received data -)	N.C. (Not connected)*
6	TRX- (Transmitted & Received data -)	RX- (Received data -)	TRX- (Transmitted & Received data -)	TX- (Transmitted data -)
7	TRX+ (Transmitted & Received data +)	N.C. (Not connected)*	TRX+ (Transmitted & Received data +)	N.C. (Not connected)*
8	TRX- (Transmitted & Received data -)	N.C. (Not connected)*	TRX- (Transmitted & Received data -)	N.C. (Not connected)*

*Not used

[Fig. 8.7] LAN connector

Make sure not to form a loop by NJR-P when connecting a LAN cable to NJR-P.

NJR-P constantly send broadcast packet in order to notify status.

If adding the LAN cable to the existing network, avoid problems, such as broadcast storm caused by broadcast traffic.

Broadcast storm: This problem occurs when a network system is overwhelmed by continuous broadcast traffic or the like.

8.3.7 Connecting USB

To enable USB HID communication, connect cables as follows:

- Connect the USB connector of the encoder to PC's USB port.
- Connect the USB connectors of the decoder to a USB HID keyboard and mouse.

Notes:

- Only HID class is supported. USB products other than HID class (USB hub, gaming mouse/keyboard, hub-integrated keyboard, and the like) are not supported.
- Use a USB-supported product of less than 100 mA.

8.3.8 Connecting IR cable

Control signal can be sent to the NJR-CTB from the recommended remote controller (manufactured by DAISEN ELECTRONICS INDUSTRIAL CO.LTD) over IDK's IR cable (IR-P01-R) and the NJR-P.

8.3.9 Supplying power

NJR-P01UC-T/R can be powered from PoE-supported 10 GbE switch (IEEE 802.3at/IEEE 802.3af) or DIN plug AC adapter.

■ Powered by PoE-supported 10 GbE switch

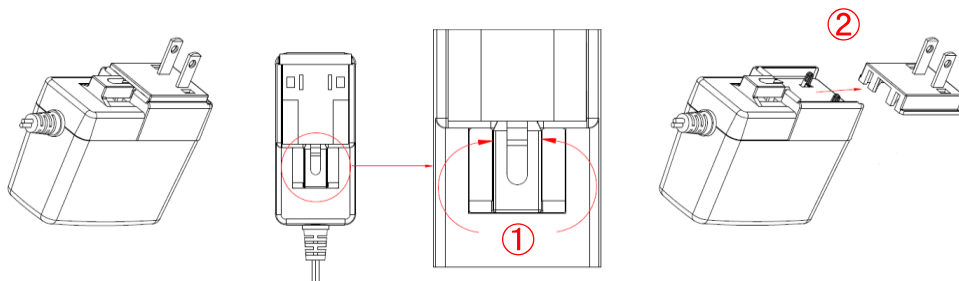
Before connecting a category cable, ensure that AC adapter is not connected. Refer to the manual of 10 GbE switch for power supply.

■ DIN plug AC adapter with locking mechanism

The shapes of AC plugs with screw locking mechanism vary from country to country. The AC plug can be removed from the AC adapter.

Removing AC plug:

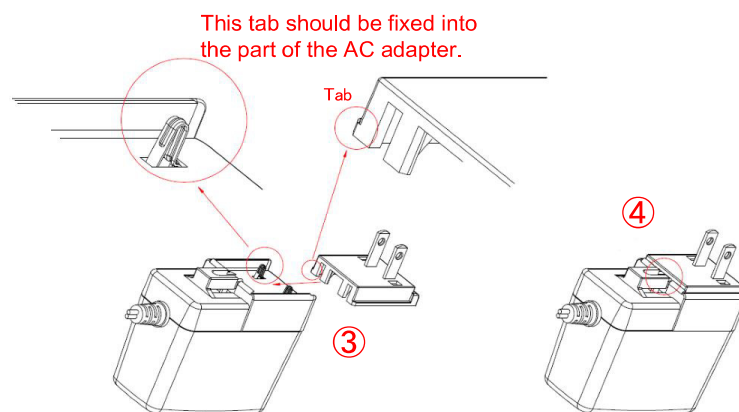
Slide the AC plug (②) from the AC adapter while holding down the portion mentioned below (①).



[Fig. 8.8] Removing AC plug (Example: Plug type A)

Attaching AC plug:

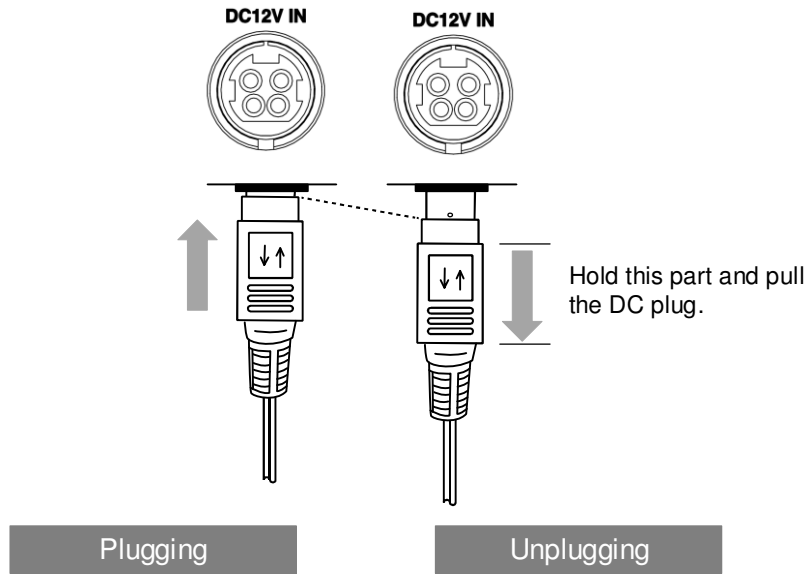
Gently slide the AC plug into the AC adapter (③) until it clicks (④).



[Fig. 8.9] Attaching AC plug (Example: Plug type A)

■ **Plugging and unplugging DC plug**

Plug the DC plug to the power supply connector of the unit until it clicks.
Hold the portion mentioned below when unplugging the DC plug.

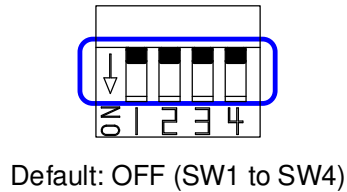


[Fig. 8.10] Plugging and unplugging DC plug

8.4 Setting DIP switch

Use the DIP switch to change settings of NJR-P.

■ Settings for NJR-P01UF/C-T

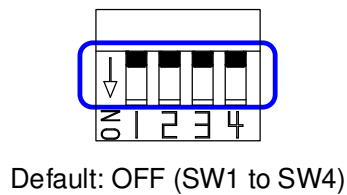


No.	Description
1	Selects internal connection of the RS-232C connector. OFF : Connects to IP-NINJAR decoders. ON : Connects to the CPU and sets settings of NJR-P01UF/C-T.
2	Not connected*
3	Not connected*
4	Not connected*

*Not used

[Fig. 8.11] Functions of DIP switch (NJR-P01UF/C-T)

■ Setting for NJR-P01UF/C-R



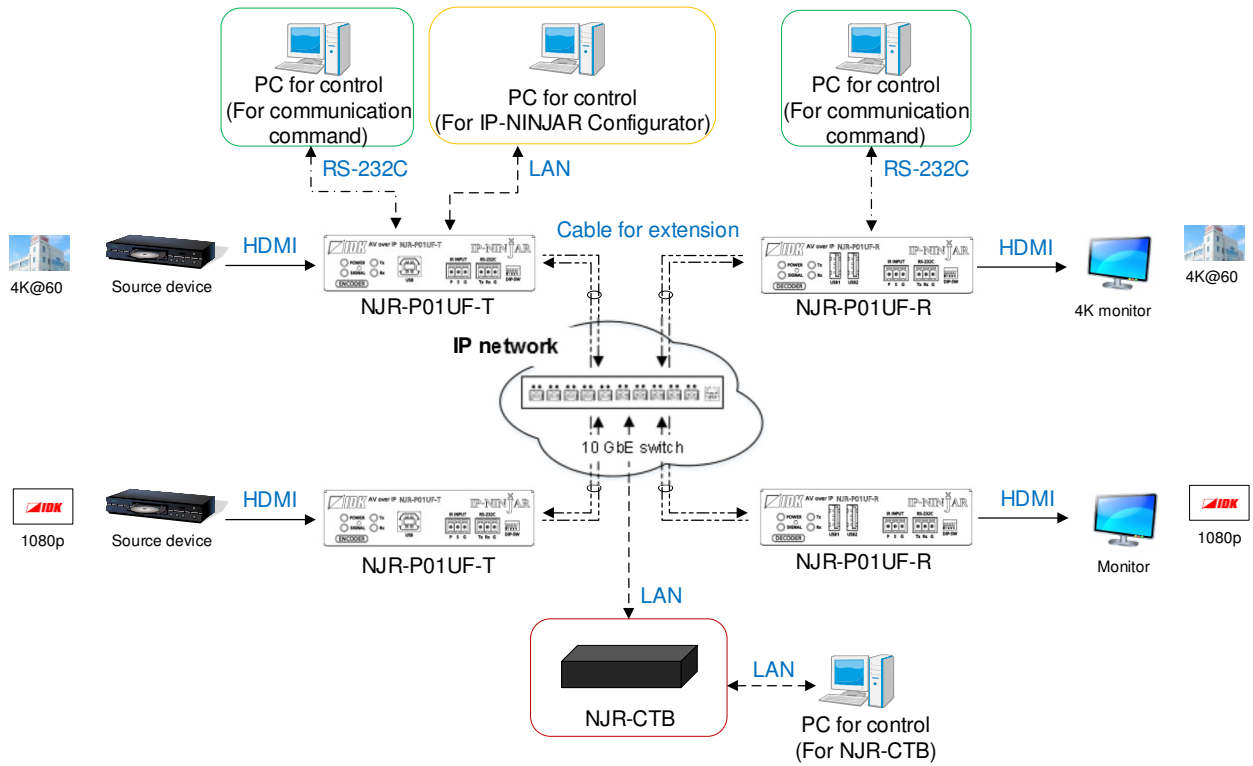
No.	Description
1	Selects internal connection of the RS-232C connector. OFF : Connects to IP-NINJAR encoders. ON : Connects to the CPU and sets settings of NJR-P01UF/C-R.
2	Not connected*
3	Not connected*
4	Not connected*

*Not used

[Fig. 8.12] Functions of DIP switch (NJR-P01UF/C-R)

9 Basic Operation

NJR-P can be set from commands over RS-232C communication and NJR-CTB or IP-NINJAR Configurator.



[Fig. 9.1] Setting NJR-P

9.1 Control over RS-232C communication

The NJR-P can be controlled over RS-232C communication.

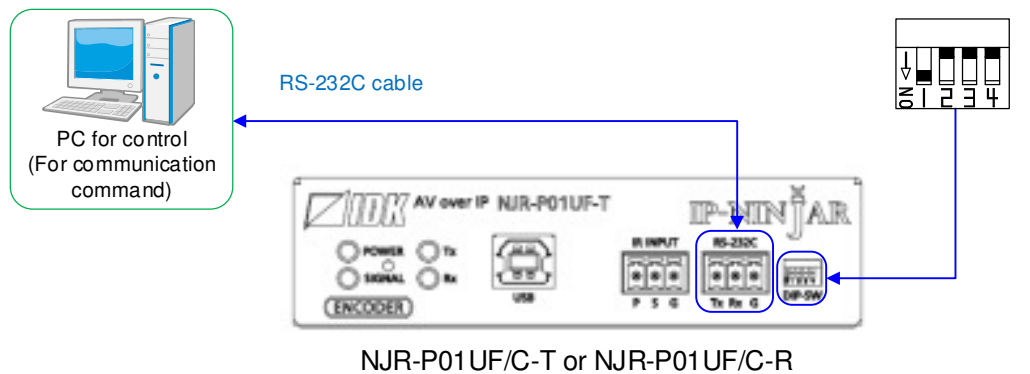
You can control NJR-P and get its status by connecting a control unit, such as PCs, to NJR-P over an RS-232C cable.

The RS-232C connector has two modes: control mode is controlling NJR-P01UF/C-T or NJR-P01UF/C-R and communication mode is communicating between peripheral devices connected to NJR-P01UF/C-T or NJR-P01UF/C-R.

Turn the DIP switch No.1 to ON to control NJR-P01UF/C-T or NJR-P01UF/C-R.

For details of communication commands, refer to the Command Guide for the NJR-P.

【See: 8.4 Setting DIP switch】



DIP switch (No.1)

Setting internal connection selection of RS-232C connector

OFF : NJR-P01UF/C-T and NJR-P01UF/C-R are connected

ON : Connected to CPU of NJR-P01UF/C-T and can set NJR-P01UF/C-T

Or

Connected to CPU of NJR-P01UF/C-R and can set NJR-P01UF/C-R

(Default: OFF)

[Fig. 9.2] Control over communication command

Note:

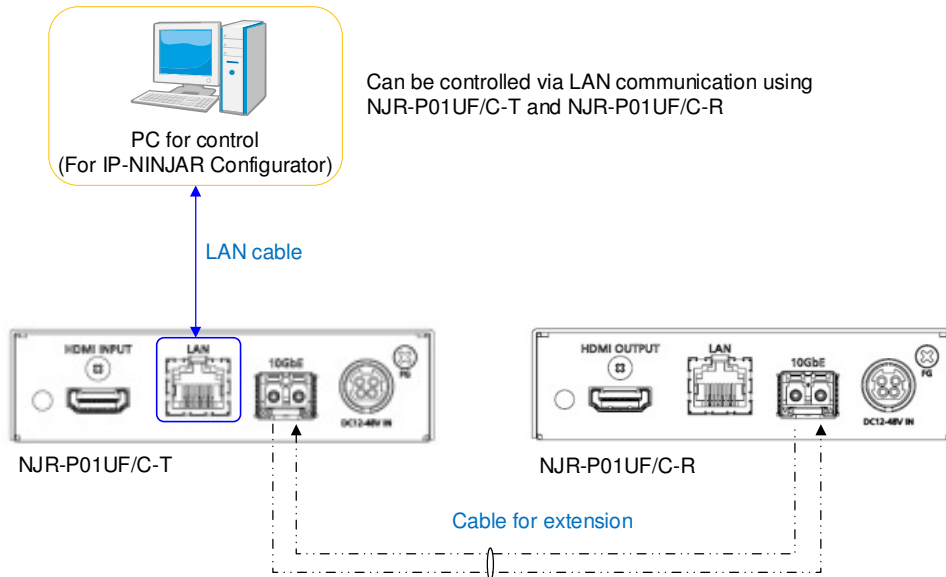
Settings of NJR-P01UF/C-R or NJR-P01UF/C-T cannot be set from NJR-P01UF/C-T or NJR-P01UF/C-R, respectively.

9.2 Controlled by IP-NINJAR Configurator

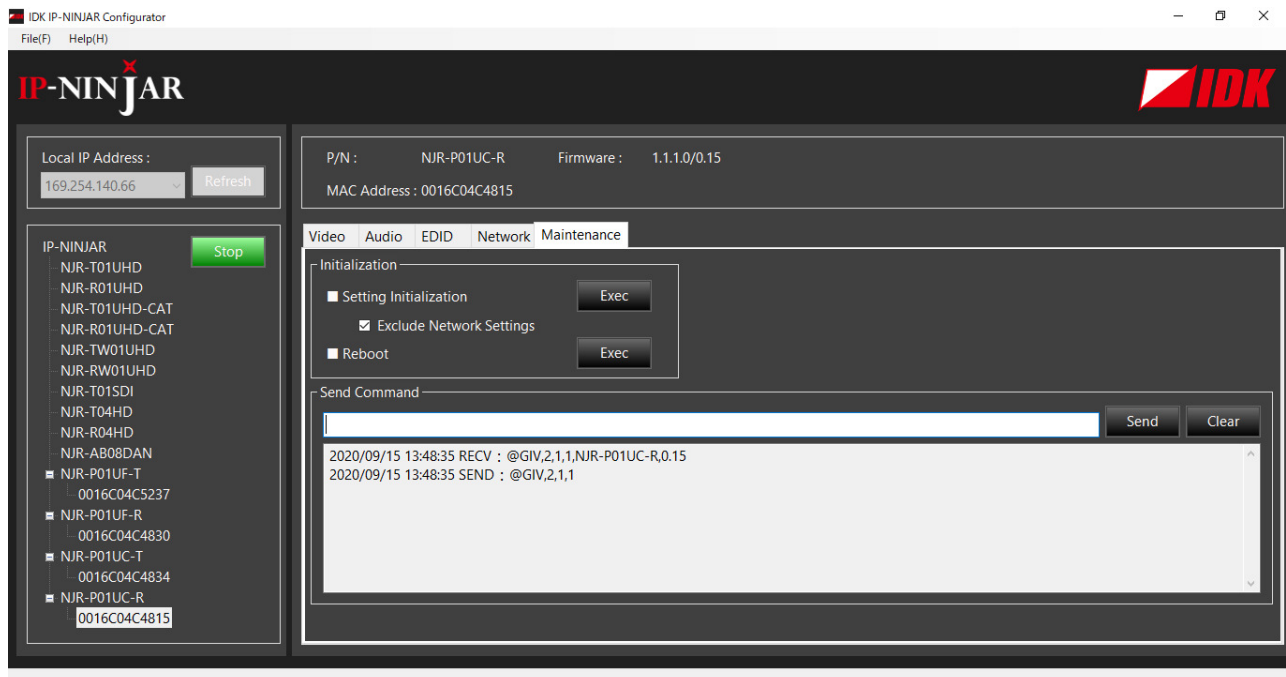
The NJR-P connected to LAN can be set from the IP-NINJAR Configurator remotely over LAN communication.

The following settings can be set from the GUI: setting RS-232C, setting LAN, resetting settings, and rebooting NJR-P. For other settings, communication commands can be input from the command line. Refer to the IP-NINJAR Configurator User Guide for operations from the IP-NINJAR Configurator. Refer to the Command Guide for NJR-P for details of communication commands.

Please contact us to download the IP-NINJAR Configurator.



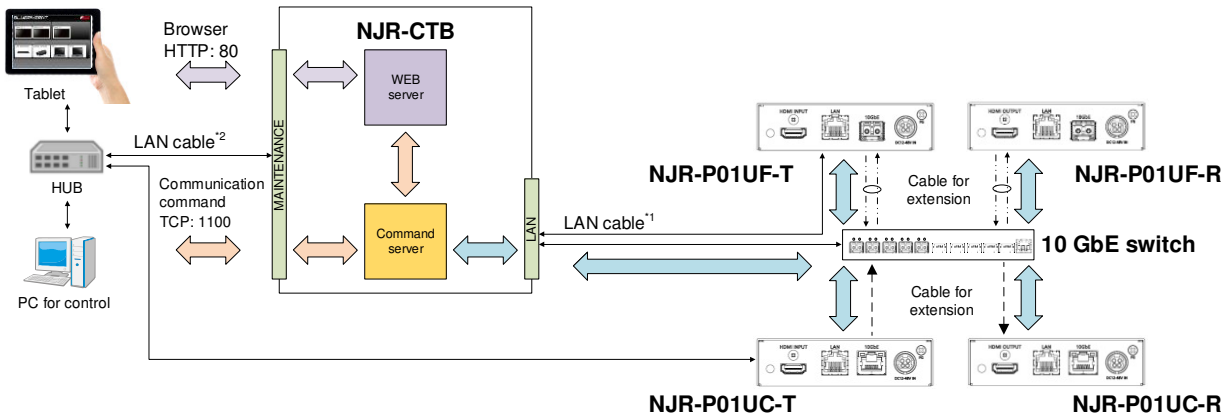
[Fig. 9.3] Control from IP-NINJAR Configurator



[Fig. 9.4] IP-NINJAR Configurator's GUI

9.3 Controlled by NJR-CTB

The NJR-CTB is the integrated control unit for IP-NINJARs connected to a network over a 10 GbE switch. The control box can control all devices and acquire their statuses using communication commands through WEB browser or LAN by connecting to NJR-P or 10 GbE switch. Refer to NJR-CTB User Guide for operations via a web browser. Refer to the Command Guide for NJR-P or the Command Guide for NJR-CTB for details of communication commands.



¹ The LAN connector of NJR-CTB should be connected to the LAN connector of NJR-P or the 10 GbE switch.
² PC for control should be connected to the MAINTENANCE connector of NJR-CTB or the LAN connector of NJR-P.

[Fig. 9.5] Controlled by NJR-CTB

9.4 Setting Items

Some setting items can be controlled through commands/GUI operation; the others cannot be controlled.

[Table 9.1] Setting items

Command: Command input, GUI: GUI operation, WEB&C: WEB browser and command input, No: Not supported

Setting item	NJR-P01UF/C-T/R		NJR-CTB	Page
	RS-232C	LAN (IP-NINJAR Configurator)	LAN	
Non-signal input monitoring	Command	Command	WEB&C	45
HDCP input enabled/disabled	Command	Command	WEB&C	46
Output mode	Command	Command	WEB&C	47
HDCP output	Command	Command	WEB&C	47
Hot plug ignoring duration	Command	Command	WEB&C	48
Muting digital audio	Command	Command	WEB&C	49
Selecting output audio	No	GUI	WEB&C	49
EDID resolution	Command	Command	WEB&C	50
Copying EDID	No	GUI	WEB&C	52
Selecting WXGA mode	Command	Command	WEB&C	52
Deep Color	Command	Command	WEB&C	53
Audio format	Command	Command	WEB&C	53
Speaker configuration	Command	Command	WEB&C	54
IR control	Command	Command	WEB&C	54
RS-232C communication	No	GUI	WEB&C	55
LAN	No	GUI	WEB&C	56
MAC address	No	GUI	WEB&C	56
Input status	Command	Command	WEB&C	57
Output status	Command	Command	WEB&C	58
Monitor EDID	Command	Command	WEB&C	59
Version	Command	Command	WEB&C	60
Initialization	No	GUI	WEB&C	43
Reboot	No	GUI	WEB&C	43
Setting channel information*	No	No	WEB&C	-
Selecting I/O channel*	No	No	WEB&C	-
Operating preset memory*	No	No	WEB&C	-
Videowall*	No	No	WEB&C	-
RS-232C crosspoint*	No	No	WEB&C	-
USB-HID crosspoint*	No	No	WEB&C	-
NJR-CTB LAN*	No	No	WEB&C	-

*: In this manual, only settings of NJR-P are explained. Refer to NJR-CTB User Guide for the following operations: Using as Network Extender base on 10GbE Switcher, setting channel information, selecting input/output channel, operating preset memory, and setting videowall, setting RS-232C/USB HID crosspoint, and setting NJR-CTB LAN.

9.5 Initialization

You can initialize settings to factory defaults using IP-NINJAR Configurator or NJR-CTB via LAN communication.

When initialization completes, NJR-P reboots with new settings automatically.

Note:

Once values are initialized, they cannot be restored.

【See: 9.2 Controlled by IP-NINJAR Configurator】

【See: 9.3 Controlled by NJR-CTB】

9.6 Reboot

You can reboot NJR-P using IP-NINJAR Configurator or NJR-CTB over LAN communication.

【See: 9.2 Controlled by IP-NINJAR Configurator】

【See: 9.3 Controlled by NJR-CTB】

10 Setting

The following items of NJR-P can be set using the RS-232C communication, IP-NINJAR Configurator, or NJR-CTB.

In this manual, only settings of NJR-P are explained. Refer to NJR-CTB User Guide for the following operations: Using as Network Extender base on 10GbE Switcher, setting channel information, selecting input/output channel, operating preset memory, setting videowall, setting crosspoint, and setting NJR-CTB LAN.

[Table 10.1] Setting items

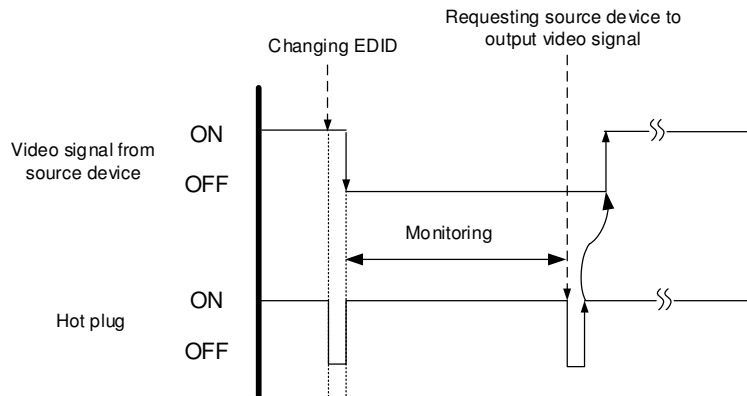
Item	Setting value		Page
	Value	Default	
Non-signal input monitoring	OFF/2 to 15 [sec.]	10 [sec.]	45
HDCP input enabled/disabled	HDCP enabled/HDCP disabled	HDCP enabled	46
Output mode	AUTO/DVI/RGB/YCbCr 4:2:2/ YCbCr 4:4:4/YCbCr 4:2:0	AUTO	47
HDCP output	ALWAYS/HDCP INPUT ONLY/ HDCP 2.2	ALWAYS	47
Hot plug ignoring duration	OFF/2 to 15 [sec.]	OFF (Not ignoring request signals)	48
Muting digital audio	Mute OFF/Mute ON	Mute OFF	49
Selecting output audio	Analog input audio/Digital input audio	Digital input audio	49
EDID resolution	SVGA to UHDTV	2160p 50/59.94/60 4:4:4	50
Selecting WXGA mode	1360×768/1366×768	1360×768	52
Deep Color	24/30/36-BIT COLOR	24-BIT COLOR	53
Audio format	PCM/Dolby Digital/AAC/ Dolby Digital+/DTS/DTS-HD/ Dolby TrueHD 32/44.1/48/88.2/96/176.4/192 [kHz]	PCM 48 [kHz]	53
Speaker configuration	1 to 8	2	54
IR control	Enabled/Disabled	Enabled	54
RS-232C communication	4800/9600/19200/38400/57600/115200 [bps] 7/8 [bit] 1/2 [bit] NONE/EVEN/ODD	9600 [bps] 8 [bit] 1 [bit] NONE	55
LAN	Automatic/Fix	Automatic	56

10.1 Input

10.1.1 Non-signal input monitoring

NJR-P01UF/C-T

If EDID of the encoder is changed or it is turned ON/OFF, the source device may not output video signal. In this case, you can set the time length which is from when a source device stops outputting signal to when the encoder requests the source device to output video signal.



[Fig. 10.1] Monitoring absence of input

Setting value

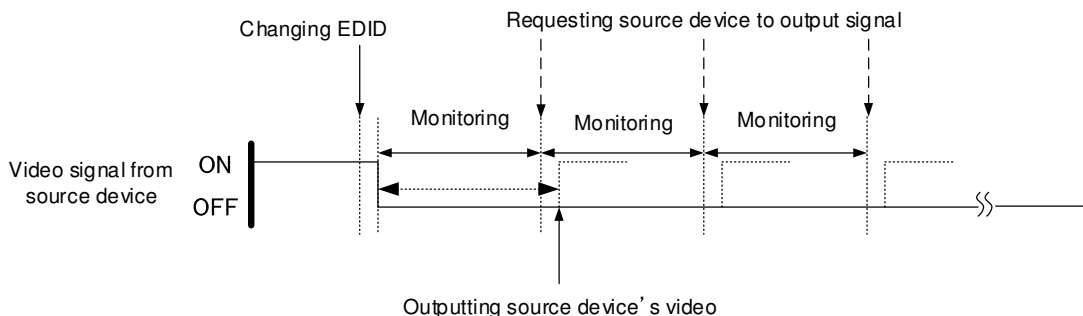
OFF

2 to 15 [sec.] [Default] 10 [sec.]

Note:

If you are using the monitor power-saving or dual monitor features on your PC, set this feature to “OFF”. This will avoid potentially unpredictable operation.

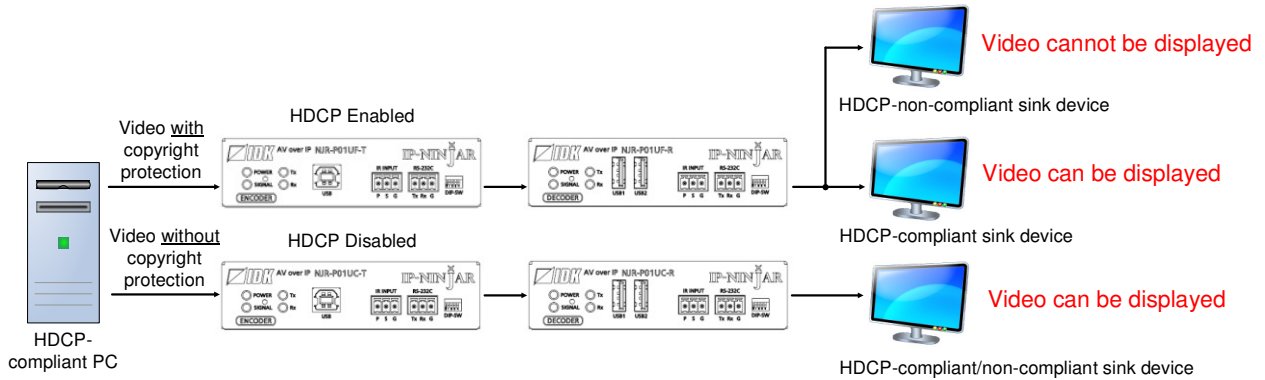
When using this feature, ensure that the “monitoring time” is set for a value greater than the amount of time needed for the source to provide an output signal.



[Fig. 10.2] Repeating output reset

10.1.2 HDCP input enabled/disabled

Some source devices negotiate with the connected device to determine if HDCP encryption is supported. After this negotiation, the source device determines whether HDCP signal encryption is enforced or not. This process takes place with some source device, even if the content being presented is not copyright protected. The encoder is HDCP compliant, if it is connected to a display device that does not support HDCP, even unprotected AV content may not be successfully displayed. Under these circumstances and if the content is indeed not protected, the problem can be solved by setting this menu to “DISABLE.”



[Fig. 10.3] HDCP-compliant and HDCP non-compliant sink device

Setting value

- HDCP enabled [Default]
- HDCP disabled

Note:

Set this setting to HDCP enabled in order to display video with copyright protection.

- HDCP 2.2 (stream type 0) can be displayed on a sink device supported HDCP 1.4.
- HDCP 2.2 (stream type 1) can be displayed on a sink device supported HDCP 2.2 but not on a sink device supported HDCP 1.4.

10.2 Output

10.2.1 Output mode

NJR-P01UF/C-T/R

You can set the color space to be sent to the sink device.

The sink device selects the best color space for the color space of the input video automatically, but if for some reason the sink device cannot select the color space, set the desired color space in encoder or decoder.

Setting value

- AUTO [Default]
- DVI output
- RGB output
- YCbCr 4:2:2 output
- YCbCr 4:4:4 output
- YCbCr 4:2:0 output

Note:

This setting is enabled when HDMI signal is input.

10.2.2 HDCP output

NJR-P01UF/C-R

You can set the HDCP output for when a HDCP-compliant device is connected.

Normally select "ALWAYS" to output HDCP at all times regardless of input signal status.

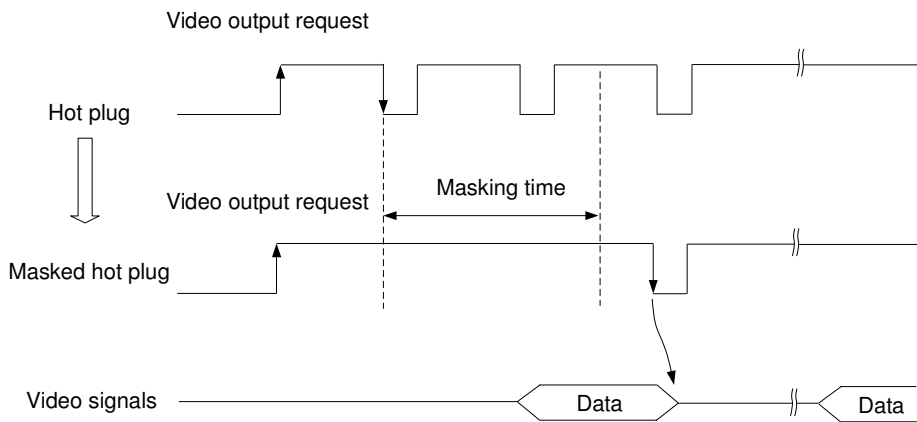
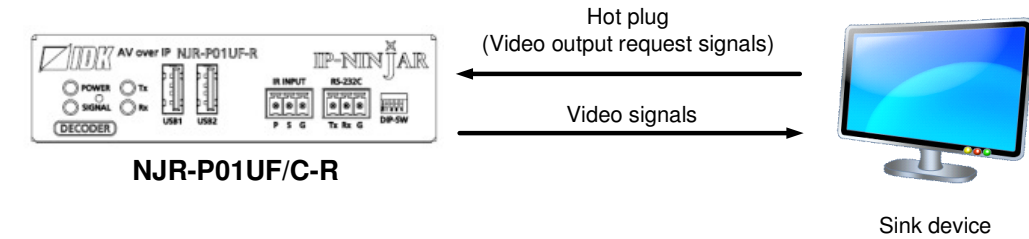
If you select "HDCP INPUT ONLY", HDCP will be output only if the input signal has HDCP. However, some sink devices fails HDCP authentication when HDCP is switched from OFF to ON; this results in that video and audio may not be output temporarily.

Setting value

- ALWAYS [Default]
- HDCP INPUT ONLY
- HDCP 2.2

10.2.3 Hot plug ignoring duration

Time for ignoring the video output request signals sent from the sink device.
 If the request signals are repeated in a short cycle, the NJR-P processes video output from the first cycle.
 As a result, video may not be output. This problem can be solved by setting the ignoring time.



[Fig. 10.4] Hot plug mask

Setting value

- OFF (Not ignoring request signals) [Default]
- 2 to 15 [sec.]

10.3 Audio

10.3.1 Muting digital audio

NJR-P01UF/C-T/R

You can enable or disable the audio output mute.

Once you mute encoder, all audio of decoder connected through the 10 GbE switch can be muted. When you mute decoder, output audio from the HDMI output connector of decoder is muted.

Setting value

Mute OFF [Default]

Mute ON

10.3.2 Selecting output audio

NJR-P01UF/C-R

You can select analog or digital audio that is embedded to output video.

Commands for analog input audio can be used when using the NJR-P01UF/C-R with other IP-NINJAR series products.

Setting value

Analog input audio

Digital input audio [Default]

10.4 EDID

10.4.1 EDID resolution

NJR-P01UF/C-T

You can set the desired resolution that is output from the source device.

Setting value

[Table 10.2] Maximum resolution of EDID

Max. resolution	Pixel	Standard	Remarks
Copied EDID	—	—	If no acquired data, "2160p (50/59.94/60, 4:4:4)"
1080p (50/59.94/60)	1920×1080	HDTV	
720p	1280×720		
1080i	1920×1080		
SVGA	800×600	VESA	
XGA	1024×768		
VESA720	1280×720		For DVI device input
WXGA	1280×768		
WXGA	1280×800		
Quad-VGA	1280×960		
SXGA	1280×1024		
WXGA	1360×768, 1366×768		Pixel can be set in "10.4.3 Selecting WXGA mode"
SXGA+	1400×1050		
WXGA+	1440×900		
WXGA++	1600×900		(RB)
UXGA	1600×1200		
WSXGA	1680×1050		
VESA1080	1920×1080		(RB), For DVI device input
WUXGA	1920×1200		(RB)
QWXGA	2048×1152		(RB)
WQHD	2560×1440	(RB)	
WQXGA	2560×1600	(RB)	
2160p (50/59.94/60, 4:2:0)	3840×2160	UHDTV	YCbCr 4:2:0 supported
4096x2160 (50/59.94/60, 4:2:0)	4096×2160	DCI	YCbCr 4:2:0 supported
2160p (50/59.94/60, 4:4:4)	3840×2160	UHDTV	Default YCbCr 4:2:0, YCbCr 4:2:2, YCbCr 4:4:4 supported
4096x2160 (50/59.94/60, 4:4:4)	4096×2160	DCI	YCbCr 4:2:0, YCbCr 4:2:2, YCbCr 4:4:4 supported

(RB): Reduced Blanking

Notes:

- For 4096×2160:
The source device may select 3840×2160 (30p, YCbCr 4:4:4) depending on the EDID definition.
First set built-in EDID and then select 4096×2160 in the source device side.
- For YCbCr4:2:0:
The source device may select 3840×2160 (30p, YCbCr 4:4:4) depending on the EDID definition.
First set built-in EDID and then select YCbCr 4:2:0 in the source device side.

[Table 10.3] Maximum resolution and supported pixels

Max. resolution	Pixels																											
	640×480	800×600	1024×768	1280×720	1280×768	1280×800	1280×960	1280×1024	1360×768*	1366×768*	1400×1050	1440×900	1600×900	1600×1200	1680×1050	1920×1080	1920×1200	2048×1152	2560 x 1440	2560 x 1600	3840×2160 (30p)	4096×2160 (30p)	3840×2160 (60p)	4096×2160 (60p)				
1080p (50/59.94/60)	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N		
720p	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1080i	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
800x600	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1024x768	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1280x720	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1280x768	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1280x800	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1280x960	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1280x1024	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1360x768	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1400x1050	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1440x900	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1600x900	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N		
1600x1200	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N		
1680x1050	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N		
1920x1080	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N		
1920x1200	Y	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N		
2048x1152	Y	Y	Y	N	N	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N		
2560x1440	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N		
2560x1600	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N		
2160p (50/59.94/60, 4:2:0)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	P	N	N		
4096x2160 (50/59.94/60, 4:2:0)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	P	P	N		
2160p (50/59.94/60, 4:4:4)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N		
4096x2160 (50/59.94/60, 4:4:4)	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		

Y: Supported, P: Only YCbCr 4:2:0, N: Not supported, —: Not used

* Set the EDID supported pixels of 1360x768 and 1366x768 in “10.4.3 Selecting WXGA mode”.
1360x768 is set by default.

10.4.2 Copying EDID

NJR-P01UF/C-T

You can load and register EDID of the sink device that is connected to an NJR decoder. The copied EDID can be treated in the same way as the internal EDID.

In order to copy the EDID of the sink device connected to an NJR decoder, set this item from the IP-NINJAR Configurator or NJR-CTB.

【See: 9.2 Controlled by IP-NINJAR Configurator】

【See: 9.3 Controlled by NJR-CTB】

Note:

To use a registered EDID, set “**10.4.1 EDID resolution**” to Copied EDID.

10.4.3 Selecting WXGA mode

NJR-P01UF/C-T

You can set the WXGA pixel (1360x768 or 1366x768) depending on the resolution of EDID.

This setting is enabled if selecting an item other than copied EDID.

Setting value

1360x768 [Default]

1366x768

10.4.4 Deep Color

NJR-P01UF/C-T

You can set the color depth that is output from the source device.

Setting value

24-BIT COLOR [Default]
 30-BIT COLOR
 36-BIT COLOR

Note:

If you select “30-BIT COLOR” or “36-BIT COLOR”, the transmission clock speed increases. Noise may occur if a bad-quality cable or long cable is connected. In these cases, the noise may be removed by selecting “24-BIT COLOR”.

For 4K@50/59.94/60 (YCbCr 4:4:4), “24-BIT COLOR” is selected automatically regardless of this menu’s setting.

10.4.5 Audio format

NJR-P01UF/C-T

You can set the audio format and maximum sampling frequency to be output from a source device.

Note:

Some formats are not supported; select an audio format and sampling frequency that are supported by the device you use.

Setting value

[Table 10.4] Audio format

Audio format	Max. sampling frequency (kHz)	Default
PCM	32/44.1/48/88.2/96/176.4/192	48
Dolby Digital	OFF/32/44.1/48	OFF
AAC	OFF/32/44.1/48/88.2/96	OFF
Dolby Digital+	OFF/32/44.1/48	OFF
DTS	OFF/32/44.1/48/96	OFF
DTS-HD	OFF/44.1/48/88.2/96/176.4/192	OFF
Dolby TrueHD	OFF/44.1/48/88.2/96/176.4/192	OFF

10.4.6 Speaker configuration

NJR-P01UF/C-T

You can set the speaker configuration of multi-channel audio.

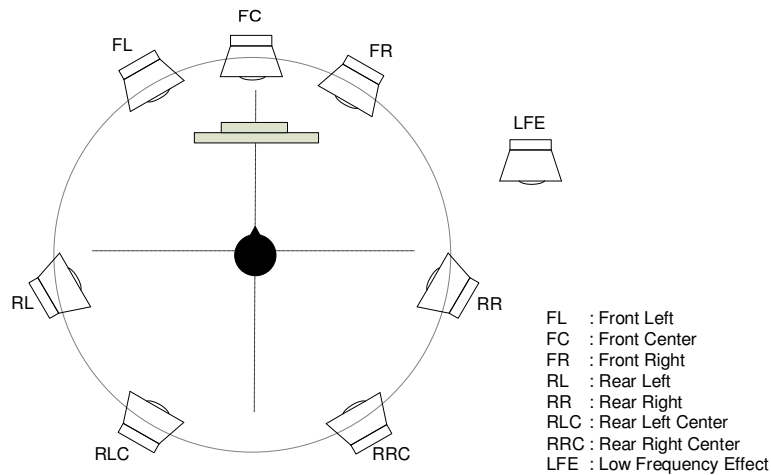
Once changing the number of speaker, the configuration is automatically set as follows.

You can change the default configuration, and you can also set each speaker individually

Setting value

[Table 10.5] Default speaker configuration

Number of speakers	FL/FR	LFE	FC	RL/RR	RC	FLC/FRC	RLC/RRC	FLW/FRW	FLH/FRH	TC	FCH
1	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2 [Default]	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
4	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
5	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
6	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
7	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
8	ON	ON	ON	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF



[Fig. 10.5] Speaker configuration

10.5 IR control

NJR-P01UF/C-T/R

You can enable/disable the IR function.

Setting value

Enabled [Default]

Disabled

10.6 RS-232C

10.6.1 RS-232C communication

NJR-P01UF/C-T/R

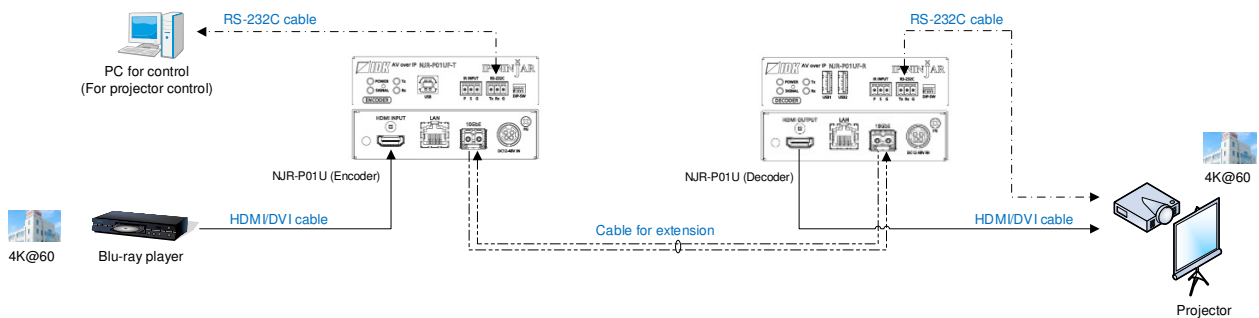
You can set the RS-232C communication between devices that connected to encoder/decoder. The same setting should be set for encoder/decoder.

Notes:

The RS-232C connector is used for two modes: controlling encoder or decoder and communicating between devices that connected to encoder/decoder. For the latter mode, set the DIP switch (No.1) to “OFF”.

【See: 8.4 Setting DIP switch】

There are two RS-232C modes: control mode (setting NJR-P) and communication mode (controlling peripheral devices). Values for the former mode are fixed and cannot be changed; values for the latter mode are settable. Refer to the Command Guide for details.



[Fig. 10.6] Communication over RS-232C

Note:

For communicating between encoder/decoder and connected device, only RD (Received data) and TD (Transmitted data) are sent.

Setting value

[Table 10.6] RS-232C setting items

Setting items	Setting value	Default
Baud rate [bps]	4800, 9600, 19200, 38400, 57600, 115200	9600
Data bit length [bit]	7, 8	8
Stop bit [bit]	1, 2	1
Parity check	NONE, EVEN, ODD	NONE

10.7 LAN

10.7.1 LAN

NJR-P01UF/C-T/R

The IP address can be obtained automatically by DHCP (Dynamic Host Configuration Protocol). Static IP address, subnet mask, and default gateway can also be configured manually.

Setting value

[Table 10.7] LAN setting items

Setting item	Setting value	Default
IP address	0.0.0.0 to 255.255.255.255	Automatic
Subnet mask	0.0.0.0 to 255.255.255.254	
Default gateway	0.0.0.0 to 255.255.255.255	

10.7.2 MAC address

NJR-P01UF/C-T/R

You can display the MAC address.

Information to be displayed

[Table 10.8] MAC address

Item	Example
MAC address	0008E5690000

10.8 Information

10.8.1 Input status

NJR-P01UF/C-T

You can display the signal status that is input from the HDMI input connector.

Information to be displayed

[Table 10.9] Input signals

Value	Description
Hxx	HDMI signal is input. xx stands for color depth which is 24, 30, or 36.
D	DVI signal is input.
N	No signal is input.

[Table 10.10] Video input signal format

Value	Description
1920x1080i 59.94Hz	SDTV/HDTV/UHDTV signal is input, which returns the format type and vertical synchronous frequency.
800x600p 60.32Hz	Signal having VESA resolution is input, and [Horizontal resolution x Vertical resolution] and vertical synchronous frequency are returned.
NO SIGNAL	No signal is input.

[Table 10.11] Audio input signal format

Value	Description
LINEAR PCM 48kHz	LPCM signal is input, which returns the sampling frequency.
COMPRESSED AUDIO	Compressed audio signal (such as Dolby Digital and DTS) is input (Because the encoder does not recognize detailed formats, "COMPRESSED AUDIO" is sent to all compressed audios).
NO AUDIO	No signal is input.

[Table 10.12] With/Without HDCP input

Value	Description
HDCP 1.4 ON	Signal with HDCP 1.4 is input.
HDCP 2.2 ON	Signal with HDCP 2.2 is input.
HDCP OFF	Signal without HDCP is input.
NO SIGNAL	No signal is input.

10.8.2 Output status

You can display the status of the sink device connected to the HDMI output connector.

Information to be displayed

[Table 10.13] HDCP authentication status

Value	Description
HDCP 1.4 SUPPORT	Authenticated with HDCP 1.4
HDCP 2.2 SUPPORT	Authenticated with HDCP 2.2
HDCP NOT SUPPORT	Not authenticated, because device that does not support HDCP is connected or input signal does not have HDCP.
HDCP ERROR	Device with HDCP is connected, but the authentication failed.
HDCP CHECK NOW	Connection status of sink device was changed, and the status is being checked.
UNCONNECTED	No sink device is connected.

[Table 10.14] Output signal type

Value	Description
Hxx	HDMI signal is output. xx stands for the color depth, 24, 30 or 36.
D	DVI signal is output.
N	No sink device is connected.

[Table 10.15] Error code

HDMI output connector status of video output is displayed and then the status of audio output is displayed.

Value	Video output	Audio output
0	Video is output correctly.	Audio is output correctly.
1	—	“ 10.3.1 Muting digital audio ” is set to “ON”.
2	No source device is connected.	
3	No video signal is input.	No audio signal is input.
4	Video output or audio output of the source device is muted.	
5	Signal with HDCP is input but the sink device does not support HDCP.	
6	The source device does not output the needed information (packets) for outputting video or audio.	
7	Signal that is not supported by NJR-P is input.	Since compressed audio is input, audio cannot be output.
9	—	The sink device that does not support audio is connected.
B	No sink device is connected.	
C	HDCP is being authenticated.	
D	HDCP authentication failed	

10.8.3 Monitor EDID

NJR-P01UF/C-R

You can display the EDID of the sink device connected to the HDMI output connector.

Information to be displayed

[Table 10.16] Monitor's EDID

Displayed value	Displayed value	Example	Remarks
Monitor name	—	NJR-P01UF-T	If no monitor is connected, "UNCONNECTED" is displayed and parameter is not displayed any more.
Resolution and pixel clock	—	1920x1080 148.50MHz	—
Supported HDMI	HDMI/DVI	HDMI	If the sink device does not support HDMI, "DVI" is displayed.
Sampling configuration ^{*1}	RGB/YCbCr422/ YCbCr444/YCbCr420	YCbCr444	All supported sampling configurations are displayed. If the sink device resolution is 4K@50/59.94/60 and only up to YCbCr 4:2:0 is supported, "YCbCr420" is displayed.
Color depth ^{*1}	24/30/36 BIT COLOR	24BIT COLOR	All supported color depths are displayed.
Supported audio	LINEAR PCM/ AUDIO NOT SUPPORT	LINEAR PCM	If the sink device is not support audio, "AUDIO NOT SUPPORT" is displayed.
Sampling frequency ^{*2}	32/44.1/48/88.2/96/176.4/ 192 kHz	32/44.1/48kHz	All supported sampling frequencies are displayed.
Bit length ^{*2}	16/20/24 BIT	16/20/24BIT	All supported bit lengths are displayed.
Number of channels ^{*2}	1 to 8 CHANNEL	2CHANNEL	—
Supported compressed audio ^{*2}	COMPRESSED AUDIO SUPPORT	COMPRESSED AUDIO SUPPORT	If only compressed audio is supported, "COMPRESSED AUDIO SUPPORT" is displayed.

^{*1} Displayed only if a sink device supporting HDMI is connected.

^{*2} Displayed only if a sink device supporting audio is connected.

10.8.4 Version

NJR-P01UF/C-T/R

You can display the model number and firmware version.

Information to be displayed

[Table 10.17] Version

Item	Example
Model number	NJR-P01UF-T
Firmware version	1.00

11 Product specification

11.1 NJR-P01UF-T/R

Item		NJR-P01UF-T (Encoder)	NJR-P01UF-R (Decoder)
Input		1 input HDMI/DVI 1.0 TMDS single link HDCP 1.4/2.2 HDR (*1) x.v.Color/3D/ARC/HEC/CEC are not supported. EDID emulation Connector: 1 female HDMI Type A (19-pin) Use 16 ft. (5 m) or shorter HDMI cables.	1 input Digital signal for extension Format: IP-NINJAR protocol RS-232C/LAN/USB Connector: 2 LC
Output		1 output Digital signal for extension Format: IP-NINJAR protocol RS-232C/LAN/USB Connector: 2 LC	1 output HDMI/DVI 1.0 TMDS single link HDCP 1.4/2.2 HDR (*1) x.v.Color/3D/ARC/HEC/CEC are not supported. Connector: 1 female HDMI Type A (19-pin) Use 16 ft. (5 m) or shorter HDMI cables.
Format		VGA / SVGA / XGA / WXGA (1280x768) / WXGA (1280x800) / Quad-VGA / SXGA / WXGA (1360x768) / WXGA (1366x768) / SXGA+ / WXGA+ / WXGA++ / UXGA / WSXGA+ / VESAHD / WUXGA / QWXGA / 4K 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K For 4K formats, 24 Hz/25 Hz/30 Hz/50Hz (4:4:4)/60 Hz (4:4:4) are supported.	
Color depth		24 bit, 30 bit, 36 bit Deep Color For 4K formats: only 24 bit	
Dot clock		25 MHz to 600 MHz	
TMDS clock		25 MHz to 300 MHz	
TMDS data rate		0.75 Gbps to 18 Gbps	
Digital audio input		Multi-channel LPCM up to 8 channels Sampling frequency: 32 kHz to 192 kHz Sample size: 16 bit to 24 bit	—
Digital audio output		—	Multi-channel LPCM up to 8 channels Sampling frequency: 32 kHz to 192 kHz Sample size: 16 bit to 24 bit
Cable for extension	Cable	Duplex fiber cable SFP+ optical transceiver	
	Polishing	- SFP+ optical transceiver for Multimode : PC polishing (Recommended) - SFP+ optical transceiver for Singlemode : UPC polishing (Recommended), SPC *APC is not supported	
	Transmission distances (*2)	- Multimode fiber (OM3) : Up to 984 ft. (300 m) - Singlemode fiber (OS1) : Up to 6.21 mi. (10 km) - Singlemode fiber (OS1) : Up to 24.85 mi. (40 km, optional)	
Control	RS-232C	1 port/captive screw (3-pin), full duplex, up to 115.2 kbps	
	LAN	1 port/RJ-45 10Base-T/100Base-TX/1000Base-T (Auto Negotiation), Auto MDI/MDI-X	
	USB	1 port/female Type-B (HID class)	2 ports/female Type-A (HID class)
	IR input	1 port/captive screw (3-pin)	
Functions		DDC buffer, Connection Reset (*3)	
General	AC adapter	Input : 100 - 240 VAC ± 10%, 50 Hz/60 Hz ± 3 Hz Output : DC 12 V 3 A (A dedicated AC adapter is provided)	
	Power consumption	About 8 Watts	About 10 Watts
	Dimensions	4.2 (W) × 1.1 (H) × 7.1 (D)" (106 (W) × 28 (H) × 180 (D) mm) (Quarter rack wide, thin type) (Excluding connectors and the like)	
	Weight	1.5 lbs. (0.7 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)	

*1 HDR is supported if the connected sink device supports HDR and its copied EDID is set for EDID setting.

*2 The maximum transmission distance is measured under the following conditions: Fiber that is polished by a recommended method is used; there is no interconnection; it does not exceed the allowable bending radius.

*3 For digital systems, some problems, such as an HDCP authentication error, can often be recovered by physically disconnecting and reconnecting the digital cables. However, the Connection Reset feature will fix these problems automatically without the need to physically plug and unplug the cables. It creates the same condition as if the cable were physically disconnected and reconnected. This feature only works for the NJR-P's output. If other devices are connected between the NJR-P's output and sink device, this feature may be invalid.

11.2 NJR-P01UC-T/R

Item		NJR-P01UC-T (Encoder)	NJR-P01UC-R (Decoder)
Input		1 input HDMI/DVI 1.0 TMDS single link HDCP 1.4/2.2 HDR (*1) x.v.Color/3D/ARC/HEC/CEC are not supported. EDID emulation Connector: 1 female HDMI Type A (19-pin) Use 16 ft. (5 m) or shorter HDMI cables.	1 input Digital signal for extension Format: IP-NINJAR protocol RS-232C/LAN/USB PoE power supplied (PD) (IEEE 802.3at/IEEE 802.3af) Connector: 1 RJ-45
Output		1 output Digital signal for extension Format: IP-NINJAR protocol RS-232C/LAN/USB PoE power supplied (PD) (IEEE 802.3at/IEEE 802.3af) Connector: 1 RJ-45	1 output HDMI/DVI 1.0 TMDS single link HDCP 1.4/2.2 HDR (*1) x.v.Color/3D/ARC/HEC/CEC are not supported. Connector: 1 female HDMI Type A (19-pin) Use 16 ft. (5 m) or shorter HDMI cables.
Format		VGA / SVGA / XGA / WXGA (1280x768) / WXGA (1280x800) / Quad-VGA / SXGA / WXGA (1360x768) / WXGA (1366x768) / SXGA+ / WXGA+ / WXGA++ / UXGA / WSXGA+ / VESAHD / WUXGA / QWXGA / 4K 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K For 4K formats, 24 Hz/25 Hz/30 Hz/50Hz (4:4:4)/60 Hz (4:4:4) are supported.	
Color depth		24 bit, 30 bit, 36 bit Deep Color For 4K formats: only 24 bit	
Dot clock		25 MHz to 600 MHz	
TMDS clock		25 MHz to 300 MHz	
TMDS data rate		0.75 Gbps to 18 Gbps	
Digital audio input		Multi-channel LPCM up to 8 channels Sampling frequency: 32 kHz to 192 kHz Sample size: 16 bit to 24 bit	—
Digital audio output		—	Multi-channel LPCM up to 8 channels Sampling frequency: 32 kHz to 192 kHz Sample size: 16 bit to 24 bit
Cable for extension	Cable	Cat6A STP cable	
	Transmission distance (*2)	Up to 328 ft. (100 m)	
Control	RS-232C	1 port/captive screw (3-pin), full duplex, up to 115.2 kbps	
	LAN	1 port/RJ-45 10Base-T/100Base-TX/1000Base-T (Auto Negotiation), Auto MDI/MDI-X	
	USB	1 port/female Type-B (HID class)	2 ports/female Type-A (HID class)
	IR input	1 port/captive screw (3-pin)	
Functions		DDC buffer, Connection Reset (*3)	
General	AC adapter	Input : 100 - 240 VAC ± 10%, 50 Hz/60 Hz ± 3 Hz Output : DC 12 V 3 A (A dedicated AC adapter is provided)	
	Power consumption	About 11 Watts	About 13 Watts
	Dimensions	4.2 (W) × 1.1 (H) × 7.9 (D)" (106 (W) × 28 (H) × 200 (D) mm) (Quarter rack wide, thin type) (Excluding connectors and the like)	
	Weight	1.8 lbs. (0.8 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)	

*1 HDR is supported if the connected sink device supports HDR and its copied EDID is set for EDID setting.

*2 The actual maximum transmission distance may be shorter than the stated distance depending on the following conditions: quality and cabling of the Cat6A cable, combination with 10 GbE switch, and installation status of the 10 GbE switch. Video may be disturbed or may not be output even if signals are within the range mentioned above.

*3 For digital systems, some problems, such as an HDCP authentication error, can often be recovered by physically disconnecting and reconnecting the digital cables. However, the Connection Reset feature will fix these problems automatically without the need to physically plug and unplug the cables. It creates the same condition as if the cable were physically disconnected and reconnected. This feature only works for the NJR-P's output. If other devices are connected between the NJR-P's output and sink device, this feature may be invalid.

12 Troubleshooting

In case the NJR-P 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.

- Are the NJR-P and all devices connected to power and powered on?
- Are signal cables connected correctly?
- Are there any loose or partially mated connections?
- Are the interconnecting cables specified correctly to support adequate bandwidth?
- Are specifications of connected devices matched to each other?
- Are configuration settings for the connected devices correct?
- 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	The problem occur at all connectors?	Yes or No
2	Connect the devices using genuine cables without connecting the NJR-P. The problem still cannot be solved? Please contact us for assistance.	Yes or No

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