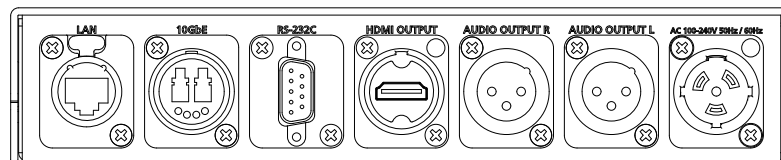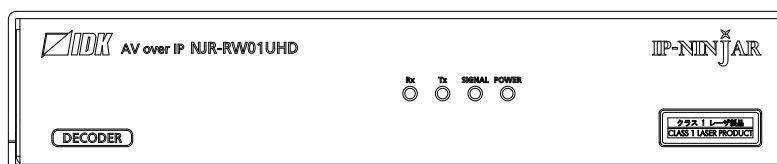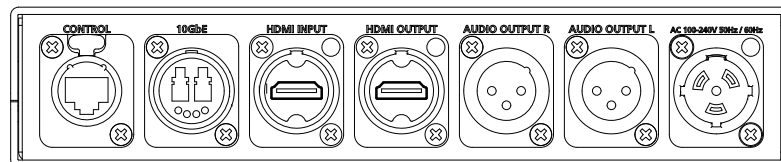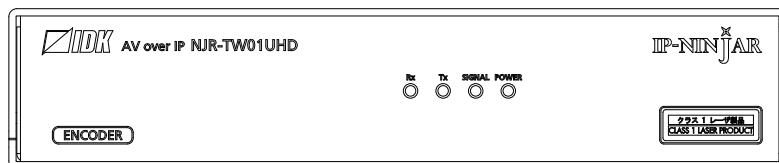**4K@60/HDCP 2.2 AV HDMI Network Extender, Rugged Chassis**

NJR-TW01UHD/NJR-RW01UHD

<User Guide>

Ver.1.2.0

- 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.

IDK Corporation

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.
- etherCON, opticalCON, and powerCON are registered trademarks of Neutrik AG.
- 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

● 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: 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.

FCC STATEMENT

Note: 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.

(Class A)

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information

Unique Identifier

Type of Equipment: 4K@60/HDCP 2.2 AV HDMI Network Extender, Rugged Chassis

Model Name: NJR-TW01UHD, NJR-RW01UHD

Responsible Party – U.S. Contact Information

Company Name: IDK America Inc.

Address: 72 Grays Bridge Road Suite 1-C, Brookfield, CT 06804

Telephone number: +1-203-204-2445

URL: www.idkav.com

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

(FCC SDoC)

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

Instructions and warnings/cautions for all products are provided. Some of them may not be applicable to your product.

⚠ **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)	⚠ **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:

❗ **Instruction**	● **Lifting must be done by two or more personnel.** To avoid injury: When lifting the product, bend your knees, keep your back straight and get close to it with two or more persons.

For installing and connecting products:

🚫 **Prohibited**	● **Do not place the product in unstable place.** Install the product in a horizontal and stable place, as this may fall or tip over and cause injury. ● **Secure the product if installing in the locations with vibration.** Vibration may move or tip over the product unexpectedly, resulting in injury.

⚠ **Warning**

! **Instruction**	● **Installation work must be performed by professionals.** 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. ● **Insert the power plug into an outlet that is unobstructed.** 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. ● **Insert the power plug into an appropriate outlet completely.** If the plug is partially inserted, arching may cause the connection to overheat, increasing the risk of electric shock or fire. Do not use a damaged plug or connect to a loose outlet. ● **Unplug the product from an AC power source during installation or service.** When connecting peripheral devices to this product, unplug all involved devices from outlets. Ground potential differences may cause fire or other difficulties. ● **The product must be electrically earthed/grounded.** To reduce the risk of electric shock, ensure the product is connected to a mains socket outlet with a protective earthing connection. ● **For PoE/PoH, use category cables meeting IEEE802.3af/at.** Otherwise, it may cause problems or a fire.

For operating products:

🚫 **Prohibited**	● **Keep out any foreign objects.** 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. ● **For power cable/plug and Category cable,** ・ **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.** Misuse of the power cable and plug may cause fire or electric shock. If power cables/plugs become damaged, contact your IDK representative.
🚫 **Do not disassemble**	● **Do not repair, modify or disassemble.** 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.
🚫 **Do not touch**	● **Do not touch the product and connected cables during electric storms.** Contact may cause electric shock.
! **Instruction**	● **Clean the power plug regularly.** If the plug is covered in dust, it may increase the risk of fire.

If the following problem occurs:

🔌 **Unplug**	● **Unplug immediately if the product smokes, makes unusual noise, or produces a burning odor.** ● **Unplug immediately if the product is damaged by falling or having been dropped.** ● **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 electric shock or fire. For maintenance and repair, contact your IDK representative.

⚠ **Caution**

For installing and connecting products:

🚫 **Prohibited**	● **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.** Placing the product in such environment 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 itself as well as 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**	● **Do not handle power plug with wet hands.** Failure to observe this precaution may increase the risk of electric shock.
❗ **Instruction**	● **Use and store the product within the specified temperature/humidity range.** If the product is used outside the specified range of 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 alone into the threaded holes on the bottom of the product. Doing so may lead to damage when the screws contact electric circuitry or components inside the product. Reinstall the originally supplied rubber feet using the originally supplied screws only.

For operating products:

Hot surfaces Caution	**For products with the hot surfaces caution label only:** ● **Do not touch the product's hot surface.** If the product is installed without enough space, it may cause malfunction of other products. If you touch product's hot surface, it may cause burns.
Prohibited	● **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 electric shock.
Unplug	● **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	● **Do not prevent heat release.** If cooling fan stops, power off the product and contact IDK. Failure to do so may raise internal temperature and increase the risk of malfunction, fire, or electric shock. ● **Keep vents clear of dust.** If the vent holes near the cooling fan or near the fan are covered with dust, internal temperatures increase and may increase the risk of malfunction. Clean the vent holes and near the fan as needed. If dust accumulates inside of the product, it may increase the risk of fire or electric shock. Periodic internal cleaning, especially before humid rainy season, is recommended. For internal cleaning, contact your IDK representative.

Table of Contents

1 About this Guide

This user guide explains how to use the NJR-W01UHD and about external control through the IP-NINJAR Configurator and NJR-CTB.

For other products of IP-NINJAR series, see "**[Table 1.1] Document for IP-NINJAR products**".
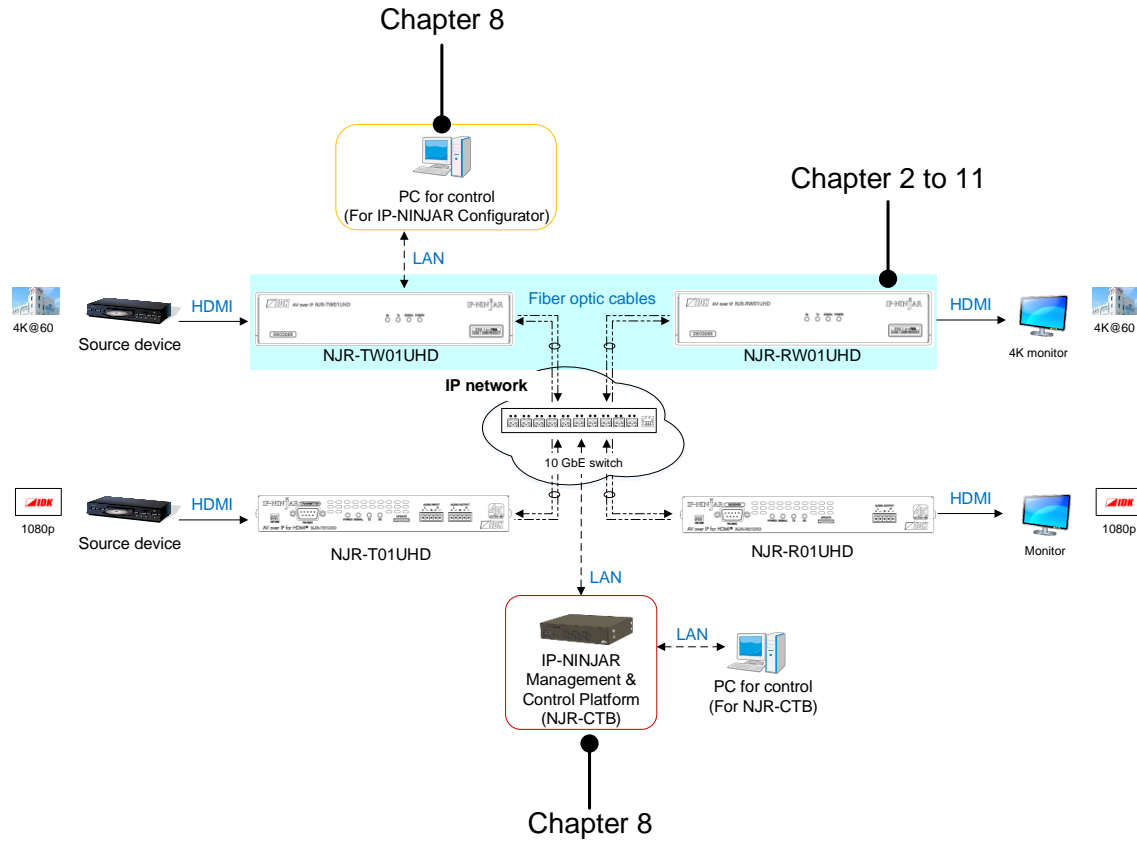
[Fig. 1.1] Document structure

[Table 1.1] Document for IP-NINJAR products

Model	User Guide	Command Guide
NJR-T01UHD/NJR-R01UHD	NJR-T01UHD/NJR-R01UHD User Guide	NJR-T01UHD/NJR-R01UHD Command Guide
NJR-TW01UHD/NJR-RW01UHD	NJR-TW01UHD/NJR-RW01UHD User Guide	NJR-TW01UHD/NJR-RW01UHD Command Guide
NJR-T01SDI	NJR-T01SDI User Guide	NJR-T01SDI Command Guide
NJR-T04HD/NJR-R04HD	NJR-T04HD/NJR-R04HD User Guide	NJR-T04HD/NJR-R04HD Command Guide
NJR-AB08DAN	NJR-AB08DAN User Guide/Command Guide	
NJR-CTB	NJR- CTB User Guide	NJR- CTB Command Guide
IP-NINJAR Configurator	IP-NINJAR Configurator User Guide	

2 Included items

Ensure that all items illustrated below are included in the package.

If any items are missing or damaged, please contact IDK.

Since AC adapter and cables are not included, use the following adapter and cables:

For AC adapter cable

  Connector: Neutrik's "NAC3FX-W"

  Cable and AC plug complying with the safety standard of your country

For 1080p@60 and 4K@60, use the following cables:

  1080p@60: High-speed HDMI cable (16 ft. (5 m) or shorter)

  4K@60   : Premium HDMI cable   (10 ft. (3 m) or shorter)
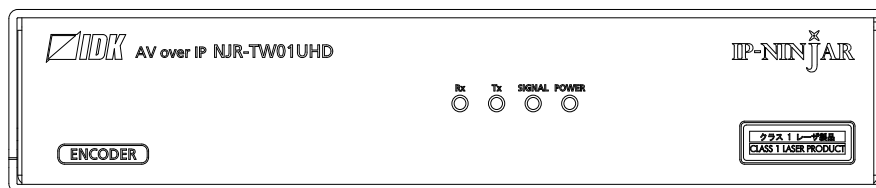
One (1) NJR-TW01UHD
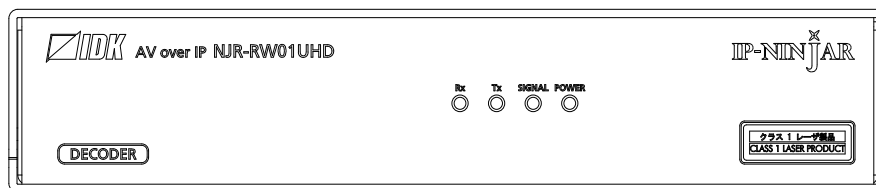
One (1) NJR-RW01UHD

[Fig. 2.1] Included items

3 Product outline

The NJR-W01UHD is a point-to point AV over IP solution for high definition signal extension via fiber optic cables. This IP-NINJAR model employs Neutrik's robust connector and rugged and lightweight chassis to accommodate event/staging market needs.

The NJR-W01UHD leverages 10 Gb Ethernet switches to control 4K@ 60 (4:4:4) signals with zero frame latency.

RS-232C bidirectional communication and LAN transmission are also supported.
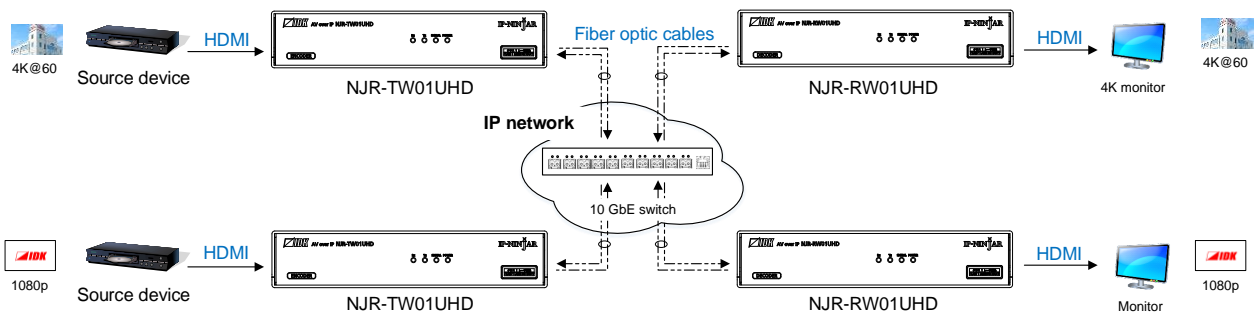
[Fig. 3.1] HDMI signals transmission

Note:

Use the NJR-W01UHD with a combination of NJR-TW01UHD and NJR-RW01UHD or other IP-NINJAR products. It cannot be connected to OPF or FDX series products.

■ **LAN model and RS-232C model**

Cable	NJR-TW01UHD		NJR-RW01UHD
	Control	Model	Model
Multimode fiber	RS-232C	NJR-TW01UHD-MM-232	NJR-RW01UHD-MM
	LAN	NJR-TW01UHD-MM-LAN	
Singlemode fiber	RS-232C	NJR-TW01UHD-SM-232	NJR-RW01UHD-SM
	LAN	NJR-TW01UHD-SM-LAN	

4 Features

■ **Video**
- ・ Up to 4K@60 (4:4:4)
- ・ HDCP 1.4/2.2
- ・ HDR
- ・ Local monitor output
- ・ Transmission distances
    - 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))

■ **Audio**
- ・ De-embedding

■ **Communication**
- ・ Bidirectional RS-232C for NJR-TW01UHD (RS-232C supported model) and NJR-RW01UHD
- ・ LAN for NJR-TW01UHD (LAN supported model) and NJR-RW01UHD

■ **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

■ **Others**
- ・ EDID emulation
- ・ DDC buffer
- ・ Connection Reset
- ・ Neutrik's robust connector with locking mechanism and rugged and lightweight chassis
- ・ Fanless (No fan noise)

■ NJR-TW01UHD
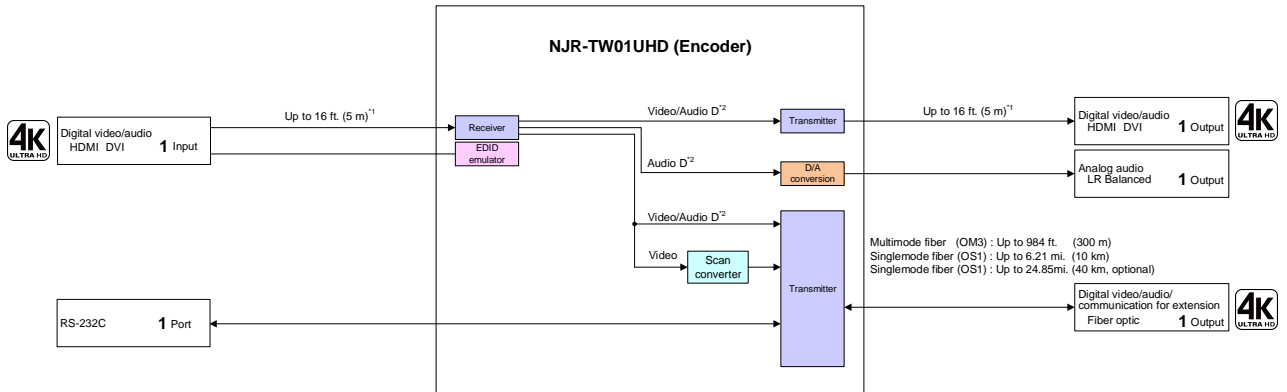
[Fig. 4.1] NJR-TW01UHD (RS-232C supported model)
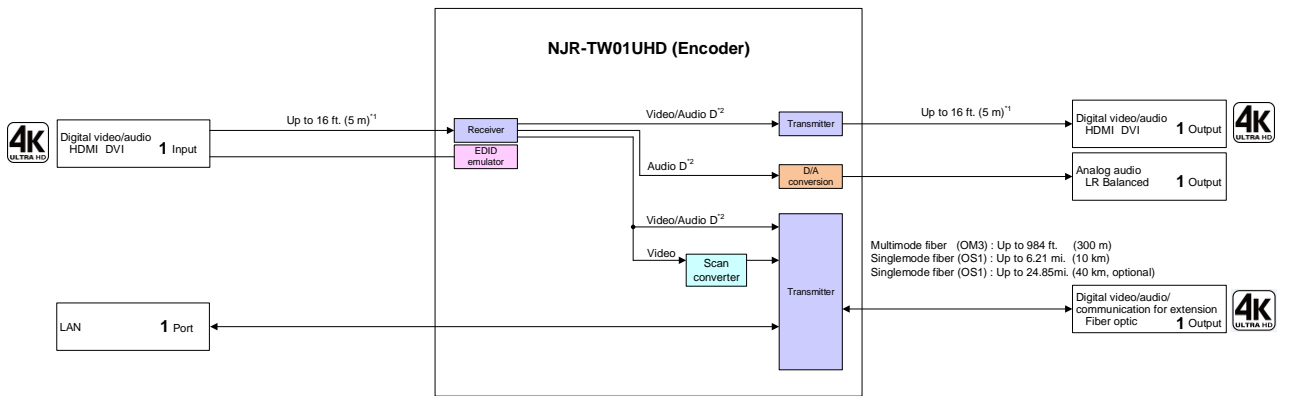
[Fig. 4.2] NJR-TW01UHD (LAN supported model)

■ NJR-RW01UHD
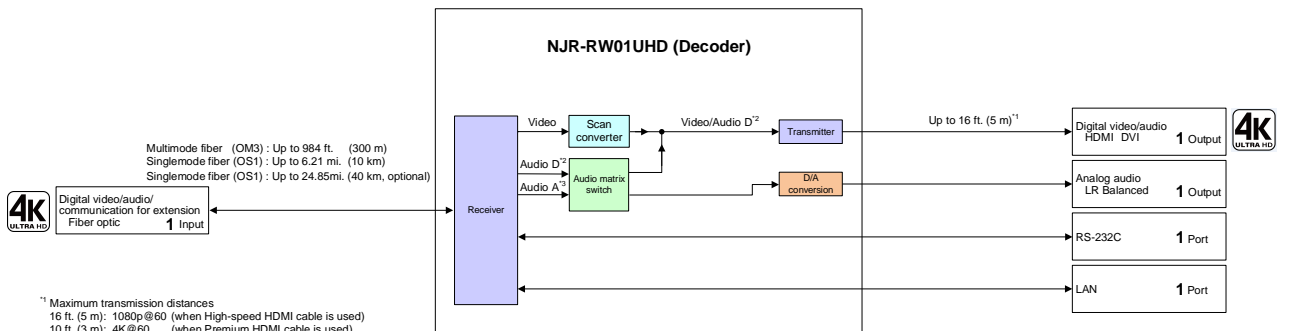
[Fig. 4.3] NJR-RW01UHD

15

5 Panels

5.1 NJR-TW01UHD (Encoder)
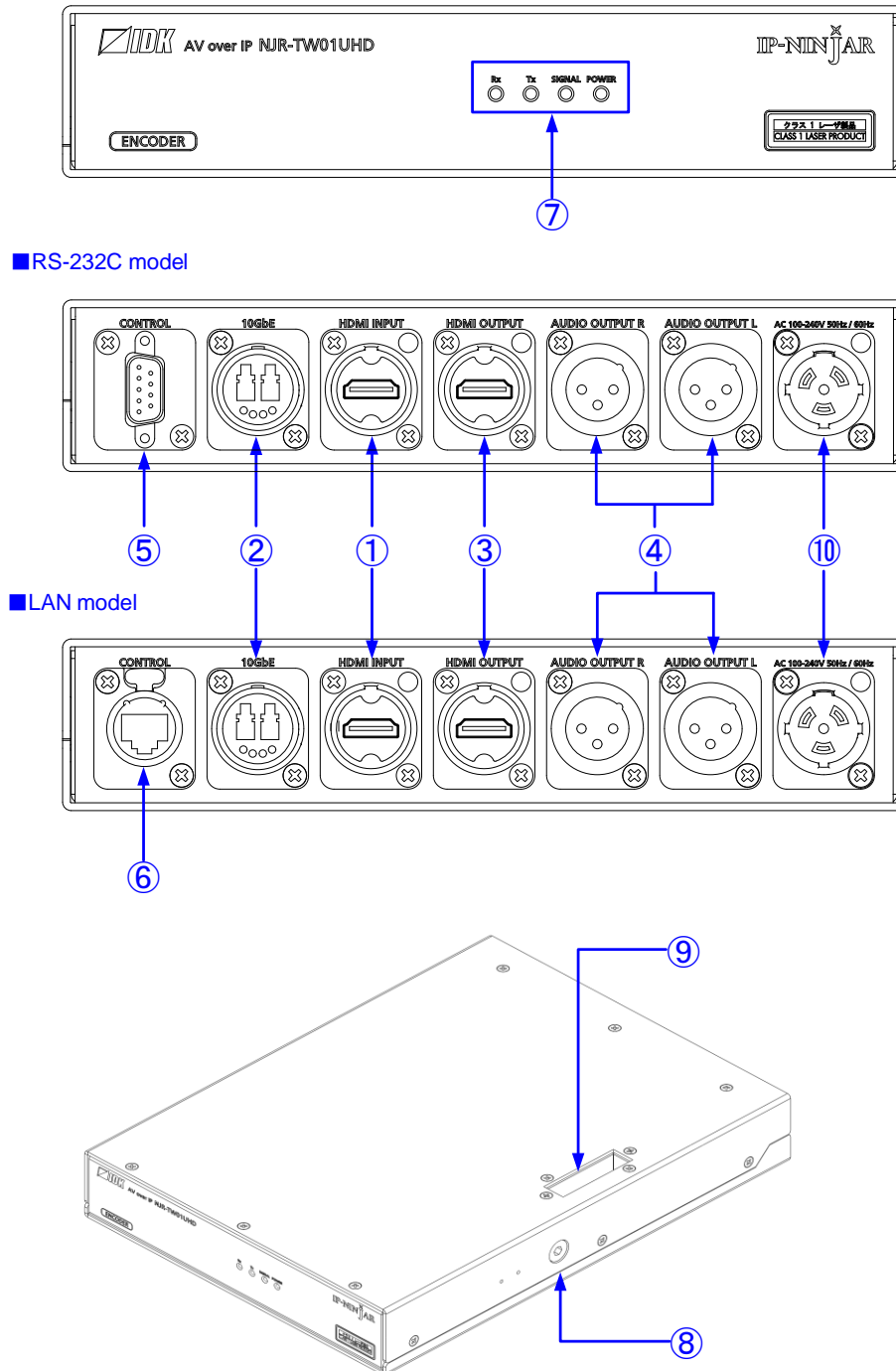
[Fig. 5.1] NJR-TW01UHD drawing

[Table 5.1] NJR-TW01UHD features

#	Feature	Description
①	HDMI input connector	Neutrik's HDMI input connector Connects to a source device, such as Blu-ray player
②	I/O for extension connector	Neutrik's opticalCON DUO series I/O connector of optical signal Connects to IP-NINJAR decoder or 10GbE switch over fiber optic cable
③	HDMI output connector	Neutrik's HDMI output connector Outputs HDMI signal that is input from HDMI input connector Monitors input signals by connecting to a sink device, such as a LCD monitor
④	Audio output connector	Neutrik's audio output connector Converts HDMI audio signal to analog audio signal Connects to amplifiers, speakers, mixer, and the like
⑤	RS-232C connector	Neutrik's RS-232C connector
⑥	LAN connector	Neutrik's etherCON type LAN connector
⑦	Status LEDs	RX : Blinks when a valid code is being received from IP-NINJAR decoder or 10 GbE switch TX : Blinks when a valid code is being sent to IP-NINJAR decoder or 10 GbE switch SIGNAL : Illuminates when video signals are valid; blinks when video signals cannot be transmit correctly POWER : Illuminates when power is ON
⑧	Fixing hole	M10-size hole for fixing the NJR-TW01UHD Up to 1.2 in. (30 mm) bolt can be used
⑨	Security slot	Keeps the NJR-TW01UHD from any risk of falling over
⑩	Power supply connector	Neutrik's powerCON connector Connects to AC adapter

5.2 NJR-RW01UHD (Decoder)
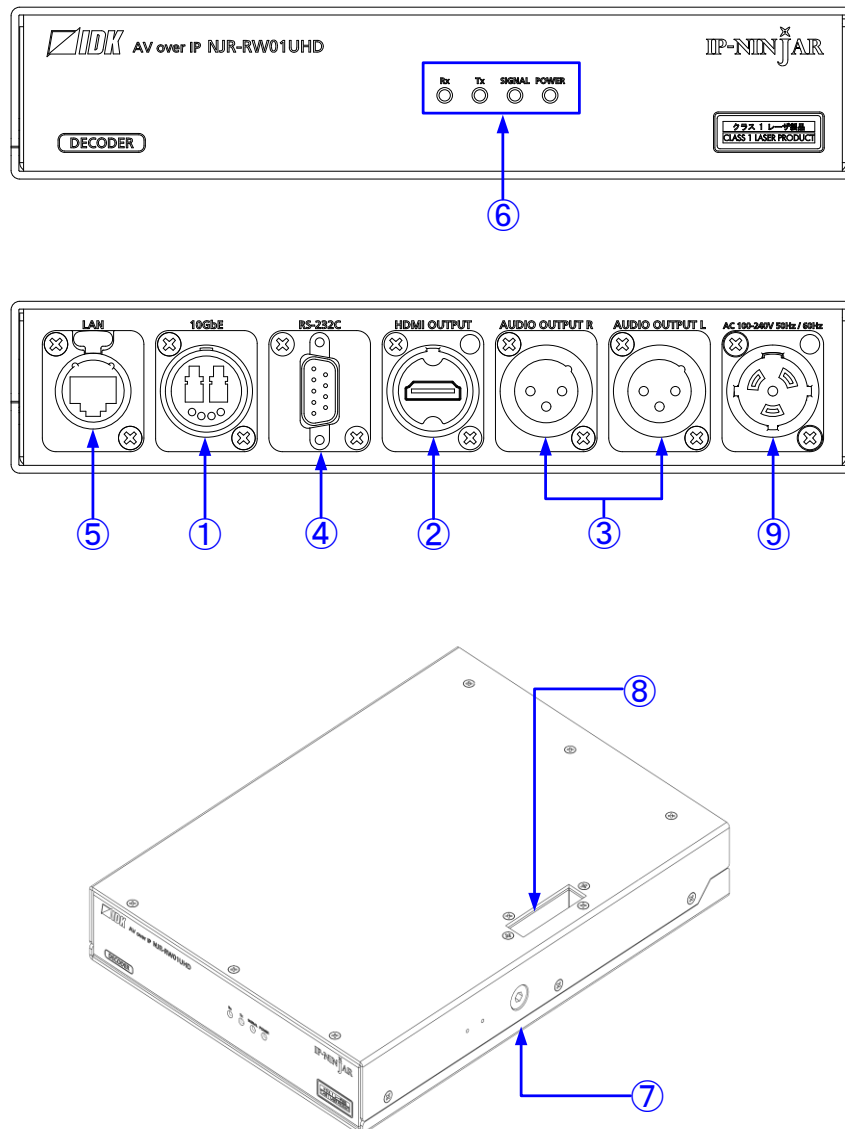
[Fig. 5.2] NJR-RW01UHD drawing

[Table 5.2] NJR-RW01UHD features

#	Feature	Description
①	I/O for extension connector	Neutrik's opticalCON DUO series I/O connector of optical signal Connects to IP-NINJAR encoder or 10GbE switch over fiber optic cable
②	HDMI output connector	Neutrik's output connector for HDMI signals Connects to a sink device, such as a LCD monitor
③	Audio output connector	Neutrik's audio output connector Outputs HDMI audio signal or analog signal as analog audio signal Connects to amplifiers, speakers, mixer, and the like The output audio signals are converted by using NJR-CTB or IP-NINJAR Configurator 【See: 9.3.2 Selecting output audio】
④	RS-232C connector	Neutrik's RS-232C connector
⑤	LAN connector	Neutrik's etherCON type LAN connector
⑥	Status LEDs	RX : Blinks when a valid code is being received from IP-NINJAR encoder or 10 GbE switch TX : Blinks when a valid code is being sent to IP-NINJAR encoder or 10 GbE switch SIGNAL : Illuminates when video signals are valid; blinks when video signals cannot be transmitted correctly POWER : Illuminates when power is ON
⑦	Fixing hole	M10-size hole for fixing the NJR-RW01UHD Up to 1.2 in. (30 mm) bolt can be used
⑧	Security slot	Keeps the NJR-RW01UHD from any risk of falling over
⑨	Power supply connector	Neutrik's powerCON connector Connects to AC adapter

6 System Configuration Example

This chapter cites two system configuration examples.

6.1 Used as Network Extender

Using the NJR-W01UHD 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 encoders
② Encoders send these signals to the 10 GbE switch over a fiber optic cable
③ 10 GbE switch sends video and audio signals to the/several decoders according to the setting of NJR-CTB
④ Decoders output received video and audio signals from the HDMI output connector to the monitor
⑤ Digital or analog audio of encoders can be selected and output from the analog audio output connector of decoders
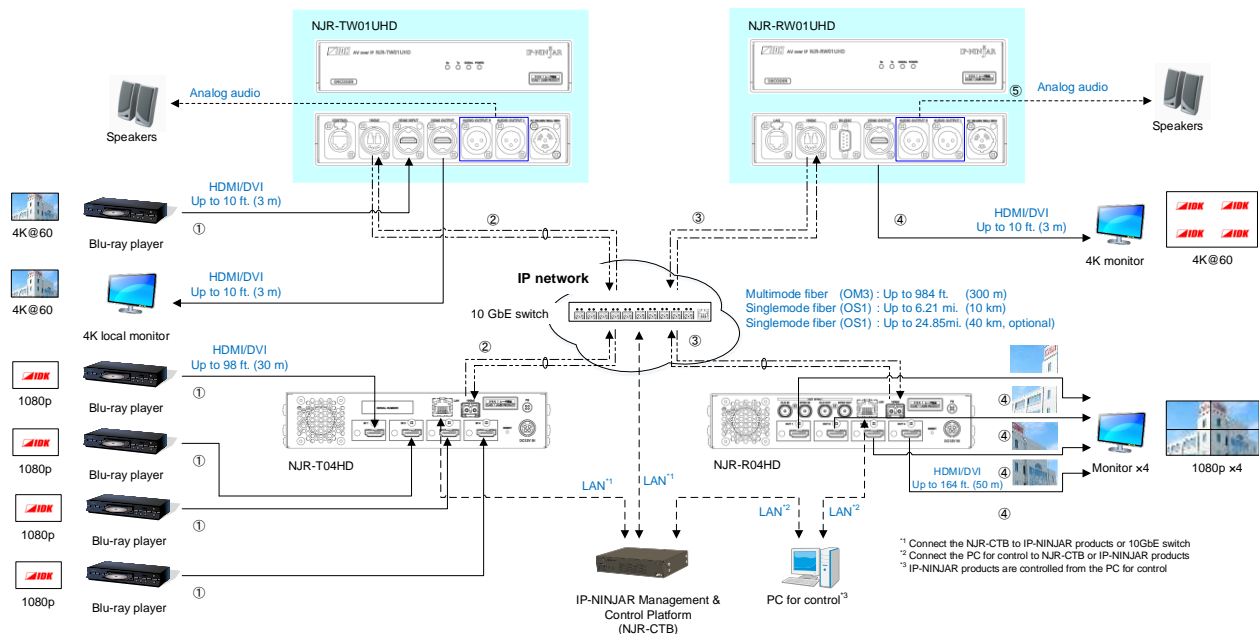
[Fig. 6.1] Used as network extender

6.2 Used as Extender

The NJR-W01UHD 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 HDIM input connector of encoders
② Encoders send these signals to the decoder over a fiber optic cable
③ Decoders output received video and audio signals from the HDMI output connector to the monitor
④ Digital or analog audio of encoders can be selected and output from the analog audio output connector of decoders
⑤ Encoders and decoders enable RS-232C communication, LAN communication, and peripheral device control (such as projectors) by using a control device (such as PCs)
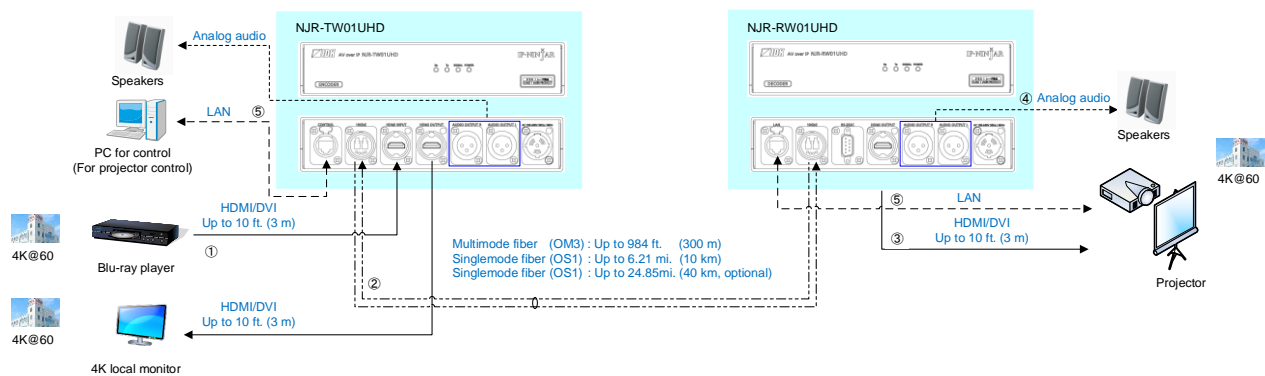
[Fig. 6.2] NJR-TW01UHD and NJR-RW01UHD

Multiview using NJR-T04HD and NJR-RW01UHD

1080p Blu-ray player ①
1080p Blu-ray player ①
1080p Blu-ray player ①
1080p Blu-ray player ①

HDMI/DVI
Up to 98 ft. (30 m)

NJR-T04HD

NJR-RW01UHD

HDMI/DVI
Up to 10 ft. (3 m)
③

4K monitor   4K@60

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 24.85mi. (40 km, optional)
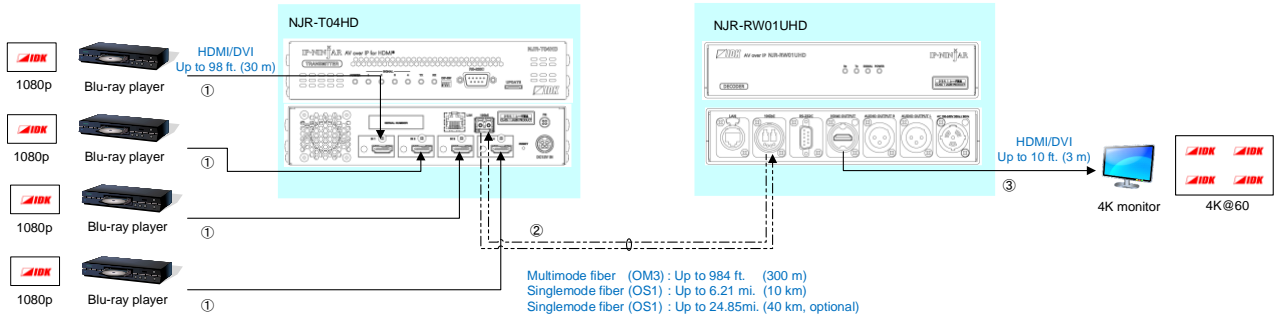
[Fig. 6.3] NJR-T04HD and NJR-RW01UHD: Multiview

Videowall using NJR-TW01UHD and NJR-R04HD

NJR-TW01UHD

NJR-R04HD

HDMI/DVI
Up to 164 ft. (50 m)
③
③
③ Monitor ×4   1080p ×4
③

4K@60 Blu-ray player ①

HDMI/DVI
Up to 10 ft. (3 m)

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 24.85mi. (40 km, optional)
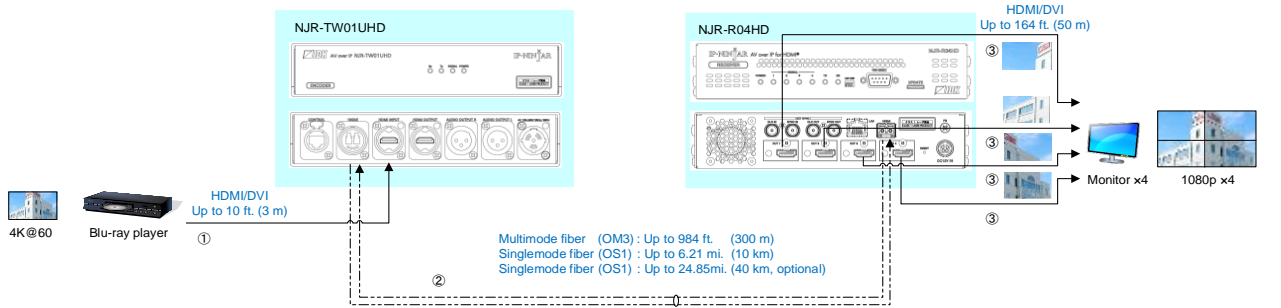
[Fig. 6.4] NJR-TW01UHD and NJR-R04HD: Videowall

7 Precautions

Before connecting to external devices, follow the precautions below.

7.1 Installation

When installing the NJR-W01UHD, please observe the following precautions.

- Do not stack or place the NJR-W01UHD directly on top of another NJR-W01UHD
- Do not block vent holes. To provide adequate ventilation, maintain sufficient clearances around the NJR-W01UHD (1.2 in. (30 mm) or more)
- When the NJR-W01UHD needs to be mounted in an enclosed space or an EIA rack without using IDK's rack mounting hardware (RM-NJRW01), 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

Good example
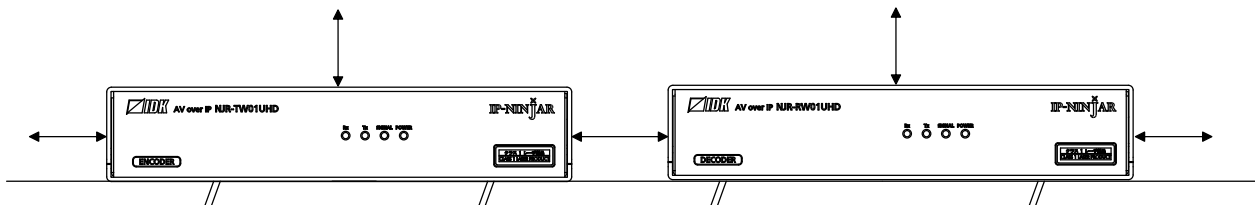
Good example
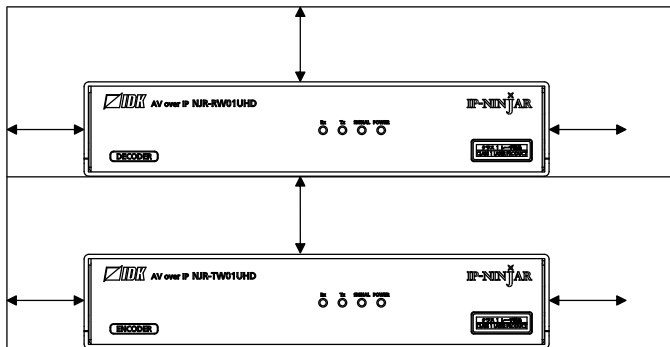
Bad example
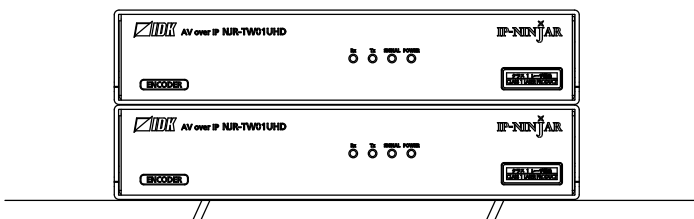
[Fig. 7.1] Necessary clearances

■ **Attaching truss bracket and the like (e.g. For event/staging)**

1. Remove the two bolts from the NJR-W01UHD shown below using a 0.2 in. (5 mm) hex wrench.
2. Attach a truss bracket. Please prepare the truss bracket and its bolts (Not included in the NJR-W01UHD).

Fixing hole (M10 screws)
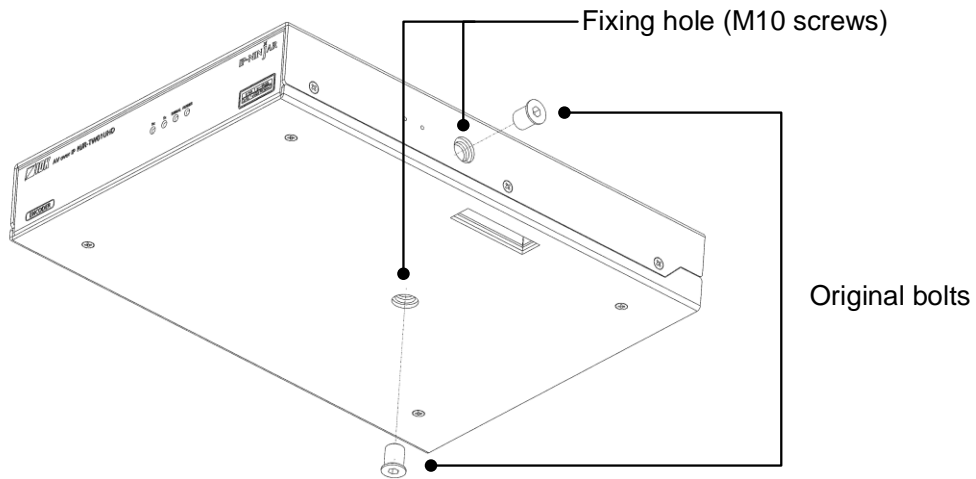
Original bolts

[Fig. 7.2] Removing original bolts

■ **Attaching rack mounting hardware (RM-NJRW01)**

1. Remove the bottom plate by unscrewing four (4) original screws from the bottom plate of the NJR-TW01UHD.

2. Mount the NJR-TW01UHD on the rack shelf and secure the device using the four (4) screws that are unscrewed in step 1. The appropriate screw tightening torque:
   M3: 0.59 N·m (6.1 kgf·cm, approx.)

Rack mounting hardware
(RM-NJRW01)
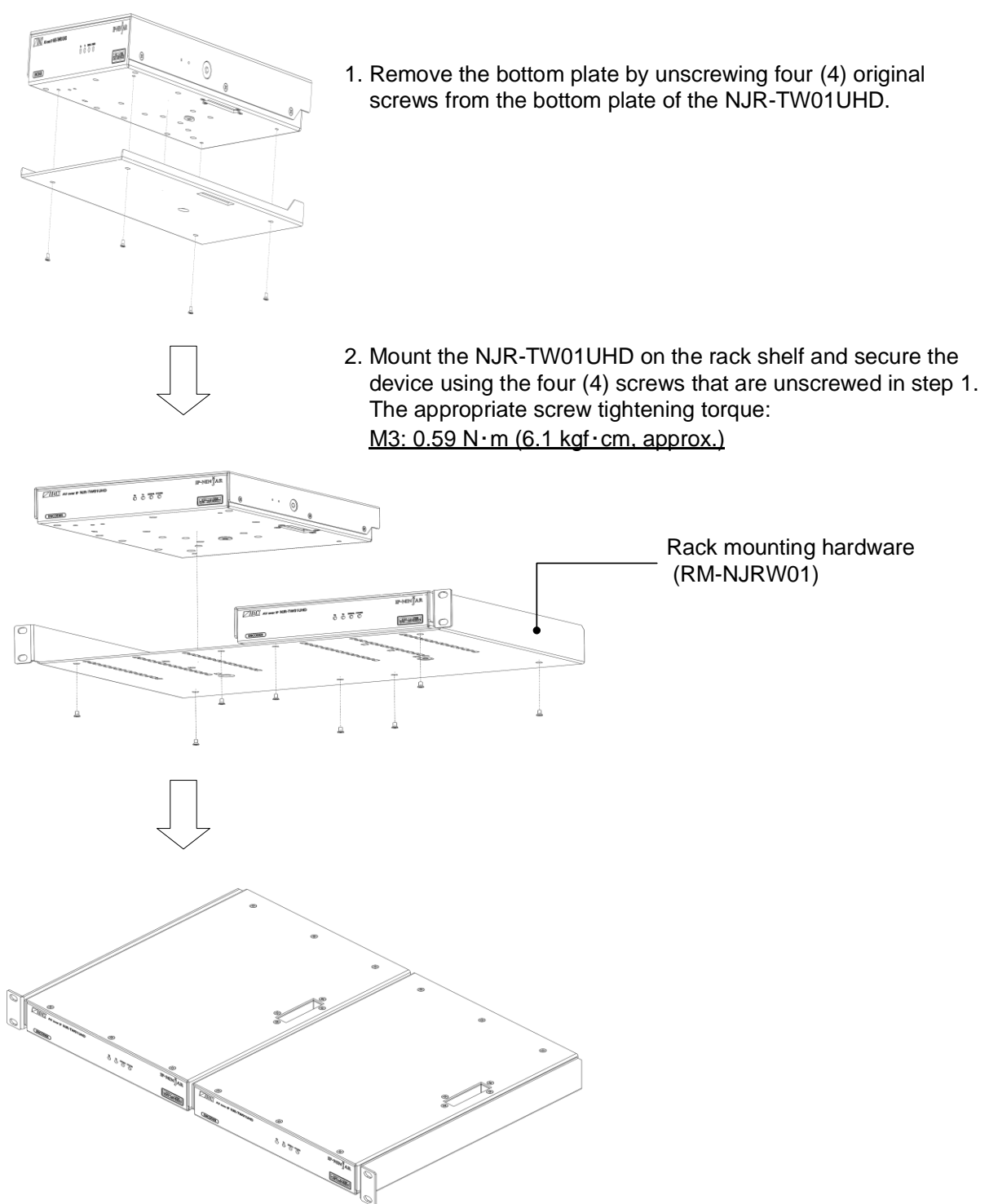
[Fig. 7.3] Attaching RM-NJRW01

7.2 Cabling

When connecting the NJR-W01UHD to external devices, please observe the following precautions.

- ・ Read manuals for the external devices
- ・ Before connecting cables to the NJR-W01UHD 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

7.2.1 HDMI cable

For 4K format video, the maximum TMDS data rate (transmission speed) is 18 Gbps. If a high-speed HDMI cable that supports up to 10.2 Gbps rate is used, video cannot be displayed stably. Select an appropriate Premium HDMI cable depending on the 4K format.
The maximum distance may change depending on cable type and characteristics of source and sink devices.

[Table 7.1] HDMI cable for 4K format

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

Premium HDMI: Premium HDMI cable, 10.2 Gbps: 10.2 Gbps cable, －:N/A

Note:
If a cable is extended and a cable joint (JJ) is used, video may be interrupted or may not be output.

7.2.2 Fiber optic cable for extension

The NJR-W01UHD can reach their full potential by selecting appropriate fiber optic cables for long-haul extension and installing the cable correctly.

Connect the <u>output</u> connector of this device to the <u>input</u> connector of the target device
Connect the <u>input</u> connector of this device to the <u>output</u> connector of the target device
NJR-TW01UHD : The target device should be the NJR-RW01UHD and other IP-NINJAR decoders or 10 GbE switch
NJR-RW01UHD : The target device should be the NJR-TW01UHD and other IP-NINJAR encoders or 10 GbE switch
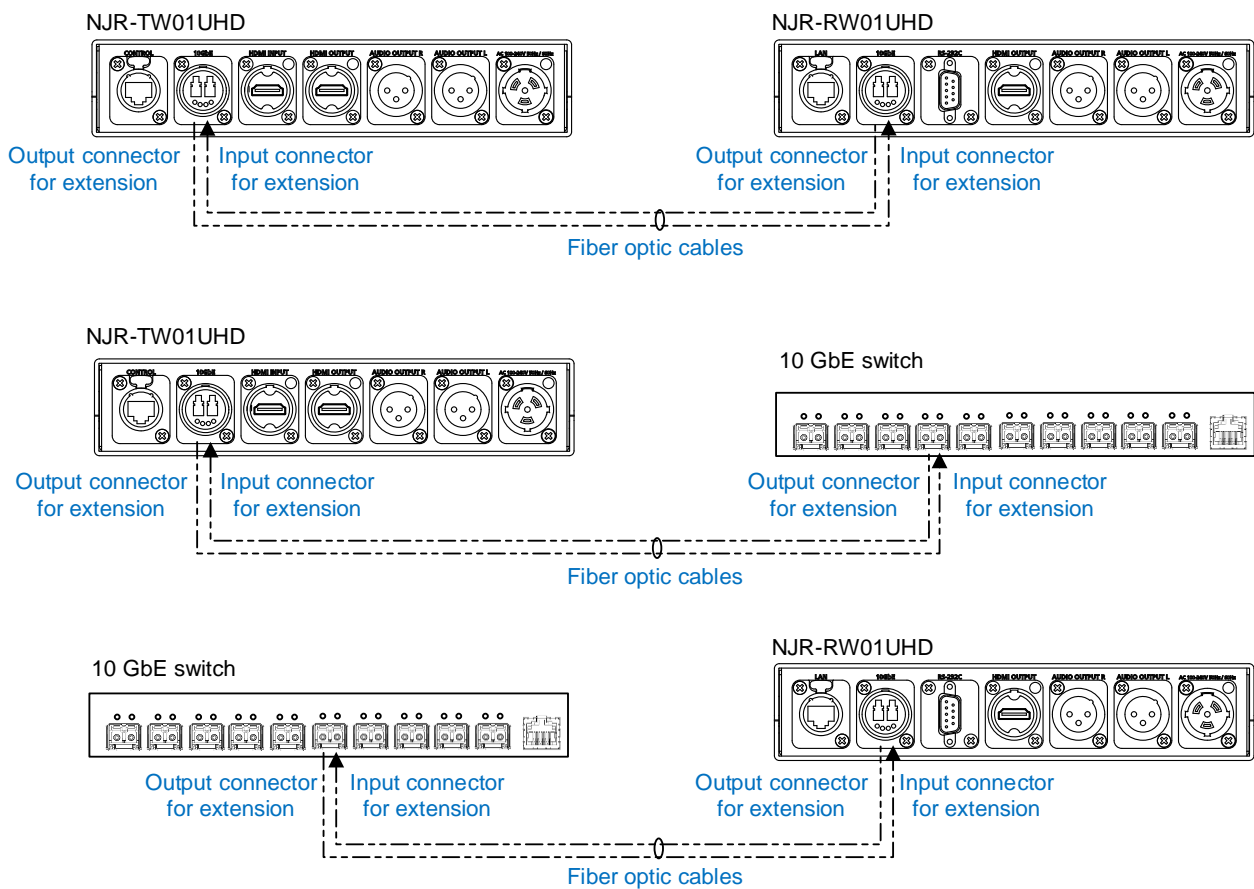
[Fig. 7.4] Connecting fiber optic cable

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.
・ Extension 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-W01UHD may not operate correctly

Left   : without dust cap
Right : with dust cap

[Fig. 7.5] Dust caps
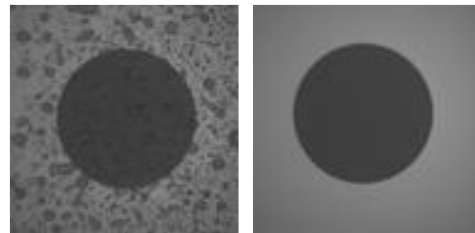
Before cleaning   After cleaning

[Fig. 7.6] Cleaning connector

7.2.3 Optical signal

The transmission distance varies depending on the optical signal.

[Table 7.2] Specification of optical signal

Item	NJR-W01UHD-MM	NJR-W01UHD-SM	NJR-W01UHD-SM40 (Optional)
Fiber	Multimode fiber	Singlemode fiber	Singlemode fiber
Wave length	850 nm (VCSEL laser*)	1310 nm (DFB laser*)	1550 nm (EML laser*)
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 higher	-16 dBm 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)		

* The lasers in these models meet class1

7.2.4 Connecting RS-232C cable

Pin assignment of the RS-232C connector is as follows.
Use a cross cable or a straight cable depending on device to be connected.

Male D-Sub (9 pin)
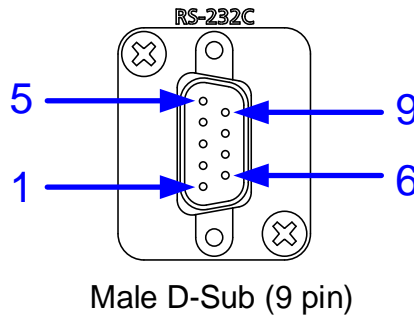
[Fig. 7.7] Specification of RS-232C connector

■ Connecting NJR-W01UHD to PC

Use a cross cable to connect the NJR-W01UHD to a PC.

NJR-W01UHD   PC

Pin #	Signal	Signal
1	N.C. (Not Connected)*	N.C.
2	RD (Receive Data)	RD
3	TD (Transmit Data)	TD
4	N.C. (Not Connected)*	N.C.
5	GND (Ground)	GND
6	N.C. (Not Connected)*	N.C.
7	RTS (Request to Send)	RTS
8	CTS (Clear to Send)	CTS
9	N.C. (Not Connected)*	N.C.
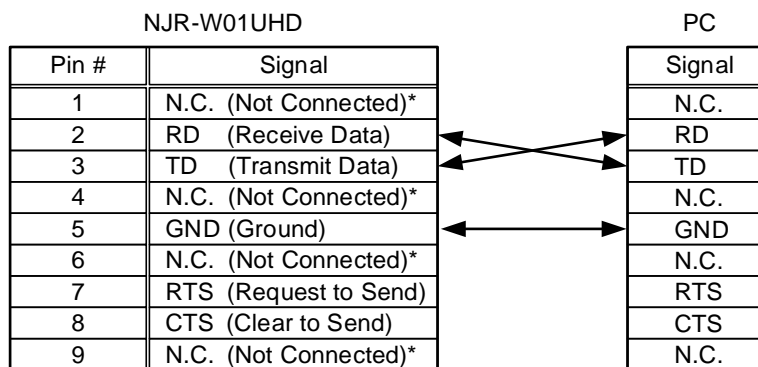
*Not used

[Fig. 7.8] RS-232C pin assignment (connecting to PC)

■ Connecting NJR-W01UHD to IDK's products

Use a cross cable to connect the NJR-W01UHD to an IDK's product.

NJR-W01UHD   IDK's products

Pin #	Signal	Signal
1	N.C. (Not Connected)*	N.C.
2	RD (Receive Data)	RD
3	TD (Transmit Data)	TD
4	N.C. (Not Connected)*	N.C.
5	GND (Ground)	GND
6	N.C. (Not Connected)*	N.C.
7	RTS (Request to Send)	RTS
8	CTS (Clear to Send)	CTS
9	N.C. (Not Connected)*	N.C.
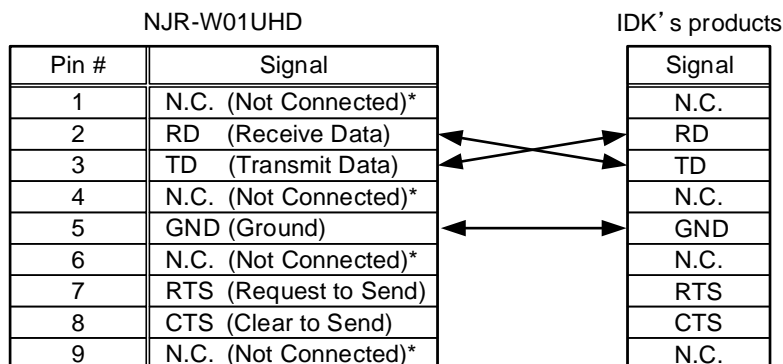
*Not used

[Fig. 7.9] RS-232C pin assignment (connecting to IDK's product)

■ Connecting NJR-W01UHD to another device requiring straight connection

Use a straight cable to connect the NJR-W01UHD to other devices requesting straight connection.

NJR-W01UHD   Other deivces

Pin #	Signal		Signal
1	N.C. (Not Connected)*		N.C.
2	RD (Receive Data)	←→	TD
3	TD (Transmit Data)	←→	RD
4	N.C. (Not Connected)*		N.C.
5	GND (Ground)	←→	GND
6	N.C. (Not Connected)*		N.C.
7	RTS (Request to Send)		CTS
8	CTS (Clear to Send)		RTS
9	N.C. (Not Connected)*		N.C.
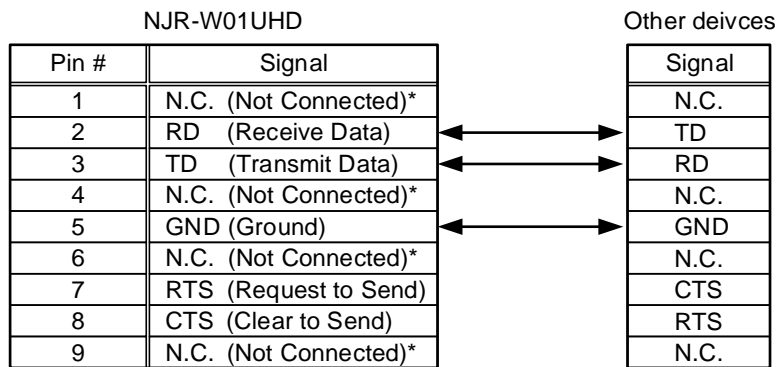
*Not used

[Fig. 7.10] RS-232C pin assignment (Connecting to device requiring straight connection)

7.2.5 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.
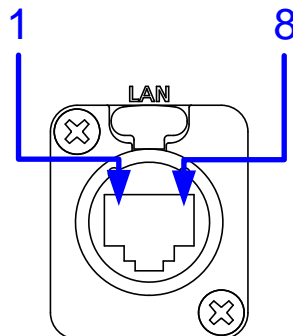
Pin No.	Signal name			
	MDI		MDI-X	
	1000BASE-T	100BASE-TX/10BASE-T	1000BASE-T	100BASE-TX/10BASE-T
1	TRX+ (Transmitted & Received data +)	TX+ (Transmitted data +)	TRX+ (Transmitted & Received data +)	RX+ (Received data +)
2	TRX- (Transmitted & Received data -)	TX- (Transmitted data -)	TRX- (Transmitted & 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. 7.11] LAN connector

Make sure not to form a loop by the NJR-TW01UHD (LAN model)/NJR-RW01UHD when connecting a LAN cable to the NJR-TW01UHD (LAN model)/NJR-RW01UHD.

The NJR-TW01UHD (LAN model)/NJR-RW01UHD 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 Basic Operation

The NJR-W01UHD can be set from commands over RS-232C communication and NJR-CTB or IP-NINJAR Configurator.

Commands cannot be controlled from RS-232C communication, which is used for command transmission (pass through).
Perform command control of NJR-TW01UHD (RS-232C model) from NJR-RW01UHD or IP-NINJAR device connected to 10 GbE switch.
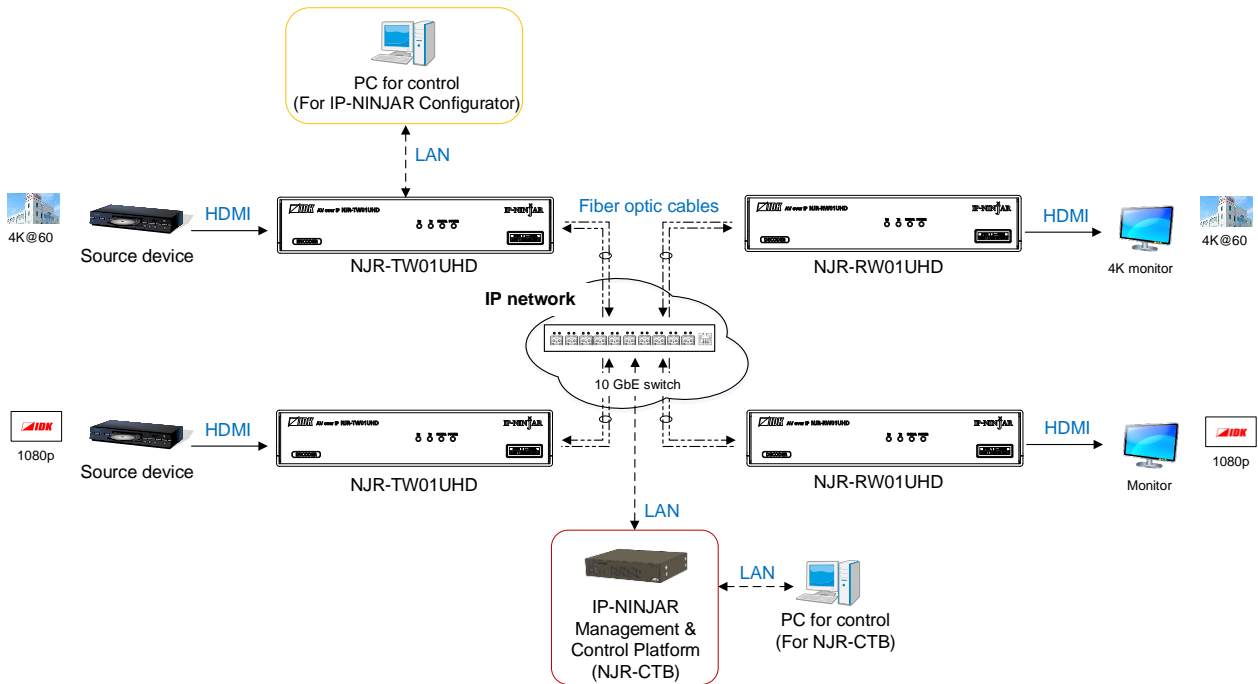
[Fig. 8.1] Setting NJR-W01UHD

8.1 Controlled by IP-NINJAR Configurator

The NJR-W01UHD can be controlled from IP-NINJAR Configurator by connecting a control device to the NJR-TW01UHD (LAN model) or NJR-RW01UHD via a LAN cable.

The following settings can be set from the GUI: selecting output audio, setting RS-232C, setting LAN, resetting settings, and rebooting the NJR-W01UHD. 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-W01UHD for details of communication commands

You can download the IP-NINJAR Configurator from our Web site below:
http://www.idkav.com
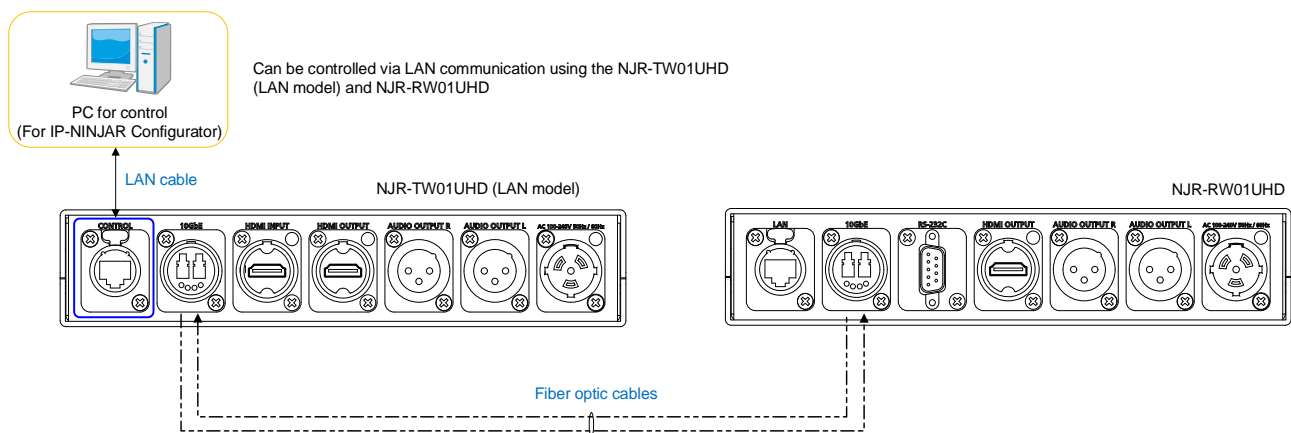
[Fig. 8.2] Control from IP-NINJAR Configurator
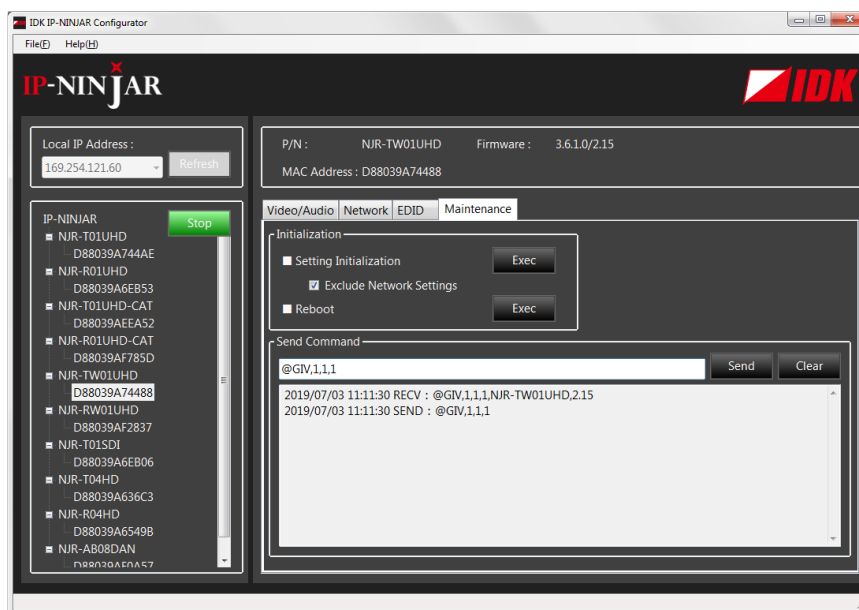
[Fig. 8.3] IP-NINJAR Configurator's GUI

8.2 Controlled by NJR-CTB

The NJR-CTB is the control device to command comprehensively IP-NINJAR devices via a 10 GbE switch.

Connect a control device to the NJR-CTB via a LAN cable to control the NJR-W01UHD using communication commands.

For details of operations from WEB browser and communication commands, refer to the NJR-CTB User Guides.
Refer to NJR-CTB User Guide for operations via a web browser
Refer to the Command Guide for NJR-W01UHD or the Command Guide for NJR-CTB for details of communication commands
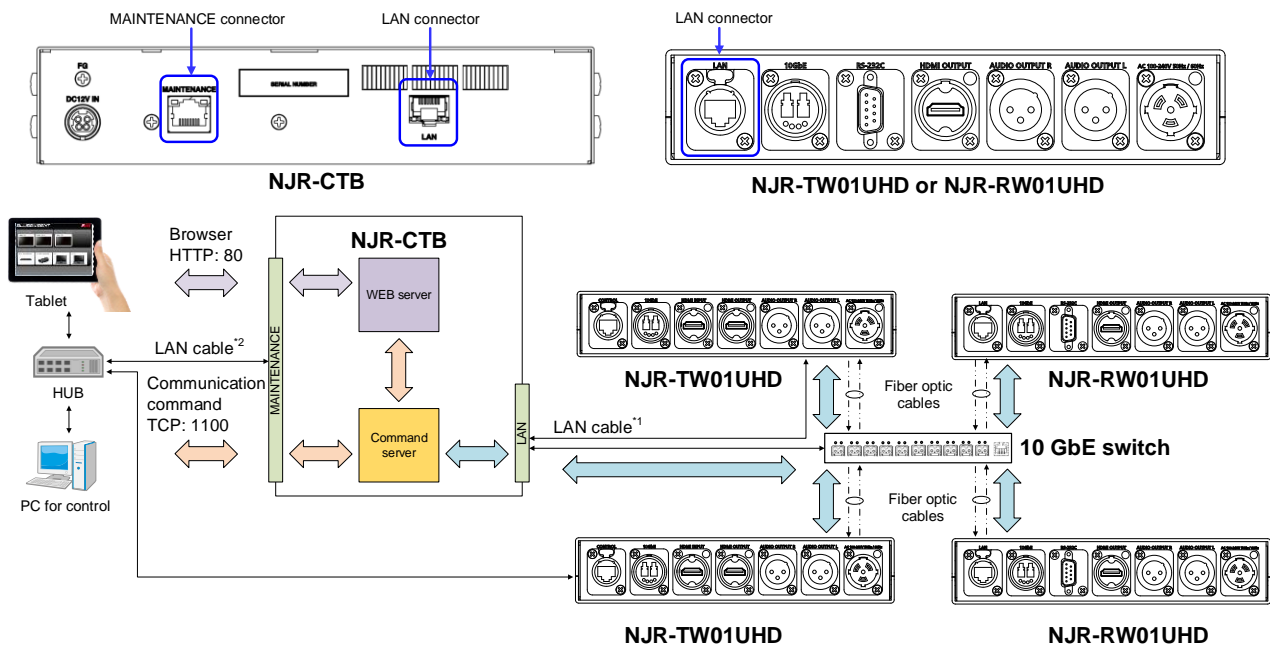
[*1] The LAN connector of the NJR-CTB should be connected to the LAN connector of the NJR-TW01UHD (LAN model)/NJR-RW01UHD or the 10 GbE switch
[*2] PC for control should be connected to the MAINTENANCE connector of the NJR-CTB or the LAN connector of the NJR-TW01UHD (LAN model)/NJR-RW01UHD

[Fig. 8.4] Controlled by NJR-CTB

8.3 Setting items

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

[Table 8.1] Setting items

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

Setting items	NJR-TW01UHD NJR-RW01UHD LAN (IP-NINJAR Configurator)	NJR-CTB LAN	Page
No-signal input monitoring	Command	WEB&C	38
HDCP input enabled/disabled	Command	WEB&C	39
Output mode	Command	WEB&C	40
HDCP output	Command	WEB&C	40
Hot plug ignoring duration	Command	WEB&C	41
Muting digital audio	Command	WEB&C	42
Selecting output audio	GUI	WEB&C	43
EDID resolution	Command	WEB&C	44
Copying EDID	Command	WEB&C	46
Selecting WXGA mode	Command	WEB&C	46
Deep Color	Command	WEB&C	47
Audio format	Command	WEB&C	47
Speaker configuration	Command	WEB&C	48
RS-232C communication	GUI	WEB&C	49
LAN	GUI	WEB&C	50
MAC address	GUI	WEB&C	50
Input status	Command	WEB&C	51
Output status	Command	WEB&C	52
Monitor EDID	Command	WEB&C	53
Version	Command	WEB&C	54
Initialization	GUI	WEB&C	36
Reboot	GUI	WEB&C	36
Selecting channel information*	No	WEB&C	-
Selecting I/O channel*	No	WEB&C	-
Operating preset memory*	No	WEB&C	-
Videowall*	No	WEB&C	-
RS-232C crosspoint*	No	WEB&C	-
NJR-CTB LAN*	No	WEB&C	-

*: In this manual, only settings of the NJR-W01UHD is 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.

8.4 Initialization

All user configurable settings can be reset to their respective factory default values using IP-NINJAR Configurator or NJR-CTB over LAN.
When initialization completes, the NJR-TW01UHD or NJR-RW01UHD reboots with new settings automatically.

Initialize tings of the NJR-TW01UHD (RS-232C model) can be initialized from NJR-RW01UHD or IP-NINJAR device connected to 10 GbE switch.

Note:
Once setting values are initialized, they cannot be restored.

Communication command

    @CLRC Initialization

【See: 8.1 Controlled by IP-NINJAR Configurator】
【See: 8.2 Controlled by NJR-CTB】

8.5 Reboot

You can reboot the NJR-TW01UHD and NJR-RW01UHD using IP-NINJAR Configurator or NJR-CTB over LAN communication.
Reboot the NJR-TW01UHD (RS-232C model) from NJR-RW01UHD or IP-NINJAR device connected to 10 GbE switch.

Communication command

    @RBTC Reboot

【See: 8.1 Controlled by IP-NINJAR Configurator】
【See: 8.2 Controlled by NJR-CTB】

9 Setting

The following items of the NJR-W01UHD can be set using IP-NINJAR Configurator and NJR-CTB.
Refer to NJR-CTB User Guide for the following operations: Setting channel information, selecting input/output channel, and operating preset memory.

[Table 9.1] Setting items

Item	NJR-W01UHD		Page
	Setting value	Default	
No-signal input monitoring	OFF/2 to 15 [sec.]	10 [sec.]	38
HDCP input enabled/disabled	HDCP enabled/HDCP disabled	HDCP enabled	39
Output mode	AUTO/DVI output/RGB output/ YCbCr 4:2:2 output/ YCbCr 4:4:4 output/YCbCr 4:2:0 output	AUTO	40
HDCP output	ALWAYS/HDCP INPUT ONLY/ HDCP 2.2	ALWAYS	40
Hot plug ignoring duration	OFF/2 to 15 [sec.]	OFF (Not ignoring request signals)	41
Muting digital audio	Mute OFF/Mute ON	Mute OFF	42
Selecting output audio	Analog input audio/Digital input audio	Analog input audio	43
EDID resolution	SVGA to UHDTV	2160p 50/59.94/60 4:4:4	44
Selecting WXGA mode	1360×768/1366×768	1360×768	46
Deep Color	24/30/36-BIT COLOR	24-BIT COLOR	47
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]	47
Speaker configuration	1 to 8	2	48
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	49
LAN	Automatic/Fix	Automatic	50

9.1 Setting input

9.1.1 No-signal input monitoring   NJR-TW01UHD

If you change the EDID settings of the NJR-TW01UHD or power the NJR-TW01UHD off/on, the source device may not output a video signal. Use this menu to set the monitoring time. This is the interval beginning when a source device is not outputting a signal; and ending at the point when the NJR-TW01UHD requests an output from that source device.
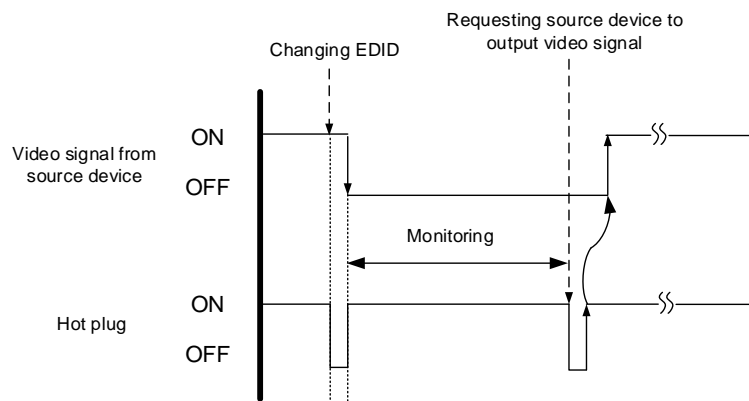
[Fig. 9.1] Monitoring absence of input

Setting value

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

Notes:

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.
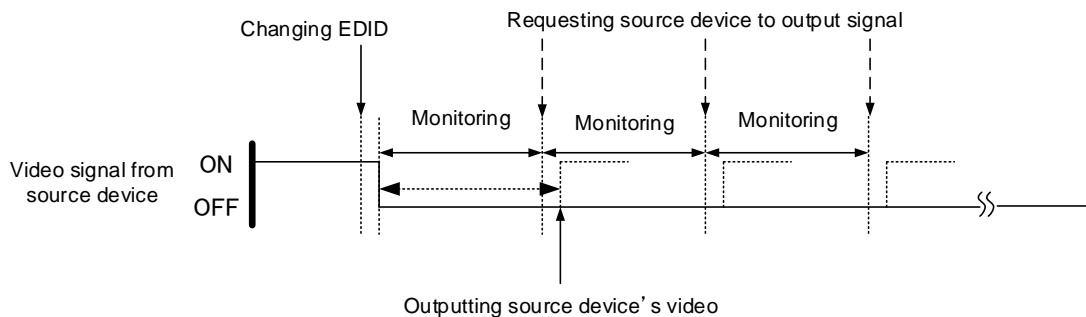
[Fig. 9.2] Repeating output reset

Communication command

    @SDT   Setting the no-signal input monitoring
    @GDT   Getting the no-signal input monitoring

9.1.2 HDCP input enabled/disabled

NJR-TW01UHD

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 NJR-TW01UHD 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."
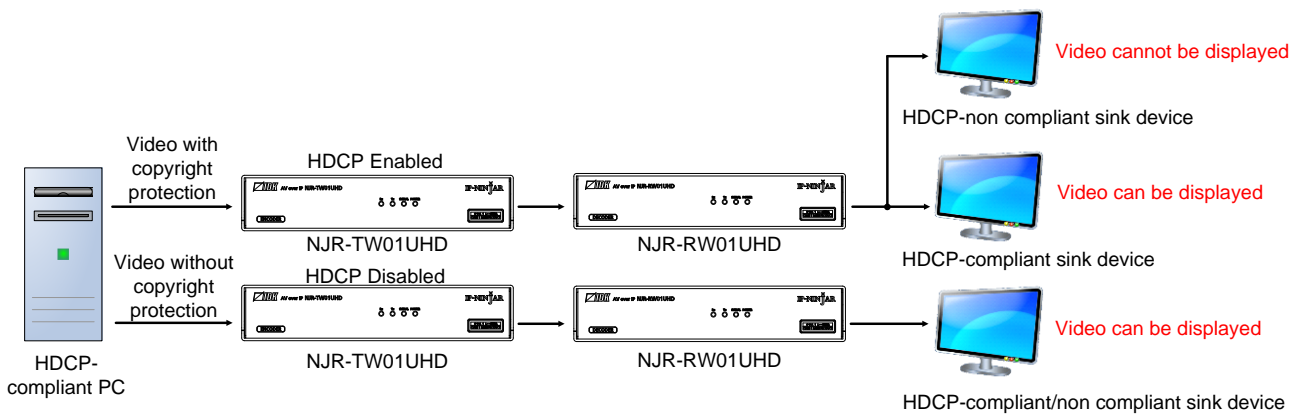
[Fig. 9.3] HDCP-compliant and HDCP non-compliant sink device

Setting value

    HDCP enabled [Default]
    HDCP disabled

Note:

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

・ HDCP2.2 (stream type 0) contents can be displayed on sink devices supporting HDCP1.4
・ HDCP2.2 (stream type 1) contents can be displayed on sink devices supporting HDCP2.2 but cannot be displayed on sink devices supporting HDCP1.4

Communication command

    @SHE   Setting HDCP input enabled/disabled
    @GHE   Getting HDCP input enabled/disabled

9.2 Setting output

9.2.1 Output mode

NJR-TW01UHD/NJR-RW01UHD

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 NJR-TW01UHD or NJR-RW01UHD.
For NJR-TW01UHD, output mode can individually be set to the output from the HDMI OUTPUT connector (local output) and output connector for extension.

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.

Communication command

> @SDM   Setting output mode
> @GDM   Getting output mode

9.2.2 HDCP output

NJR-RW01UHD

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

Communication command

> @SEN   Setting HDCP output
> @GEN   Getting HDCP output

9.2.3 Hot plug ignoring duration

NJR-TW01UHD/NJR-RW01UHD

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-W01UHD 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.
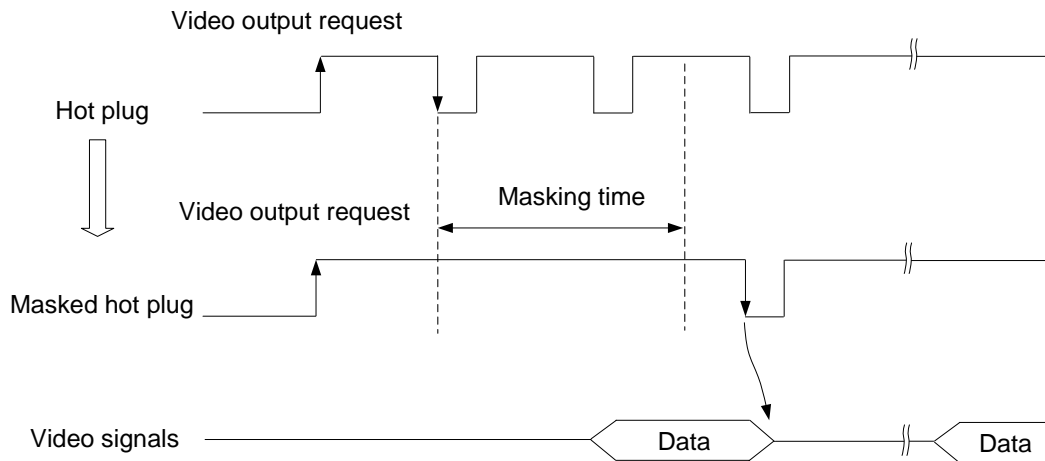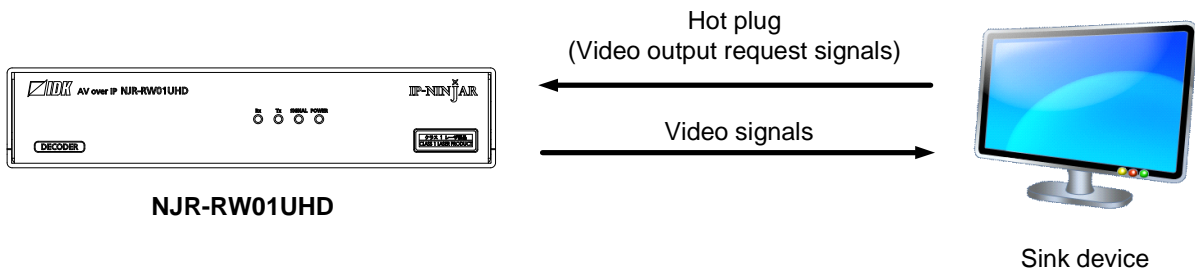
[Fig. 9.4] Hot plug mask

Setting value

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

Communication command

@SHM   Setting hot plug ignoring duration
@GHM   Getting hot plug ignoring duration

9.3 Setting audio

9.3.1 Muting digital audio

NJR-TW01UHD/NJR-RW01UHD

You can enable or disable the audio output mute.

Once you mute NJR-TW01UHD, all audio of NJR-RW01UHD connected through the 10 GbE switch can be muted. If digital audio is output from the audio output connector of NJR-RW01UHD, these output audio is also muted.

When you mute NJR-RW01UHD, output audio from the HDMI output connector of NJR-RW01UHD is muted.
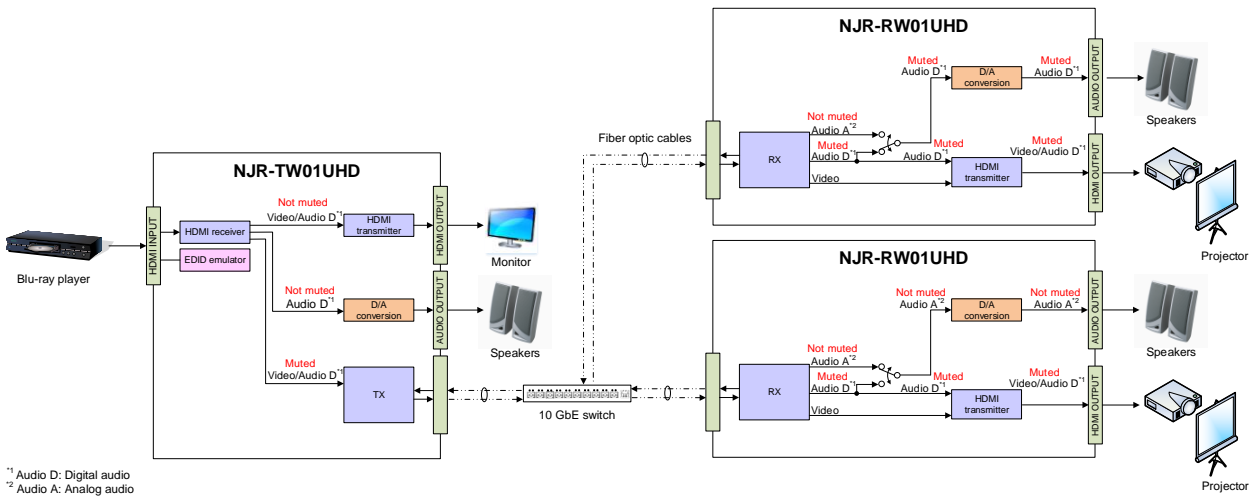
[Fig. 9.5] Muting NJR-TW01UHD
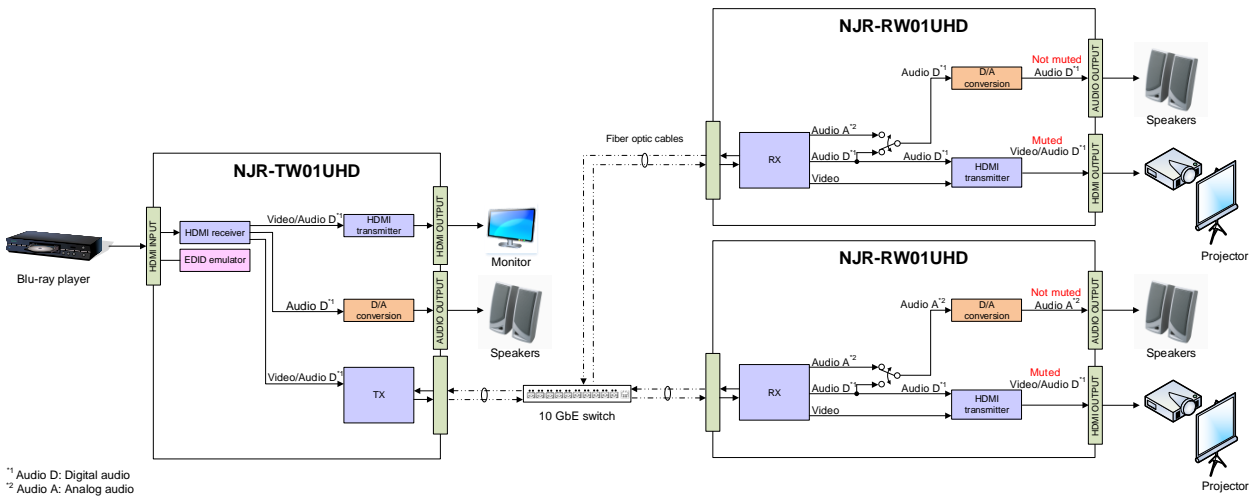
[Fig. 9.6] Muting NJR-RW01UHD

Setting value

Mute OFF   [Default]
Mute ON

Communication command

@SAM   Muting/Unmuting digital audio output
@GAM   Getting mute status of digital audio output

9.3.2 Selecting output audio

NJR-RW01UHD

You can select the audio that is output from the analog audio output connector.

*1 Audio D: Digital audio
*2 Audio A: Analog audio
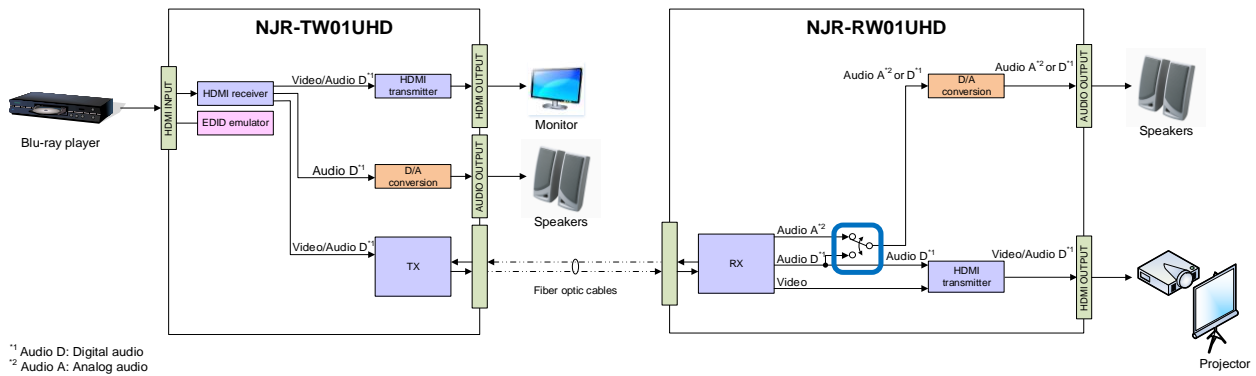
[Fig. 9.7] Selecting output audio

Setting value

> Analog input audio   [Default]
> Digital input audio

Communication command

> @SAAS Setting output audio
> @GAAS Getting output audio

9.4 Setting EDID

9.4.1 EDID resolution

NJR-TW01UHD

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

Setting value

[Table 9.2] 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 "Selecting @GWX/@SWX 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 9.3] Maximum resolution and supported pixels

Max. resolution \ Pixels	640x480	800x600	1024x768	1280x720	1280x768	1280x800	1280x960	1280x1024	1360x768*	1366x768*	1400x1050	1440x900	1600x900	1600x1200	1680x1050	1920x1080	1920x1200	2048x1152	2560x1440	2560x1600	3840x2160 (30p)	4096x2160 (30p)	3840x2160 (60p)	4096x2160 (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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
1920x1200	Y	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	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	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	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	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	N	P	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	P	P
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	N	Y	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: Supported, P: Only YCbCr 4:2:0, N: Not supported, －: Not used

* Set the EDID supported pixels of 1360x768 and 1366x768 in "**9.4.3 Selecting WXGA mode**".

1360x768 is set by default.

Communication command

  @SVF Setting EDID resolution

  @GVF Getting EDID resolution

9.4.2 Copying EDID

NJR-TW01UHD

EDID of the sink device connected to NJR-TW01UHD or NJR-RW01UHD can be loaded and registered, and 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 NJR-RW01UHD, set this item from the IP-NINJAR Configurator or NJR-CTB.

Communication command

  @RME Copying EDID

【See: 8.1 Controlled by IP-NINJAR Configurator】

【See: 8.2 Controlled by NJR-CTB】

Note:

To use a registered EDID, set "**9.4.1 EDID resolution**" to Copied EDID

9.4.3 Selecting WXGA mode

NJR-TW01UHD

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

Communication command

  @SWX Setting WXGA mode

  @GWX Getting WXGA mode

9.4.4 Deep Color

NJR-TW01UHD

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.

Communication command

@SDI   Setting Deep Color input
@GDI   Getting Deep Color input

9.4.5 Audio format

NJR-TW01UHD

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 9.4] 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

Communication command

@SAF   Setting audio format
@GAF   Getting audio format

9.4.6 Speaker configuration

NJR-TW01UHD

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 9.5] 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

FL : Front Left
FC : Front Center
FR : Front Right
RL : Rear Left
RR : Rear Right
RLC : Rear Left Center
RRC : Rear Right Center
LFE : Low Frequency Effect
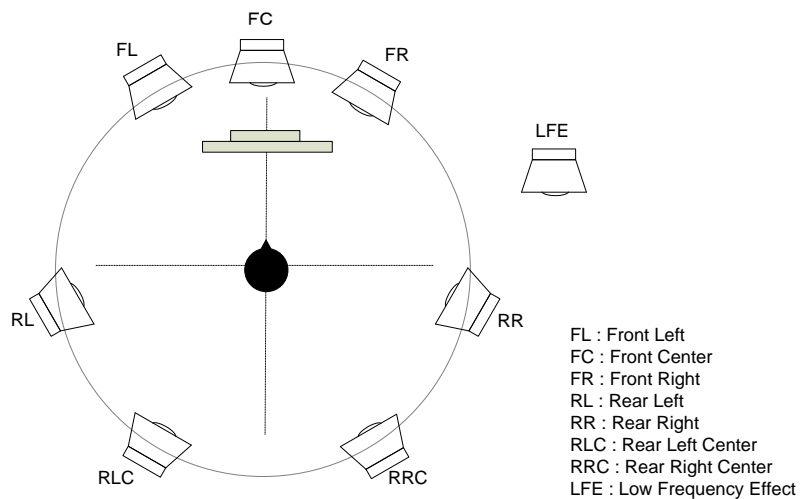
[Fig. 9.8] Speaker configuration

Communication command

@SSP   Setting speaker configuration

@GSP   Getting speaker configuration

9.5 Setting RS-232C

Only the NJR-TW01UHD (RS-232C model) and NJR-RW01UHD support RS-232C communication settings.

9.5.1 RS-232C communication

NJR-TW01UHD/NJR-RW01UHD

The same setting should be set for RS-232C communication of devices.

Note:

For communicating between the NJR-TW01UHD (RS-232C model)/NJR-RW01UHD and connected device, only RD (Received data) and TD (Transmitted data) are sent.

Setting value

[Table 9.6] 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

Communication command

    @SCTB Setting RS-232C communication

    @GCTB Getting RS-232C communication setting

9.6 Setting LAN

9.6.1 LAN   NJR-TW01UHD/NJR-RW01UHD

With NJR-TW01UHD (LAN model) and NJR-RW01UHD, 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 9.7] LAN setting items

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

Communication command

@SIP   Setting LAN

@GIP   Getting LAN setting

9.6.2 MAC address   NJR-TW01UHD/NJR-RW01UHD

You can display the MAC address.

Information to be displayed

[Table 9.8] MAC address

Item to be displayed	Example
MAC address	0008E5690000

Communication command

@GMC   Getting MAC address

9.7 Information

9.7.1 Input status

NJR-TW01UHD

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

Information to be displayed

[Table 9.9] Input signals

Value to be displayed	Description
Hxx	HDMI signal is input. xx: color depth(24, 30, or 36)
D	DVI signal is input.
N	No signal is input.

[Table 9.10] Format of video input signal

Value to be displayed	Description
1920x1080i 59.94Hz	SDTV/HDTV/UHDTV signal is input. Format type and vertical sync frequency
800x600p 60.32Hz	VESA resolution signal is input. Horizontal resolution x Vertical resolution and sync frequency
NO SIGNAL	No signal is input.

[Table 9.11] Format of audio input signal

Value to be displayed	Description
LINEAR PCM 48kHz	LPCM signal is input. Sampling frequency
COMPRESSED AUDIO	Compressed audio signal (e.g. Dolby Digital, DTS) is input. (Since NJR-TW01UHD does not determine detailed format, the same value is displayed for all compressed audio.)
NO AUDIO	No signal is input.

[Table 9.12] HDCP

Value to be displayed	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.

Communication command
    @GSS   Getting I/O status

9.7.2 Output status

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

Information to be displayed

[Table 9.13] HDCP authentication

Value to be displayed	Description
HDCP 1.4 SUPPORT	HDCP 1.4 authorized
HDCP 2.2 SUPPORT	HDCP 2.2 authorized
HDCP NOT SUPPORT	Not authorized because sink device that does not support HDCP is connected or input signal does not have HDCP.
HDCP ERROR	The sink device that supports HDCP is connected, but authentication failed.
HDCP CHECK NOW	The sink device status is checking. e.g. When sink device status is changed, this message is displayed.
UNCONNECTED	A sink device is not connected.

[Table 9.14] Output signal

Value to be displayed	Description
Hxx	HDMI signal is output. xx: color depth(24, 30, or 36)
D	DVI signal is output.
N	A sink device is not connected.

[Table 9.15] Error code

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

Value to be displayed	Video output	Audio output
0	Video is output correctly.	Audio is output correctly.
1	—	"**9.3.1 Muting digital audio**" is set to "ON".
2	No source device is connected.	
3	Video signal is not input.	Audio signal is not input.
4	Video 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 necessary data (packet) for video or audio output.	
7	Signal that is not supported by NJR-TW01UHD/NJR-RW01UHD is input.	Audio cannot be output, because compressed audio is input.
9	—	A sink device that is not supported by audio is connected.
B	No sink device is connected.	
C	HDCP is being authorized.	
D	HDCP authentication failed	

Communication command

@GSS   Getting I/O status

9.7.3 Monitor EDID

NJR-TW01UHD/NJR-RW01UHD

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

Information to be displayed

[Table 9.16] Monitor's EDID

Displayed value	Displayed value	Example	Remarks
Monitor name	—	MSD-5402	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.

Communication command

    @GES   Getting monitor EDID

9.7.4 Version

NJR-TW01UHD/NJR-RW01UHD

You can display the model number and firmware version.

Information to be displayed

[Table 9.17] Version

Item	Example
Model number	NJR-TW01UHD
Firmware version	1.00

Communication command

@GIV   Getting version

10 Product specification

Item		NJR-TW01UHD (Encoder)	NJR-RW01UHD (Decoder)
Input		1 input HDMI (*1)/DVI 1.0 TMDS single link HDCP 1.4/2.2, HDR (*2) EDID emulation Connector: Neutrik's female HDMI Type A (19-pin) (*3)	1 input Digital signal for extension Format: IP-NINJAR protocol RS-232C, LAN Connector: Neutrik's LC (opticalCON DUO series)
Output		1 output Digital signal for extension Format: IP-NINJAR protocol RS-232C, LAN Connector: Neutrik's LC (opticalCON DUO series) 1 output for monitoring input signals HDMI (*1)/DVI 1.0 TMDS single link HDCP 1.4/2.2, HDR (*2) Connector: Neutrik's female HDMI Type A (19-pin) (*3)	1 output HDMI (*1)/DVI 1.0 TMDS single link HDCP 1.4/2.2, HDR (*2) Connector: Neutrik's female HDMI Type A (19-pin) (*3)
Format		VGA / SVGA / XGA / WXGA (1280x768) / WXGA (1280x800) / Quad-VGA / SXGA / WXGA (1360x768) / WXGA (1366x768) / SXGA+ / WXGA+ / WXGA++ / UXGA / WSXGA+ / VESAHD / WUXGA / QWXGA / 4K (*4) 480i / 480p / 576i / 576p / 720p / 1080i / 1080p / 4K (*4)	
Color depth		24 bit, 30 bit, 36 bit Deep Color (*5)	
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 Reference level: -20 dBFS, Max. input level: 0 dBFS	—
Digital audio output		Multi-channel LPCM up to 8 channels Sampling frequency: 32 kHz to 192 kHz Sample size: 16 bit to 24 bit Reference level: -20 dBFS, Max. output level: 0 dBFS	Multi-channel LPCM up to 8 channels Sampling frequency: 32 kHz to 192 kHz Sample size: 16 bit to 24 bit Reference level: -20 dBFS, Max. output level: 0 dBFS
Analog audio output		1 output Stereo LR balanced Output impedance: 100 Ω balanced Reference level: -10 dBu, Max. output level: +10 dBu Connector: Neutrik's 2 female XLR (3-pin)	1 output Stereo LR balanced Output impedance: 100 Ω balanced Reference level: -10 dBu, Max. output level: +10 dBu Connector: Neutrik's 2 female XLR (3-pin)
Cable for extension	Polishing (*6)	For multimode : PC polishing (recommended) For singlemode : UPC polishing (recommended), SPC *APC is not supported	
	Transmission distances (*7)	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)	
External control	RS-232C	1 port for RS-232C supported model Neutrik's male D-sub (9 pin) connector Full duplex, up to 115.2 kbps	1 port Neutrik's male D-sub (9 pin) connector Full duplex, up to 115.2 kbps
	LAN	1 port for LAN supported model Neutrik's RJ-45 (etherCON type) 10Base-T/100Base-TX/1000Base-T (Auto Negotiation), Auto MDI/MDI-X	1 port Neutrik's RJ-45 (etherCON type) 10Base-T/100Base-TX/1000Base-T (Auto Negotiation), Auto MDI / MDI-X
Function		DDC buffer, Connection Reset	
General	Power	100 - 240 VAC ± 10%, 50 Hz/60 Hz ± 3 Hz Neutrik's powerCON type	
	Power consumption	About 18 Watts	About 17 Watts
	Dimensions	8.5 (W) × 1.7 (H) × 11.4 (D)" (216 (W) × 44 (H) × 290 (D) mm) (Almost equivalent to half rack wide, 1U high) (Excluding connectors and the like)	
	Weight	4.6 lbs. (2.1 kg)	4.6 lbs. (2.1 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   x.v.Color, 3D, ARC, HEC, and CEC are not supported.
*2   HDR is supported if the connected sink device supports HDR and its copied EDID is set for EDID setting.
*3   Use the following HDMI cables:
  ・1080p@60 : High-speed HDMI cable (16 ft.(5 m) or shorter)
  ・4K@60   : Premium HDMI cable   (10 ft. (3 m) or shorter)
  The maximum cable distance depends on the connected devices. The distance may not be extended with some device combinations, cabling method, or other manufacturer's cable. Video may be disturbed or may not be output even if signals are within the range mentioned above.
*4   4K format: 24 Hz/25 Hz/30 Hz/50 Hz (4:4:4)/59.94 Hz (4:4:4)/60 Hz (4:4:4) are supported.
*5   4K format: Only 24 bit is supported.
*6   We do not recommend other polishing methods because it increases the return loss.
*7   The maximum extension 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.

11 Troubleshooting

In case the NJR-W01UHD 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-W01UHD and all devices plugged in and powered on normally?
・ Are cables connected correctly?
・ Are there no loose connections?
・ Are correct cables for NJR-W01UHD being used?
・ Are signal specifications of connected devices matched to each other?
・ Are settings of the sink device correct?
・ Are there any nearby objects that may cause noise?

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

No.	Checking items	Result
1	Does the same problem occur at all connectors?	Yes or No
2	Connect the devices using genuine cables without connecting the NJR-W01UHD. The problem still cannot be solved? Please contact us for assistance.	Yes or No

User Guide of NJR-TW01UHD/NJR-RW01UHD

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