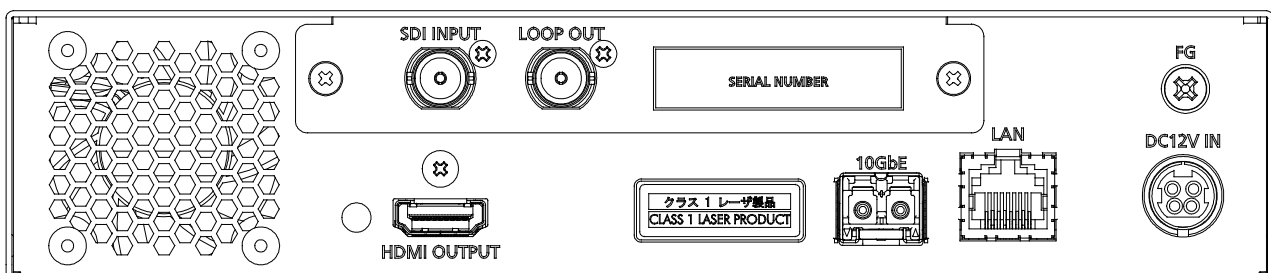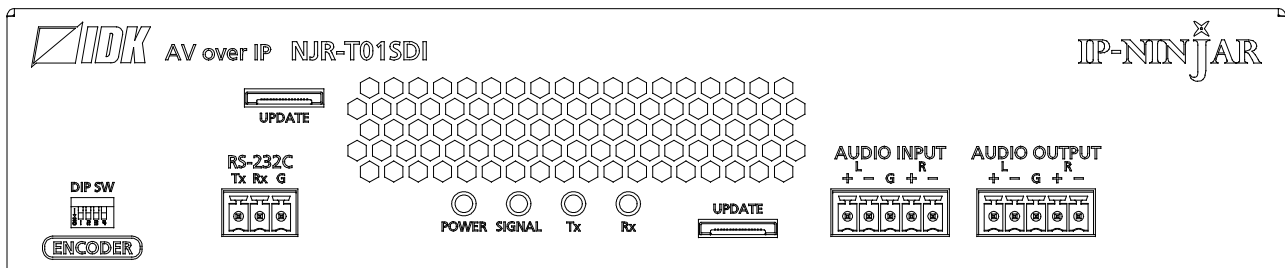**AV over IP Encoder for SDI**

NJR-T01SDI

<User Guide>

Ver.1.4.0

- 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

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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: AV over IP

Model Name: NJR-T01SDI

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 AV over IP Encoder for SDI (NJR-T01SDI).

This document also describes basic operations from external devices for controlling the NJR-T01SDI.

If other IP-NINJAR series products are connected, refer to each 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.
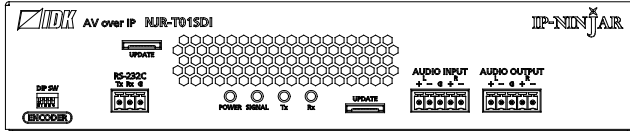
One (1) NJR-T01SDI
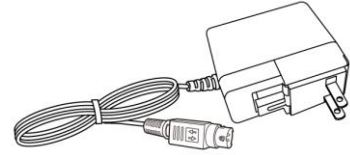
One (1) AC adapter (4 ft. (1.2 m))
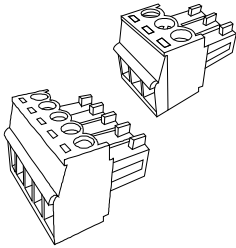
One (1) 3-pin captive screw
    connector
Two (2) 5-pin captive screw
    connector

[Fig. 2.1] Included items

Tip:
Dust caps are attached to SFP+ optical transceiver and the connector.
These caps will be used for shipping or repairing the NJR unit.
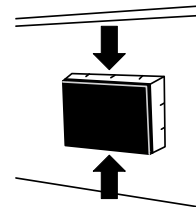
3 Precautions for shipping

SFP+ optical transceiver 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.

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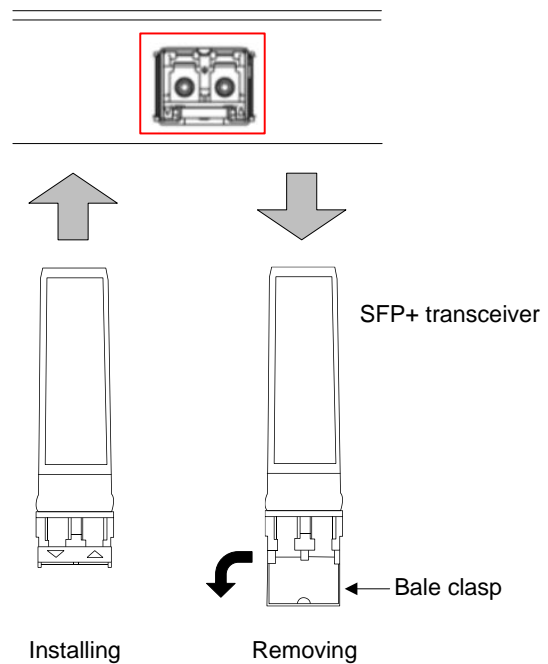
[Fig. 3.1] Removing and installing SFP+ optical transceiver

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-T01SDI is a 3G/HD/SD-SDI input-compliant AV over IP encoder. It is designed to transmit SDI signals for local and long-haul transmission over fiber optic cables.

The NJR-T01SDI features a local monitor output, enabling video recording and previewing using an HDMI monitor. It also offers RS-232C bidirectional communication and 1G network transmission.
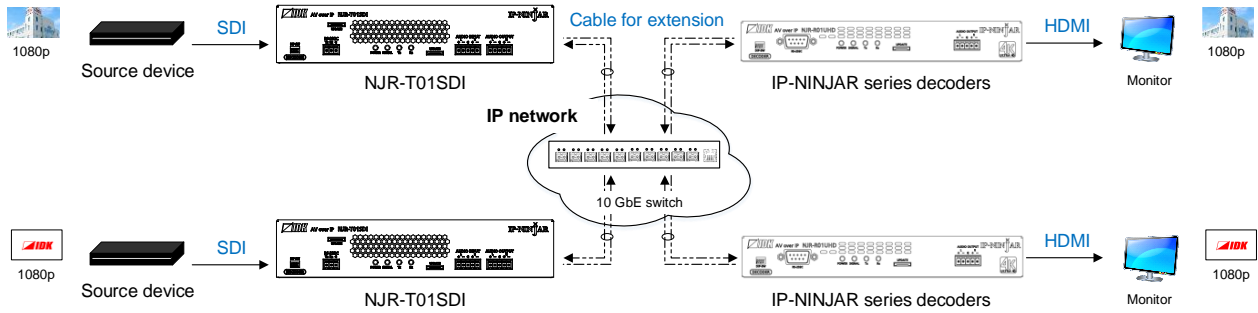
[Fig. 4.1] Signal transmission

Note:

The NJR-T01SDI has to be used with IP-NINJAR series decoders. The NJR-T01SDI cannot be connected to FDX's optic boards or OPF series products.

5 Features

■ **Video**
・ Up to 1080p
・ 3G-SDI/HD-SDI/SD-SDI input
・ Local monitor output
・ Transmission distances
  Up to 984 ft. (300 m) (OM3 Multimode fiber), Up to 6.21 mi. (10 km) (OS1 Singlemode fiber)

■ **Audio**
・ De-embedding

■ **Communication**
・ Bidirectional RS-232C
・ LAN

■ **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**
・ AC adapter with locking mechanism
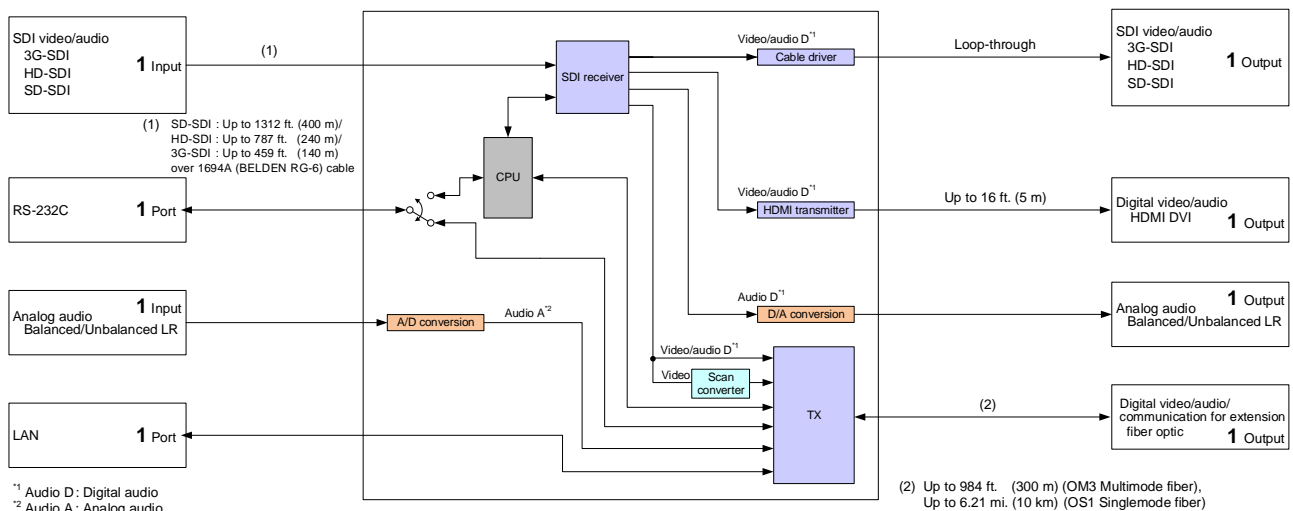
[Fig. 5.1] NJR-T01SDI Connection Diagram

6 Panels
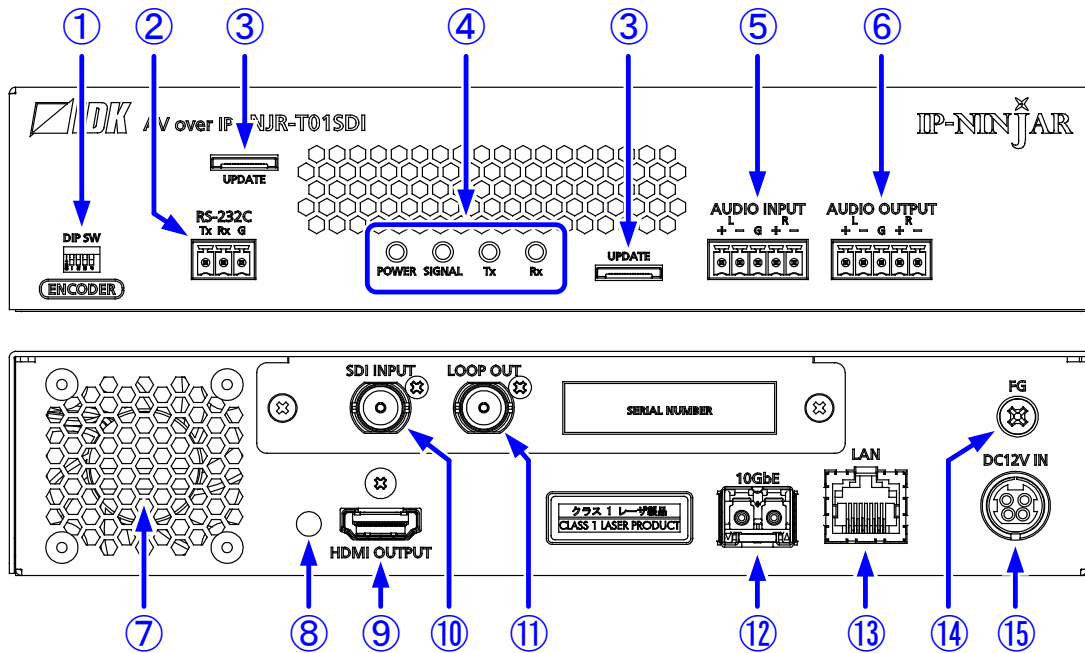
[Fig. 6.1] NJR-T01SDI drawing

[Table 6.1] NJR-T01SDI features

#	Feature	Description
①	DIP switch	Switches internal connections of RS-232C signals. 【See: 8.3 Setting DIP switch】
②	RS-232C connector	Connector for RS-232C signals.
③	Maintenance port	Factory use only
④	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 transmit correctly. ・TX : Blinks when a valid code is being sent to IP-NINJAR series decoders, or 10 GbE switch. ・RX : Blinks when a valid code is being received from IP-NINJAR series decoders, or 10 GbE switch.

[Table 6.2] NJR-T01SDI features (Cont'd)

#	Feature	Description
⑤	Audio input connector	Input connector (5-pin captive screw connector) for analog audio signals.
⑥	Audio output connector	Output connector for converted analog audio signal from SDI audio input signal. Connects to amplifiers, speakers, and mixers.
⑦	Cooling fan	Releases heat from the unit.
⑧	HDMI cable fixing hole (Not used)	Not used.
⑨	HDMI output connector	Output connector for converted HDMI signal from SDI input signal. Input signals can be monitored by connecting to a sink device.
⑩	SDI input connector	Input connectors for 3G-SDI/HD-SDI/SD-SDI signals, interfaces with source devices such as video cameras.
⑪	SDI loop through output connector	Output connector for loop through SDI signal. Input signals can be monitored by connecting to a sink device.
⑫	I/O connector for extension	I/O connector for digital signal extension. A fiber optic cable is used; connects to IP-NINJAR series decoders or 10 GbE switch. SFP+ optical transceivers are sold separately.
⑬	LAN connector	For external control by communication commands or web browsers.
⑭	Frame ground	Use for bonding chassis to local ground. An M4 screw is used.
⑮	Power supply connector	For use with provided power cable.

7 System configuration example

This chapter cites two system configuration examples.

7.1 Used as Network Extender

Using the NJR-T01SDI 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 to the SDI input connector of the NJR-T01SDI from an industrial video device.

② NJR-T01SDI sends these signals to the 10 GbE switch over a fiber optic cable.

③ 10 GbE switch sends video and audio signals to the/several NJR-R01UHD/NJR-R04HD according to the setting of NJR-CTB.

④ NJR-R01UHD/NJR-R04HD outputs received video and audio signals from the HDMI output connector to the monitor.

⑤ Digital or analog audio of NJR-T01SDI can be selected and output from the analog audio output connector of NJR-R01UHD.
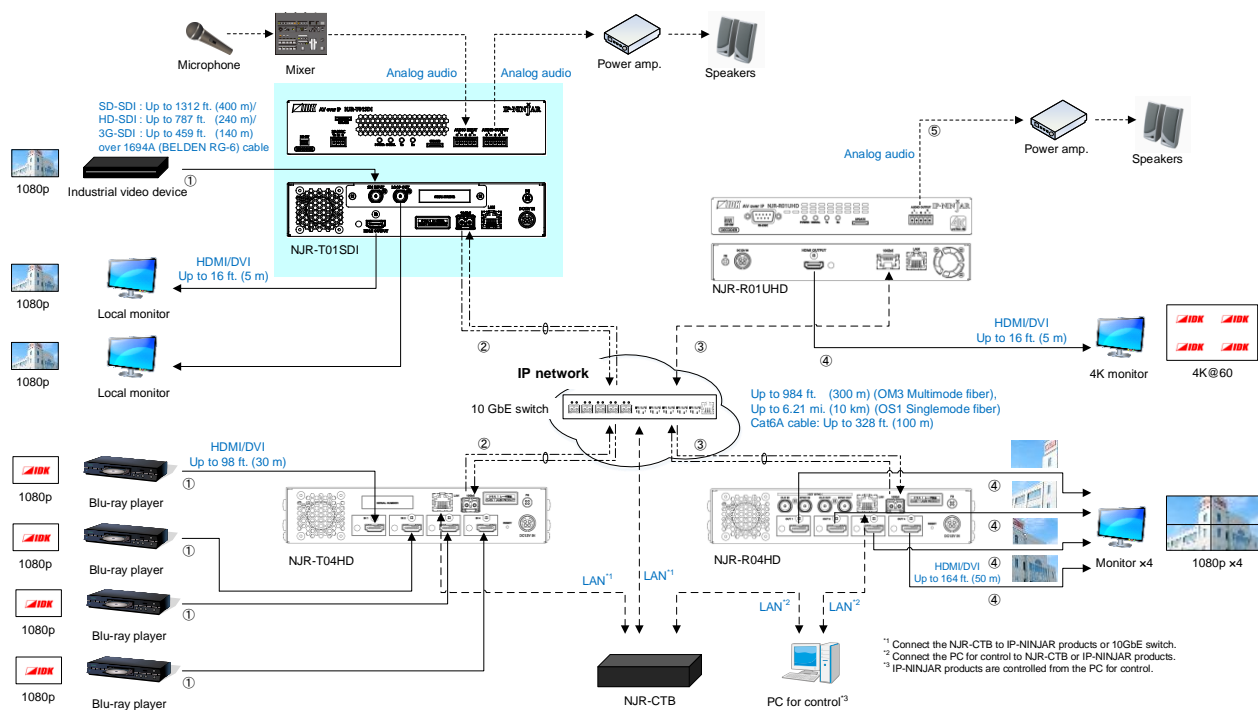
[Fig. 7.1] Used as network extender

7.2 Used as Extender

An NJR-T01SDI and IP-NINJAR series decoders are connected as Point To Point.

① Video and audio signals are input to the SDI input connector of the NJR-T01SDI from an industrial video device.

① The NJR-T01SDI sends those signals to the NJR-R01UHD/NJR-R04HD over a fiber optic cable.

② NJR-R01UHD/NJR-R04HD outputs received video and audio signals from the HDMI output connector to the monitor.

③ Digital or analog audio of NJR-T01SDI can be selected and output from the analog audio output connector of NJR-R01UHD.

④ NJR-T01SDI and NJR-R01UHD/NJR-R04HD enables RS-232C communication, LAN communication, and peripheral device control (such as projectors) by using a control device (such as PCs).
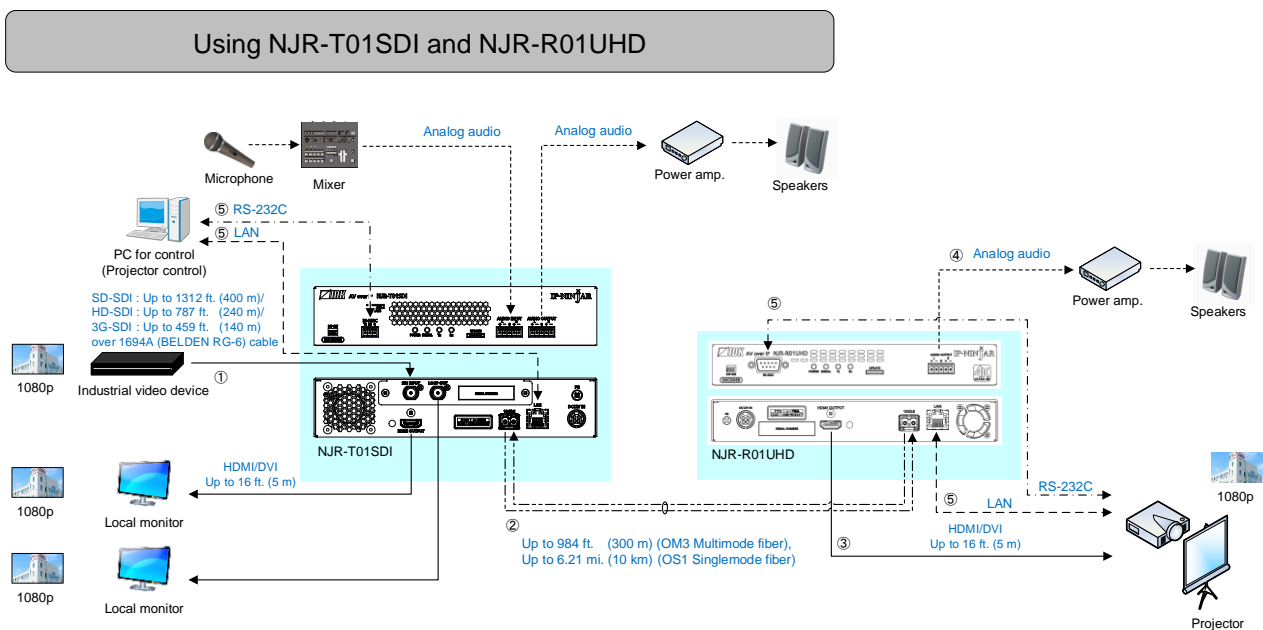
[Fig. 7.2] NJR-T01SDI and NJR-R01UHD
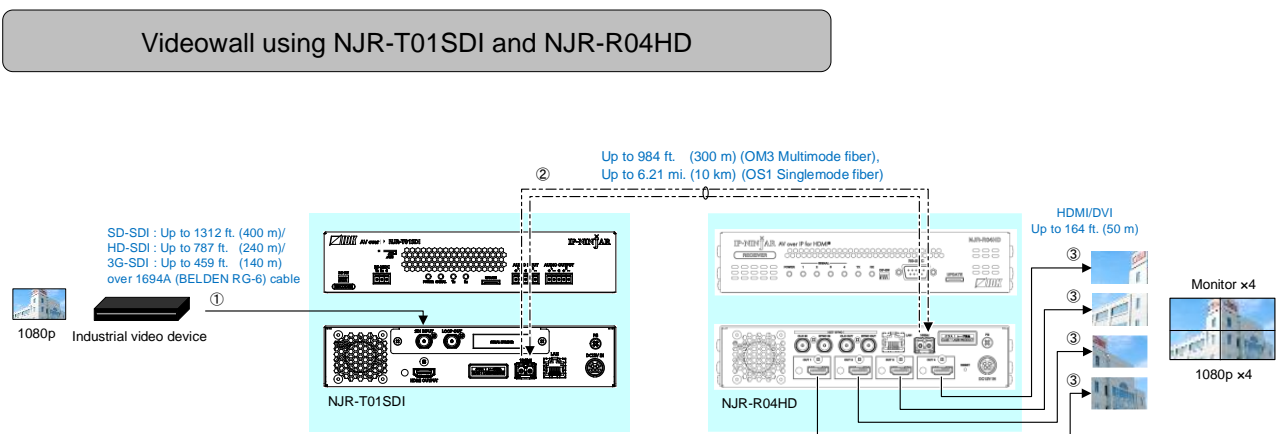
[Fig. 7.3] NJR-T01SDI and NJR-R04HD: Videowall

8 Precautions

Before using NJR-T01SDI, follow the precautions and instructions below.

8.1 Installation

When installing the NJR-T01SDI, please observe the following precautions.

- ・ Do not stack or place one NJR-T01SDI directly on top of another NJR-T01SDI.
- ・ Do not block vent holes. To provide adequate ventilation, maintain sufficient clearances around the NJR-T01SDI (1.2 in. (30 mm) or more).
- ・ Do not install NJR-T01SDI in a closed space.
  When placing them in an EIA rack-mount unit, prepare ventilating equipment to keep the ambient temperature at 104°F (40°C) or less. If inadequately vented, the life of parts may be shortened and operation may be affected.
  (Exception: Installing to IDK's rack mounting RM-44S, RM-44D, and RM-SH)
- ・ When you do not use an EIA rack-mount unit, maintain adequate clearances (1.2 in. (30 mm) or more) as shown below.

Maintain adequate clearances (1.2 in. (30 mm) or more) as shown below.
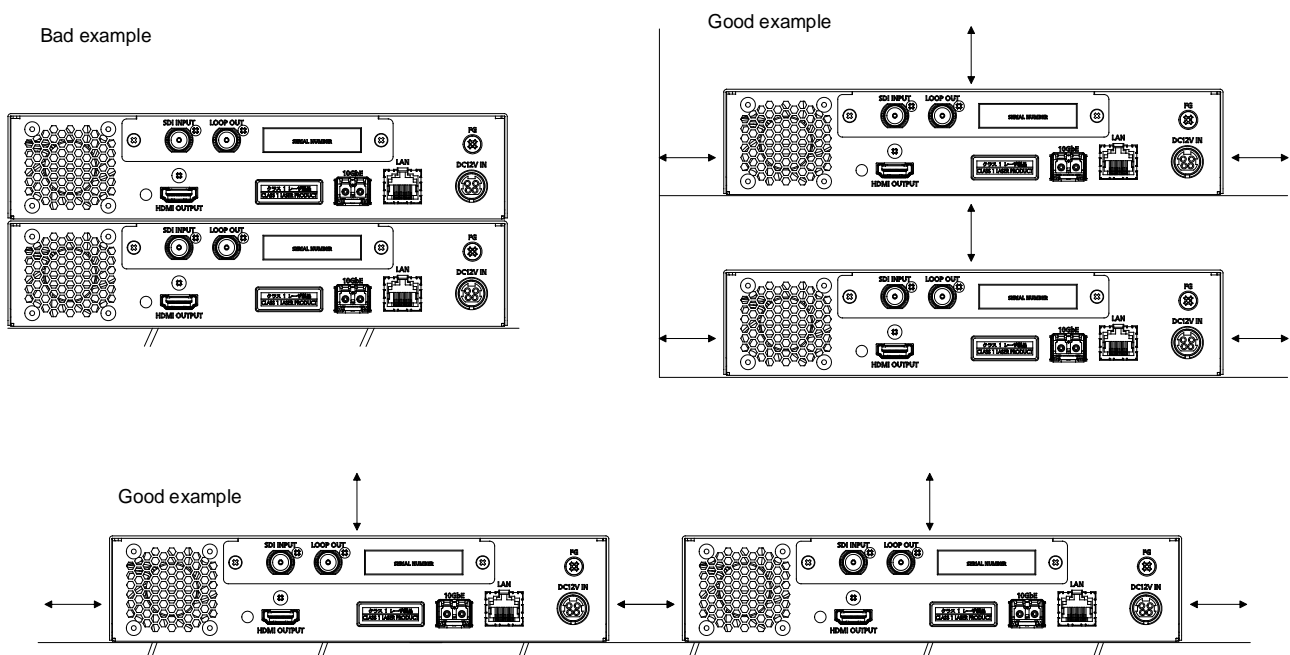
[Fig. 8.1] Necessary clearances

8.2 Cabling

When connecting the NJR-T01SDI to external devices, please observe the following precautions.

・ Read manuals for the external devices.
・ Before connecting cables to the NJR 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.
・ Use the cable lacing bracket to secure a standard HDMI cable as shown.

① Plug the HDMI cable into the HDMI connector.

② Loosen the HDMI connector screw (about six turns).
The screw does not need to be removed.

③ Place the bracket on the screw.

④ Tighten the screw to secure the bracket. (Do not overtighten the screw.)

⑤ Place the tie wrap around the cable and tighten the tie wrap as above.

⑥ Cut excess length.
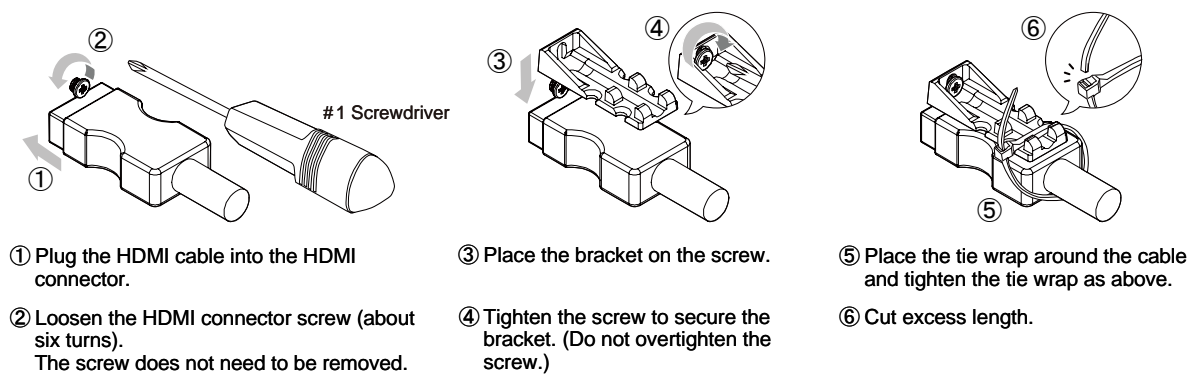
[Fig. 8.2] Cable Lacing Bracket (FB-01 For IDK products only)

8.2.1 Coaxial cable

Select the appropriate coaxial cable by referring to the following table.

[Table 8.1] Maximum transmission distance when using BELDEN cable

SDI type	Cable	Max. transmission distance
3G-SDI	1505A (BELDEN RG-59)	394 ft. (120 m)
	1694A (BELDEN RG-6)	459 ft. (140 m)
HD-SDI	1505A (BELDEN RG-59)	656 ft. (200 m)
	1694A (BELDEN RG-6)	787 ft. (240 m)
SD-SDI	1505A (BELDEN RG-59)	1083 ft. (330 m)
	1694A (BELDEN RG-6)	1312 ft. (400 m)

Note:
Maximum transmission distance depends on the characteristics of each source device and quality of each cable.

8.2.2 Fiber optic cable for extension

NJR-T01SDI 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-T01SDI: The target device should be IP-NINJAR series decoders or 10 GbE switch.
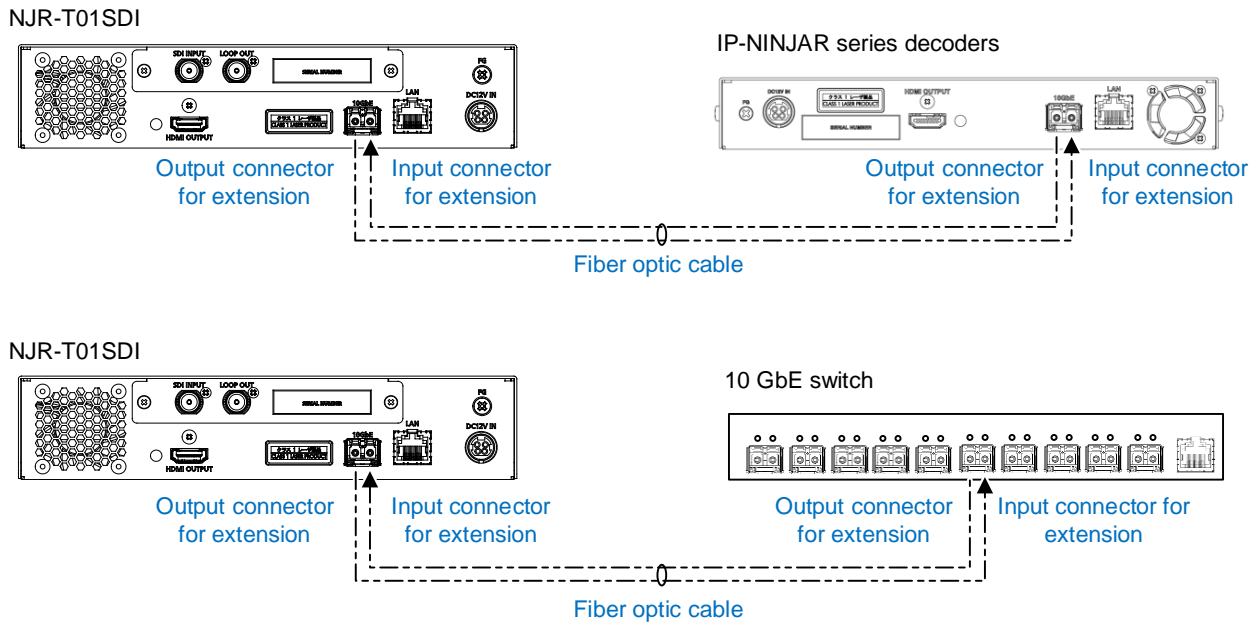
[Fig. 8.3] Connecting fiber optic cable

Note:
For the connectors of 10 GbE switch, refer to its manual.

Tip:
IDK supplies various optical cables, such as high-performance optical cables and non-strip fiber optic cables. See our web site for details.

・ 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-T01SDI may not operate correctly.

Left: without dust cap
Right: with dust cap

[Fig. 8.4] Dust caps
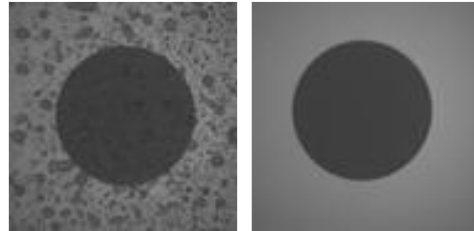
Before cleaning　　　After cleaning

[Fig. 8.5] Cleaning connector

8.2.3 Connecting audio cable

The NJR's audio input and output connectors mate with 5-pin captive screw connectors.
Connect audio cables to the 5-pin captive screw connectors. The NJR supports both balanced and unbalanced analog signals.

28 AWG to 16 AWG conductor gauge and a strip length of 0.28 in. (7 mm) are recommended.

Connecting balanced signal (I/O)   Connecting unbalanced signal (Input)   Connecting unbalanced signal (Output)
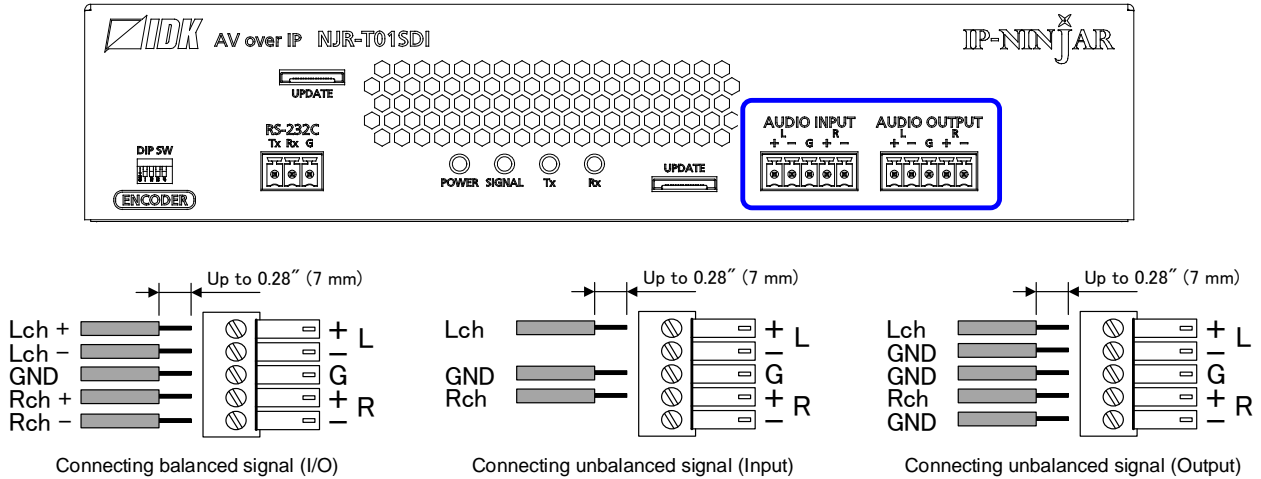
[Fig. 8.6] Connecting audio cable to 5-pin captive screw connector

8.2.4 RS-232C connector specification

The NJR's RS-232C connection is supported by a 3-pin captive screw connector.
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 to the mating connector on the NJR-T01SDI.

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.
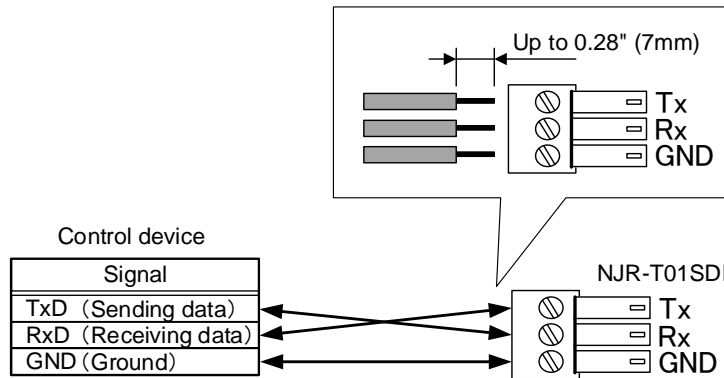
[Fig. 8.7] Connecting RS-232C cable to 3-pin captive screw connector

8.2.5 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.

8-pin RJ-45
Modular connector

8 ←——— 1
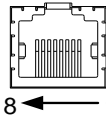
Pin number	Signal name			
	MDI		MDI-X	
	1000BASE-T	100BASE-TX/10BASE-T	1000BASE-T	100BASE-TX/10BASE-T
1	TRX+ (Transmitted & Received data +)	TX+ (Transmitted data +)	TRX+ (Transmitted & Received data +)	RX+ (Received data +)
2	TRX- (Transmitted & Received data -)	TX- (Transmitted data -)	TRX- (Transmitted & 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. 8.8] Specification of LAN connector

Make sure not to form a loop by NJR-T01SDI when connecting a LAN cable to NJR-T01SDI.

NJR-T01SDI 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.

8.2.6 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).
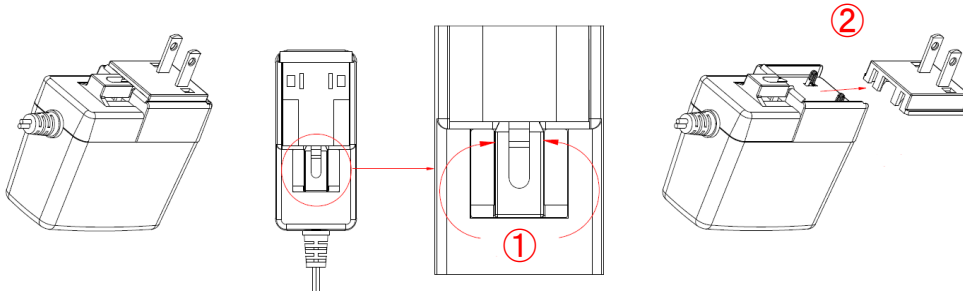
[Fig. 8.9] Removing AC plug (Example: Plug type A)

Attaching AC plug:
Gently slide the AC plug into the AC adapter (③) until it clicks (④).
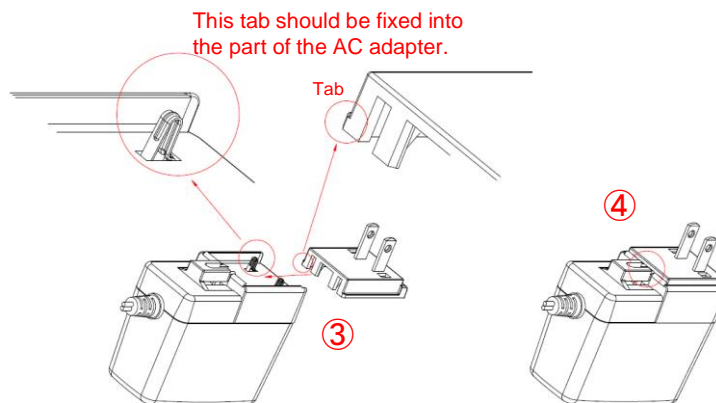
[Fig. 8.10] Attaching AC plug (Example: Plug type A)

■ **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.

Hold this part and pull the DC plug.

Plugging   Unplugging
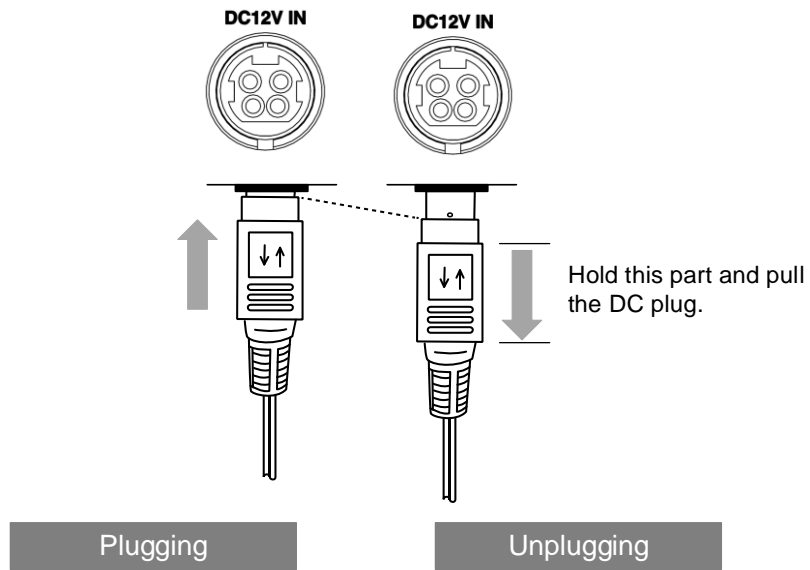
[Fig. 8.11] Plugging and unplugging DC plug

8.3 Setting DIP switch

Use the DIP switch to change settings of the NJR-T01SDI RS-232C connector.
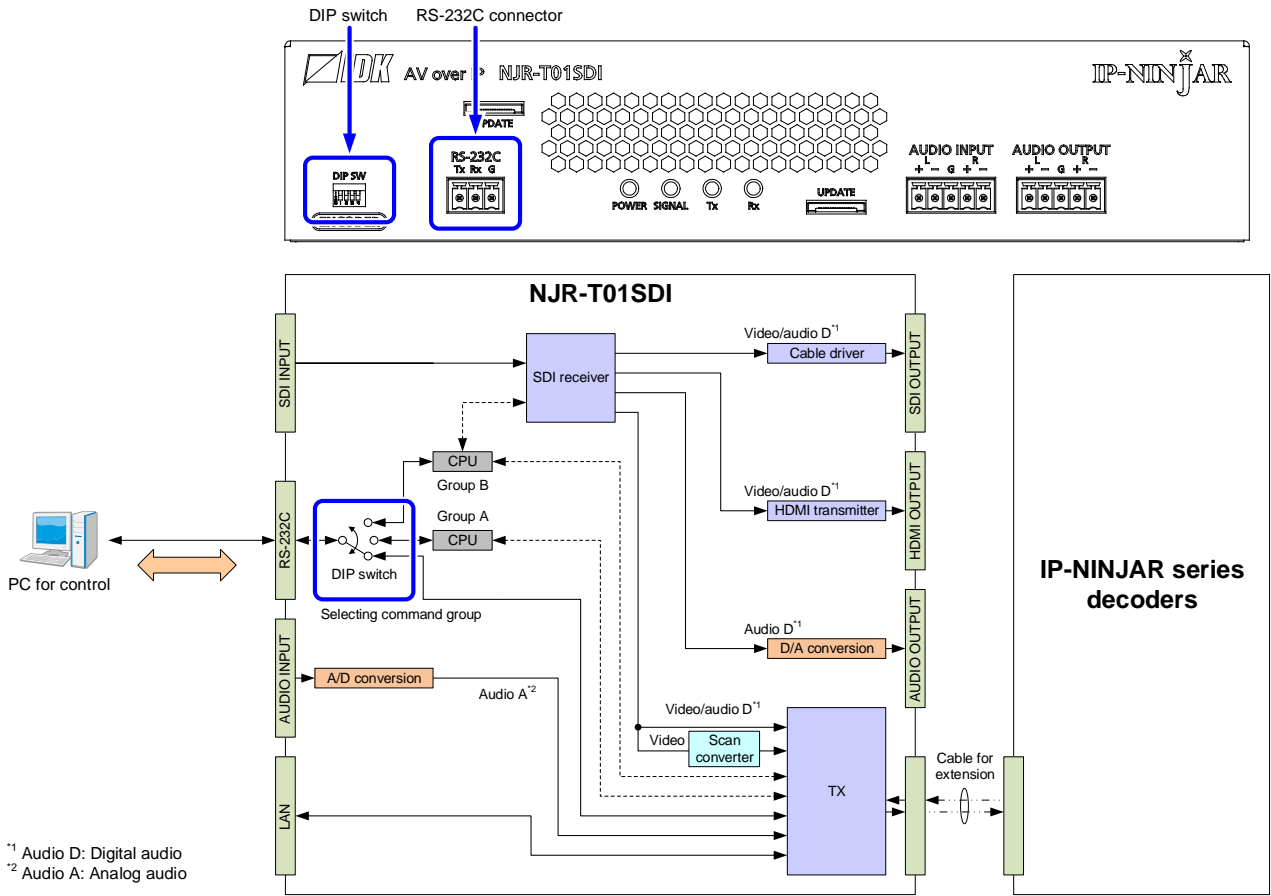
[Fig. 8.12] DIP switch function

[Table 8.2] DIP switch

	1	2	3	4	Description
	OFF	OFF	—*	—*	Connecting to RS-232C connector of IP-NINJAR decoder by default
	ON	OFF	—*	—*	Command group A Refer to "**NJR-T01SDI Command Guide**".
	OFF	ON	—*	—*	Not used
	ON	ON	—*	—*	Command group B Refer to "**NJR-T01SDI Command Guide**".

*-: No Connection

9 Basic Operation

NJR-T01SDI can be set by commands over RS-232C communication, NJR-CTB, or IP-NINJAR Configurator.
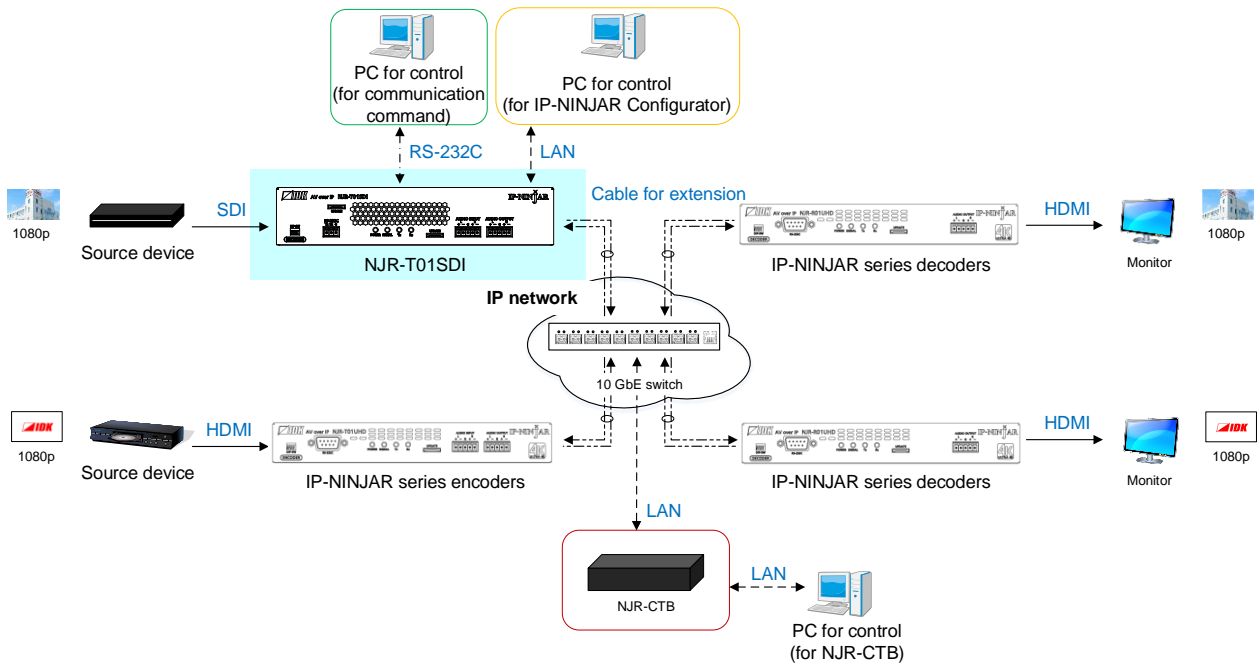
[Fig. 9.1] Setting NJR-T01SDI

9.1 Control over RS-232C communication

NJR-T01SDI can be controlled over RS-232C communication.

You can control NJR-T01SDI and get its status by connecting a control unit, such as PCs, to NJR-T01SDI over an RS-232C cable.

The RS-232C connector has two modes: one is controlling NJR-T01SDI and another is communicating between peripheral devices connected to NJR-T01SDI or IP-NINJAR series decoders.

For details of communication commands, refer to the Command Guide for the NJR-T01SDI.

【See: 8.3 Setting DIP switch】
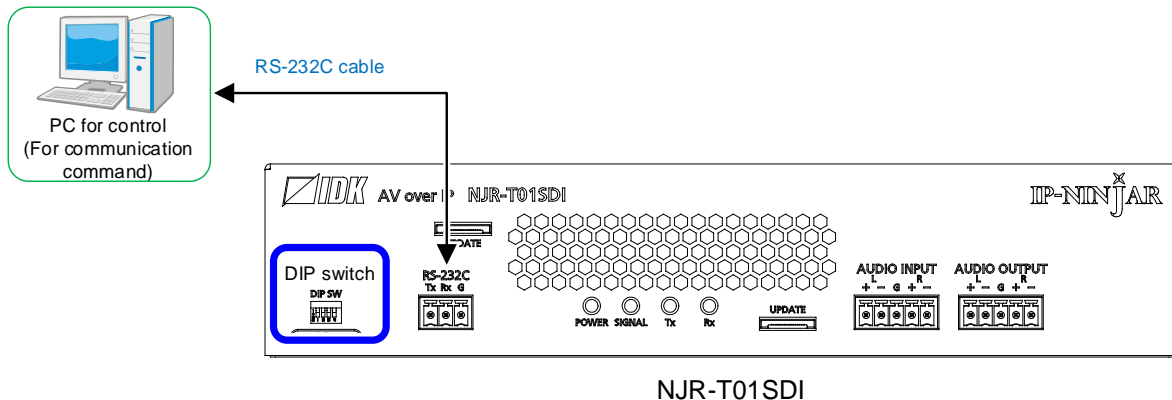
[Fig. 9.2] Control over communication command

9.2 IP-NINJAR Configurator (Setting software for IP-NINJAR)

NJR-T01SDI connected to LAN can be set from the IP-NINJAR Configurator remotely over LAN communication.

The following settings can be set from the GUI: selecting output audio, setting RS-232C, setting LAN, resetting settings, and rebooting NJR-T01SDI. 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-T01SDI for details of communication commands.

Please contact us to download the IP-NINJAR Configurator.
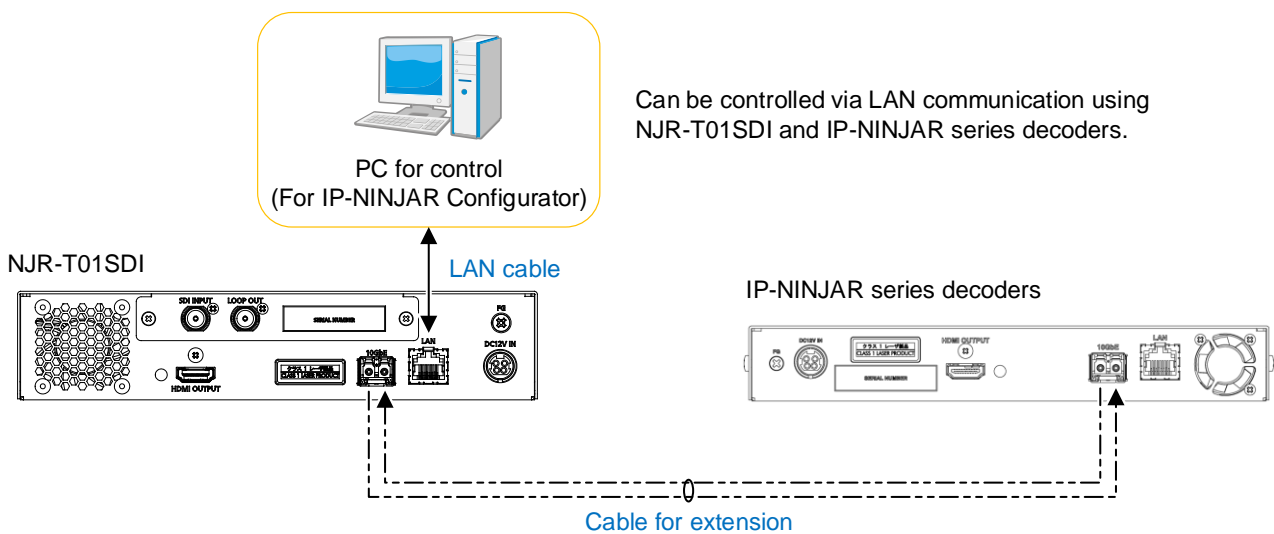
[Fig. 9.3] Control from IP-NINJAR Configurator
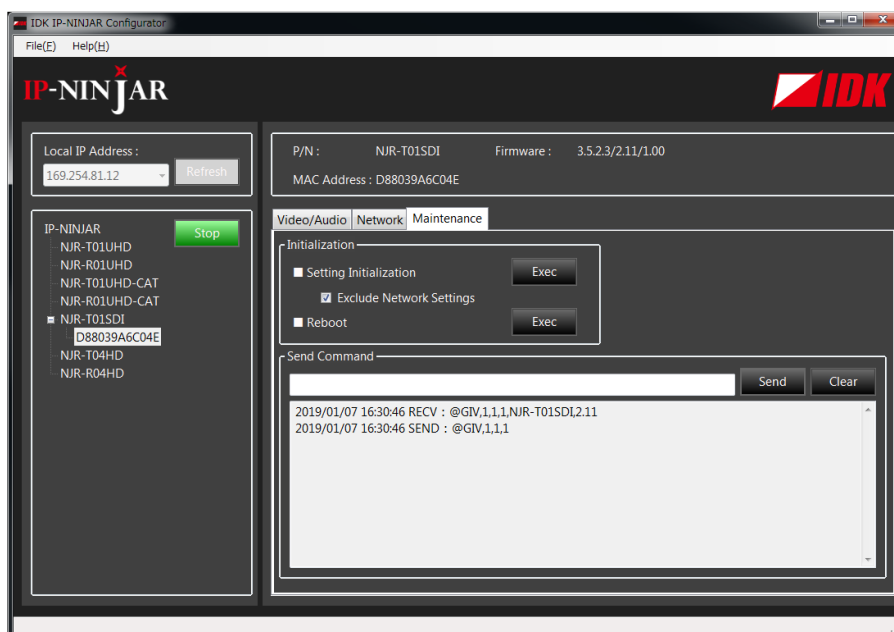
[Fig. 9.4] IP-NINJAR Configurator's GUI

9.3 Control over NJR-CTB (Control box for IP-NINJAR)

The NJR-CTB is the integrated control unit for NP-NINJAR products 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 IP-NINJAR products or 10 GbE switch.

Refer to NJR-CTB User Guide for operations via a web browser.

Refer to the Command Guide for NJR-T01SDI or the Command Guide for NJR-CTB for details of communication commands.
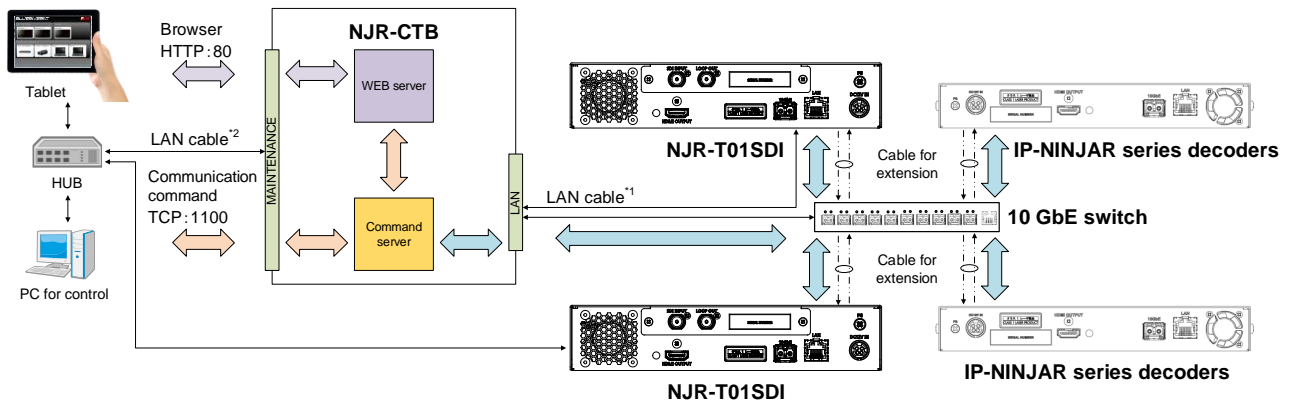
[1] LAN connector on NJR-CTB should be connected to the LAN connector on IP-NINJAR products or 10 GbE switch.
[2] PC for control should be connected to the MAINTENANCE connector on NJR-CTB or the LAN connector on IP-NINJAR products.

[Fig. 9.5] Control over 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

C: Command input, G: GUI, W: WEB browser and command input, No: Not supported

Setting item	NJR-T01SDI			Page
	RS-232C	LAN (IP-NINJAR Configurator)	LAN (NJR-CTB)	
Setting output mode	C	C	W	35
Setting output deep color	C	C	W	35
Setting hot plug masking	C	C	W	36
Muting digital audio	C	C	W	37
Setting SDI input audio group	C	C	W	38
SDI Dual Stream input video	C	C	W	38
RS-232C communication	No	G	W	39
LAN	No	G	W	40
MAC address	No	G	W	40
Input video status	C	C	W	41
Input audio status	C	C	W	41
Output status	C	C	W	42
Sink device EDID	C	C	W	42
Version	C	C	W	42
Initialization	No	G	W	33
Reboot	No	G	W	33
Setting channel information*	No	No	W	-
Selecting I/O channel*	No	No	W	-
Operating preset memory*	No	No	W	-
Setting videowall*	No	No	W	-
Setting RS-232C cross point*	No	No	W	-
Setting NJR-CTB LAN*	No	No	W	-

*: In this manual, only settings of NJR-T01SDI 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 video wall, setting cross point, and setting NJR-CTB LAN.

9.5 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-T01SDI reboots with new settings automatically.

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

Communication command

@CLRC Initialization

【See: 9.2 IP-NINJAR Configurator (Setting software for IP-NINJAR)】
【See: 9.3 Control over NJR-CTB (Control box for IP-NINJAR)】

9.6 Reboot

You can reboot NJR-T01SDI using IP-NINJAR Configurator or NJR-CTB over LAN communication.

Communication command

@RBTC Reboot

【See: 9.2 IP-NINJAR Configurator (Setting software for IP-NINJAR)】
【See: 9.3 Control over NJR-CTB (Control box for IP-NINJAR)】

10 Setting

The following items of NJR-T01SDI can be set using the RS-232C communication, IP-NINJAR Configurator, or NJR-CTB.

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 video wall, setting cross point, and setting NJR-CTB LAN.

[Table 10.1] Setting items

Item	NJR-T01SDI		Page
	Setting value	Default	
Setting output mode	AUTO/DVI/RGB/ YCbCr 4:2:2/YCbCr 4:4:4	AUTO	35
Setting output deep color	24/30/36-BIT COLOR	24-BIT COLOR	35
Setting hot plug masking	OFF/2 to 15 [sec.]	OFF (no masking)	36
Muting digital audio	Mute OFF/Mute ON	Mute OFF	37
Setting SDI input audio group	Audio group 1 to 4	Audio group 1 (Primary) Audio group 2 (Secondary)	38
SDI Dual Stream input video	Video stream 1 to 2	Video stream 1	38
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	39
LAN	Automatic/Fix	Automatic	40

10.1 Output setting

10.1.1 Setting output mode

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 the NJR-T01SDI. Output mode can individually be set to the output from the HDMI OUTPUT connector (local output) and output connector for transmission.

Setting value
> AUTO   [Default]
> DVI output
> RGB output
> YCbCr 4:2:2 output
> YCbCr 4:4:4 output

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

10.1.2 Setting output deep color

You can set the output deep color.

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".

Communication command
> @SDI Setting output deep color
> @GDI Getting output deep color

10.1.3 Setting hot plug masking

You can set how long hot plug (signals for requesting video output) that is sent from a sink device will be ignored.

If a sink device repeatedly sends requests to output video at short intervals, the NJR-T01SDI may not output video, because it sets output video every time receiving the signals. This problem can be fixed by setting how long the request will be ignored (Hot plug masking).
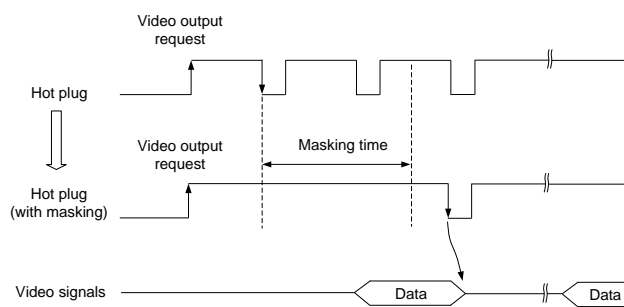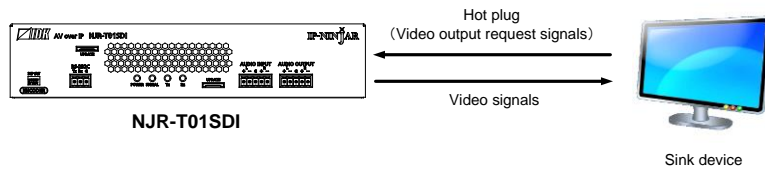
[Fig. 10.1] Setting hot plug masking

Setting value

    OFF (no masking)   [Default]

    2 to 15 [sec.]

Communication command

    @SHM Setting hot plug masking

    @GHM Getting hot plug masking

10.2 Audio setting

10.2.1 Muting digital audio

You can enable or disable the audio output mute.

Once you mute NJR-T01SDI, all audio of IP-NINJAR series decoders connected through the 10 GbE switch can be muted. If digital audio is output from the analog audio output connector of NJR-R01UHD, these output audio is also muted.
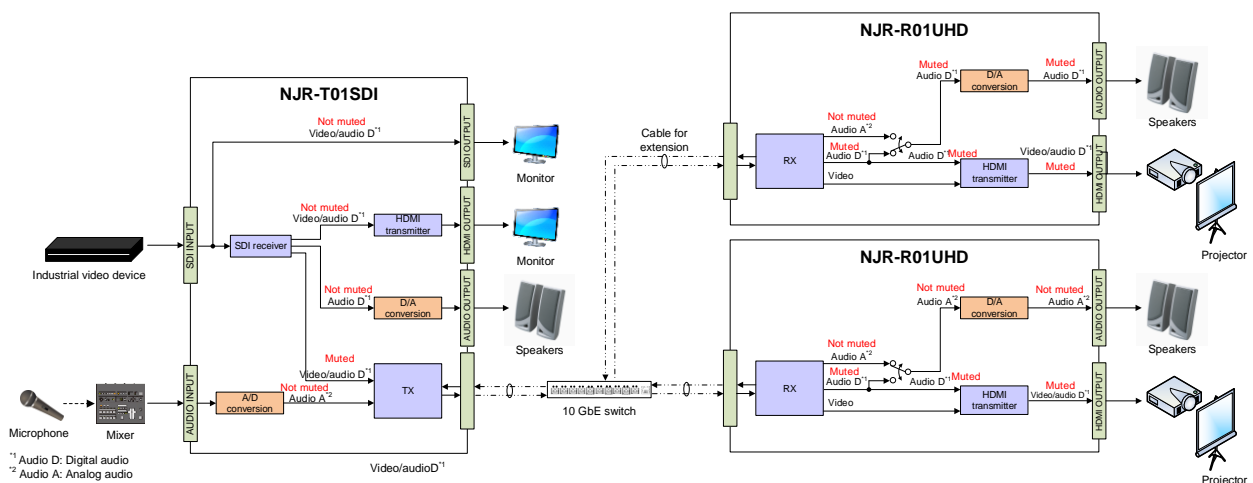
[Fig. 10.2] Muting NJR-T0SDI digital audio

Setting value

Mute OFF   [Default]

Mute ON

Communication command

@SAM Setting digital audio output mute

@GAM Getting digital audio output mute

10.3 Input setting

10.3.1 Setting SDI input audio group

Up to 16 audio channels are in SDI input audio, and these channels are divided into one to four groups by four channels. Selected two audio groups can be output as multi-channel audio and can be specified as Primary or Secondary audio as follows.

Primary audio (Output 1ch to 4ch)
Secondary audio (Output 5ch to 8ch)

Note:
An audio group cannot be specified as both primary and secondary audio group.

Setting value

    Audio group 1 (1ch to 4ch)   [Default for primary audio]
    Audio group 2 (5ch to 8ch)   [Default for secondary audio]
    Audio group 3 (9ch to 12ch)
    Audio group 4 (13ch to 16ch)

Communication command

    @SAG SDI Setting input audio group
    @GAG SDI Getting input audio group

10.3.2 SDI Dual Stream input video

Two video streams are included when 3G-SDI Dual Stream signals are input. You can select one stream to be output.

Setting value

    Video stream 1   [Default]
    Video stream 2

Communication command

    @SDU Setting SDI Dual Stream input video
    @GDU Getting SDI Dual Stream input video

10.4 RS-232C setting

10.4.1 RS-232C communication

You can set the RS-232C communication between devices that connected to NJR-T01SDI/IP-NINJAR series decoders.
The same setting should be set for NJR-T01SDI/IP-NINJAR series decoders.

Notes:

The RS-232C connector is used for two modes: controlling NJR-T01SDI and communicating between devices that connected to NJR-T01SDI/IP-NINJAR series decoders.
In the former mode, the RS-232C communication settings cannot be changed.

【See: 8.3 Setting DIP switch】

Refer to the Command Guide for details.
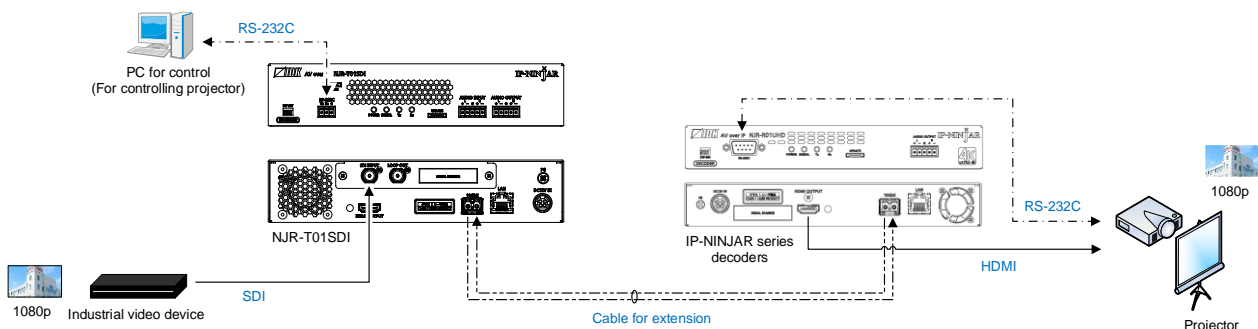
[Fig. 10.3] RS-232C communication

Note:

For communicating between NJR-T01SDI/IP-NINJAR series and connected device, only RD (Received data) and TD (Transmitted data) are sent.

Setting value

[Table 10.2] Setting items of RS-232C communication

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

10.5 LAN setting

10.5.1 LAN

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 10.3] Setting items of LAN communication

Setting item	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

10.5.2 MAC address

You can display the NJR's MAC address.

Communication command

@GMC Getting MAC address

10.6 Information

10.6.1 Input video status

You can view the input video status.

Items to be acquired

The number of horizontal active pixels
The number of vertical active pixels
Scanning method (Progressive/Interlaced)
Frame rate [Hz]
Dot clock [MHz]
SDI format (SD-SDI/HD-SDI/3G-SDI Level A/3G-SDI Level B/3G-SDI Level B (2xHD))
CEA-861 video code
Color depth (8 bit/10 bit/12 bit)
Color space
and others

Communication command

@GQV Getting input video status

10.6.2 Input audio status

You can view the input audio status.

Items to be acquired

Bit length [bit]
Sampling rate [kHz]
and others

Communication command

@GQA Getting input audio status

10.6.3 Output status

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

Items to be acquired

Output signal type (HDMI/DVI)

Communication command

@GSS Getting I/O status

10.6.4 Sink device EDID

You can view the EDID information of the sink device that is connected to the HDMI output connector.

Items to be acquired

Monitor name
Resolution and pixel clock
Supported HDMI
Sampling configuration
Color depth
Supported audio
and others

Communication command

@GES Getting monitor EDID

10.6.5 Version

You can view the model name and firmware version.

Communication command

@GIV Getting version

11 Product specification

Item		Description
Input		1 input 3G-SDI/HD-SDI/SD-SDI NRZI/NRZ, 0.8 V[p-p]/75 Ω SMPTE 424M (3G-SDI)/SMPTE 292M (HD-SDI)/SMPTE 259M-C (SD-SDI) Connector: BNC (*1) Cable: 75-Ω coaxial cable for high-frequency signals
Output		1 output Digital signal for extension RS-232C, LAN Connector: 2 LCs
		1 output for monitoring input signals When the NJR-T01SDI is powered, SDI input signal is output 3G-SDI/HD-SDI/SD-SDI NRZI/NRZ, 0.8 V[p-p]/75 Ω SMPTE 424M (3G-SDI)/SMPTE 292M (HD-SDI)/SMPTE 259M-C (SD-SDI) Connector: BNC Cable: 75-Ω coaxial cable for high-frequency signals
		1 output for monitoring input signals When the NJR-T01SDI is powered, SDI input signal is output HDMI (*2)/DVI 1.0 TMDS single link Connector: Female HDMI Type A (19-pin) (*3)
Format		480i / 480p / 576i / 576p / 720p (not supporting 23.98 Hz or 24 Hz) / 1080i / 1080p
Digital audio input		Multi-channel LPCM up to 8 channels (Selecting two groups from Audio group1 to 4) Sampling frequency: 48 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: 48 kHz, Sample size: 16 bit to 24 bit, Reference level: -20 dBFS, Max. output level: 0 dBFS
Analog audio input		1 input Balanced/Unbalanced Stereo LR Input impedance: 48 kΩ balanced/24 kΩ unbalanced Reference level: -10 dBu Max. input level: +10 dBu Connector: Captive screw (5-pin)
Analog audio output		1 output Balanced/Unbalanced Stereo LR Output impedance:100 Ω balanced/50 Ω unbalanced Reference level: -10 dBu Max. output level: +10 dBu Connector: Captive screw (5-pin)
Cable for extension	Cable	Duplex fiber cable SFP+ optical transceiver
	Transmission distances (*4)	Up to 984 ft. (300 m) (OM3 Multimode fiber), Up to 6.21 mi. (10 km) (OS1 Singlemode fiber)
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
General	AC adapter	Input : 100 - 240 VAC ±10%, 50 Hz/60 Hz ±3 Hz Output : DC 12 V 3 A 36.0 W (A dedicated AC adapter is provided)
	Power consumption	About 15 W
	Dimensions	8.3 (W) × 1.7 (H) ×5.5 (D)" (210 (W) × 44 (H) × 140 (D) mm) (Half rack wide, 1U high) (Excluding connectors and the like)
	Weight	2.9 lbs. (1.3 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   With 1505A (BELDEN RG-59), SD-SDI: 1083 ft. (330 m)/HD-SDI: 656 ft. (200 m)/3G-SDI: 394 ft. (120 m)
     With 1694A (BELDEN RG-6),   SD-SDI: 1312 ft. (400 m)/HD-SDI: 787 ft. (240 m)/3G-SDI: 459 ft. (140 m)
*2   Not supporting x.v.Color, 3D, ARC, HEC, or CEC.
*3   Use 16.4 ft. (5 m) or shorter HDMI cables.
*4   Only if the SFP+ optical transceiver sold by IDK is used, signals can be transmitted to the mentioned maximum transmission distance. If using other SFP+ optical transceiver,
     check the compatible fiber and maximum distance of the SFP+ optical transceiver.

12 Troubleshooting

In case the NJR-T01SDI 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-T01SDI and all devices plugged in and powered on normally?
- ・ Are cables connected correctly?
- ・ Are there no loose connections?
- ・ Are correct cables for NJR-T01SDI 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 check the following items and then contact us.

No.	Checking items	Result
1	The problem occurs at all connectors?	Yes or No
2	Connect the devices using genuine cables without connecting the NJR-T01SDI. The problem still cannot be solved? Please contact us for assistance.	Yes or No

User Guide of NJR-T01SDI

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