



4K@60/HDCP 2.2 AV over IP Encoder/Decoder for HDMI

NJR-T01UHD/NJR-R01UHD

The NJR-01UHD is an AV over IP solution for high definition signal transmission via fiber optic cables or category cables. This 4K solution leverages 10 Gb Ethernet switches and enables signal management of 4K@ 60 (4:4:4) signals with zero latency. RS-232C bidirectional communication and LAN transmission are also supported.

The NJR-01UHD can be used with other IP-NINJAR products. Combined with the NJR-R04HD, 4K@60 signals that is sent from the NJR-T01UHD can be divided into four full HD signals and be displayed on sink devices. When using the NJR-T04HD and the NJR-R01UHD together, four ports' full HD signals that is sent from the NJR-T04HD can be displayed as 4K@60 signals on a sink device.

Please use this product with a combination of NJR-T01UHD and NJR-R01UHD or IP-NINJAR series encoders and decoders. It cannot be connected to OPF or FDX series.

■ Specification

Item	NJR-T01UHD (Encoder)		NJR-R01UHD (Decoder)	
Model	Fiber optic	Cat6A	Fiber optic	Cat6A
Input	1 input HDMI (*1)/DVI 1.0 TMDS single link HDCP 1.4/2.2 HDR (*2) EDID emulation Connector: Female HDMI Type A (19-pin) (*3)		1 input Digital signal for extension Format: IP-NINJAR protocol RS-232C, LAN Connector: 2 LCs	1 input Digital signal for extension Format: IP-NINJAR protocol RS-232C, LAN Connector: RJ-45
Output	1 output Digital signal for extension Format: IP-NINJAR protocol RS-232C, LAN Connector: 2 LCs	1 output Digital signal for extension Format: IP-NINJAR protocol RS-232C, LAN Connector: RJ-45	1 output HDMI (*1)/DVI 1.0 TMDS single link HDCP 1.4/2.2 HDR (*2) Connector: Female HDMI Type A (19-pin) (*3)	
	1 output HDMI (*1)/DVI 1.0 *For monitoring input signals TMDS single link HDCP 1.4/2.2 HDR (*2) Connector: 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 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 Stereo LR balanced/unbalanced Output impedance:100 Ω balanced/50 Ω unbalanced Reference level: -10 dBu Max. output level: +10 dBu Connector: Captive screw (5-pin)		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)	

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Item		NJR-T01UHD (Encoder)		NJR-R01UHD (Decoder)	
Model		Fiber optic	Cat6A	Fiber optic	Cat6A
Cable for extension	Cable	Duplex fiber cable, SFP+ optical transceiver	Cat6A STP cable	Duplex fiber cable, SFP+ optical transceiver	Cat6A STP cable
	Polishing (*6)	SFP+ optical transceiver for Multimode: PC polishing (Recommended) SFP+ optical transceiver for Singlemode: UPC polishing (Recommended), SPC *APC is not supported	—	SFP+ optical transceiver for Multimode: PC polishing (Recommended) SFP+ optical transceiver for Singlemode: UPC polishing (Recommended), SPC *APC is not supported	—
	Transmission distances	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) (*7)	Cat6A STP: Up to 328 ft. (100 m) (*8)	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) (*7)	Cat6A STP: Up to 328 ft. (100 m) (*8)
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			
Function		DDC buffer, Connection Reset (*9)			
General	AC adapter	Input : 100 - 240 VAC \pm 10%, 50 Hz/60 Hz \pm 3 Hz Output : DC 12 V 3 A 36.0 W (A dedicated AC adapter is provided)			
	Power consumption	About 18 W	About 21 W	About 17 W	About 20 W
	Dimensions	8.3 (W) \times 1.2 (H) \times 5.5 (D)" (210 (W) \times 30 (H) \times 140 (D) mm) (Half rack wide, thin type) (Excluding connectors and the like)			
	Weight	2.2 lbs. (1.0 kg)	2.2 lbs. (1.0 kg)	2.2 lbs. (1.0 kg)	2.2 lbs. (1.0 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 16.4 ft. (5 m) or shorter HDMI cables.

*4 Supported 4K formats : 24 Hz/25 Hz/30 Hz/50 Hz (4:4:4)/59.94 Hz (4:4:4)/60 Hz (4:4:4)

*5 Supported 4K format : only 24 bit

*6 It is possible to connect without using the recommended polishing method, but that may cause a change of transmission distance ability due to an increase in return loss.

*7 The maximum transmission distance is measured under the following conditions: Fiber that is polished by a recommended method is used, there is no interconnection, and the allowable bending radius is not exceeded.

*8 The actual maximum transmission distance may be shorter than the stated distance depending on the following conditions: quality and cabling of the Cat 6A cable, combination with 10GbE switch, and installation status of the 10GbE switch.

Video may be interrupted or may not be output even if signals are within the range of the maximum transmission distance.

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

■ SFP+ Specification

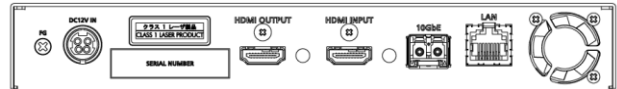
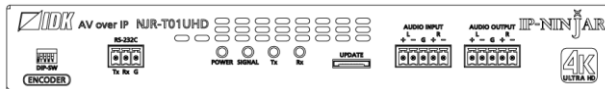
Item	10G-MM-SFP	10G-SM-SFP	10G-SM40-SFP (Optional)
Fiber	Multimode fiber	Singlemode fiber	Singlemode fiber
Wave length	850 nm (VCSEL Laser*)	1310 nm (DFB laser*)	1550 nm (EML laser*)
Max. transmission distances	OM3: 984 ft. (300 m)	OS1: 6.21 mi. (10 km)	OS1: 24.85 mi. (40 km)
Receiver sensitivity (OMA)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

*The lasers in these models meet class1.

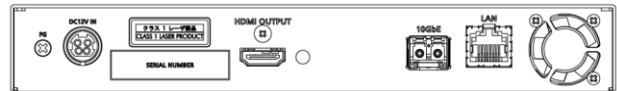
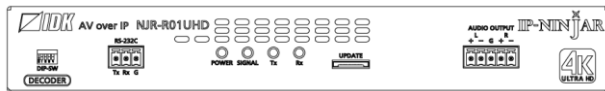
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■ Front & Rear Panels

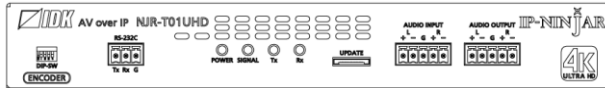
NJR-T01UHD-MM/SM



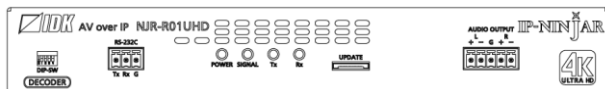
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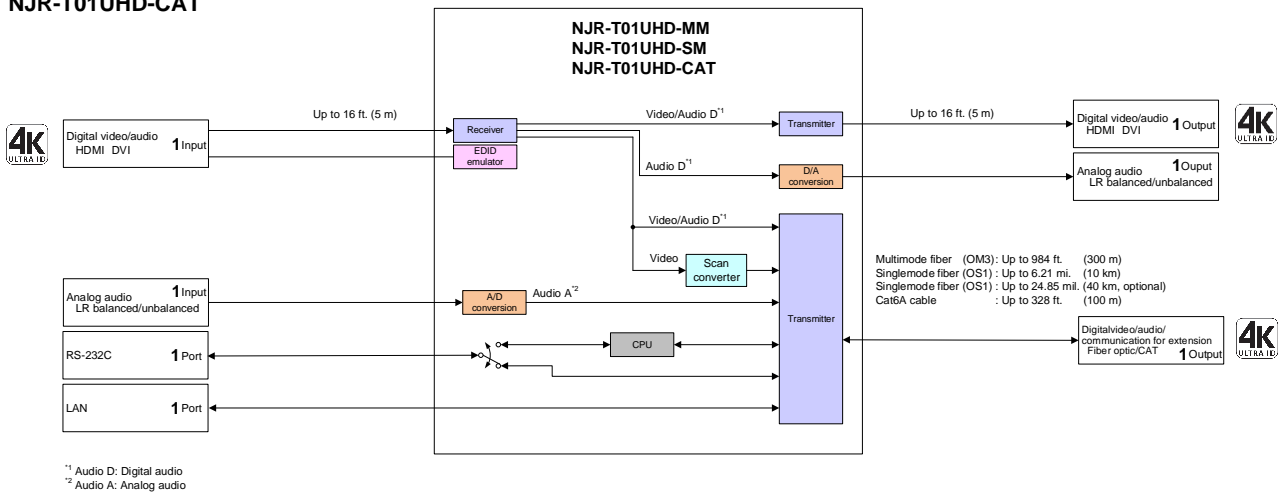
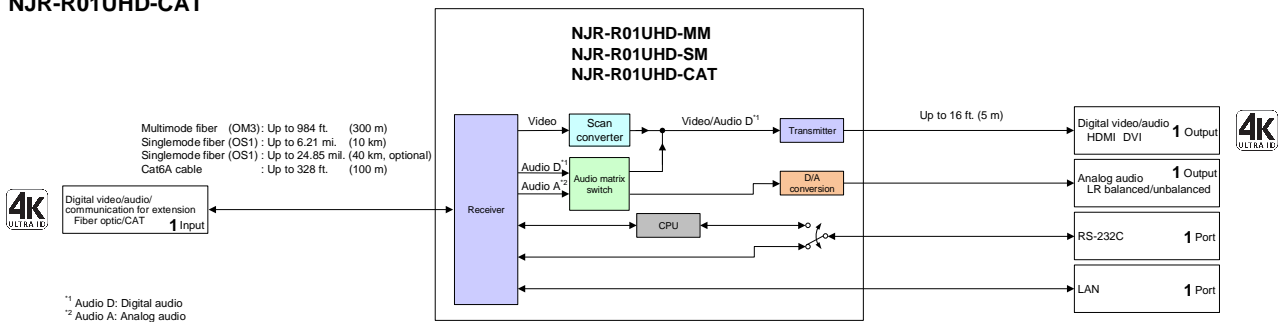
NJR-T01UHD-CAT



NJR-R01UHD-CAT



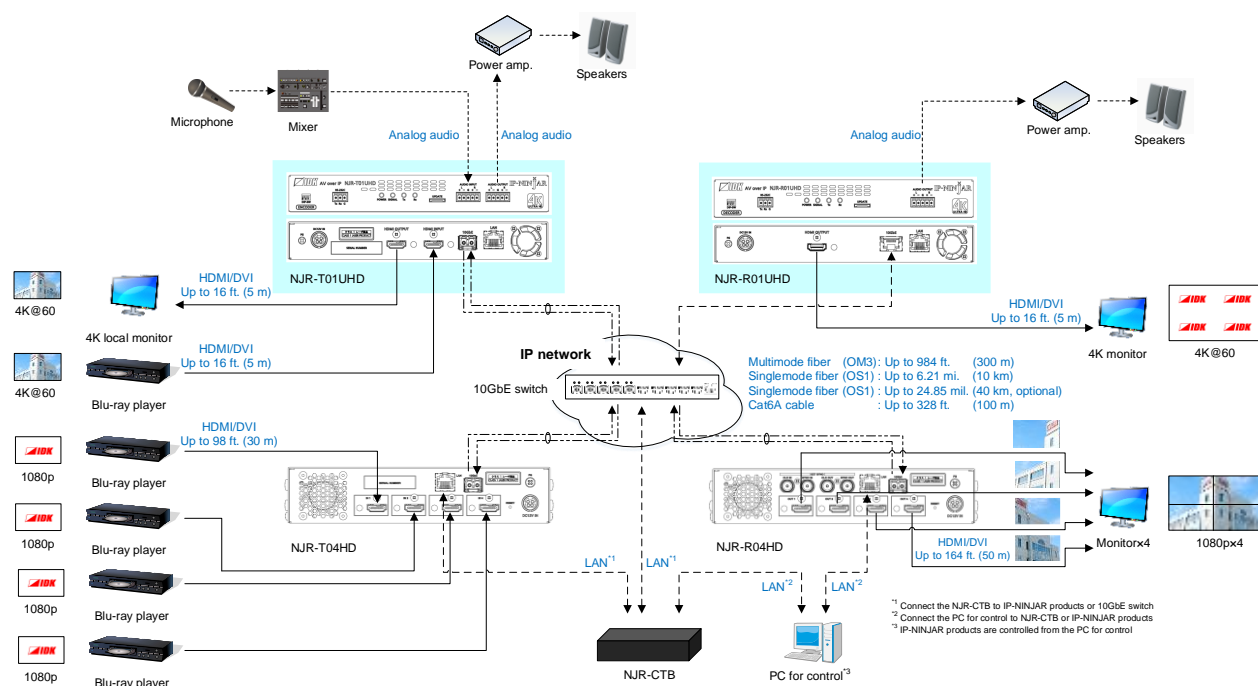
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■ Diagram
**NJR-T01UHD-MM
NJR-T01UHD-SM
NJR-T01UHD-CAT**

**NJR-R01UHD-MM
NJR-R01UHD-SM
NJR-R01UHD-CAT**


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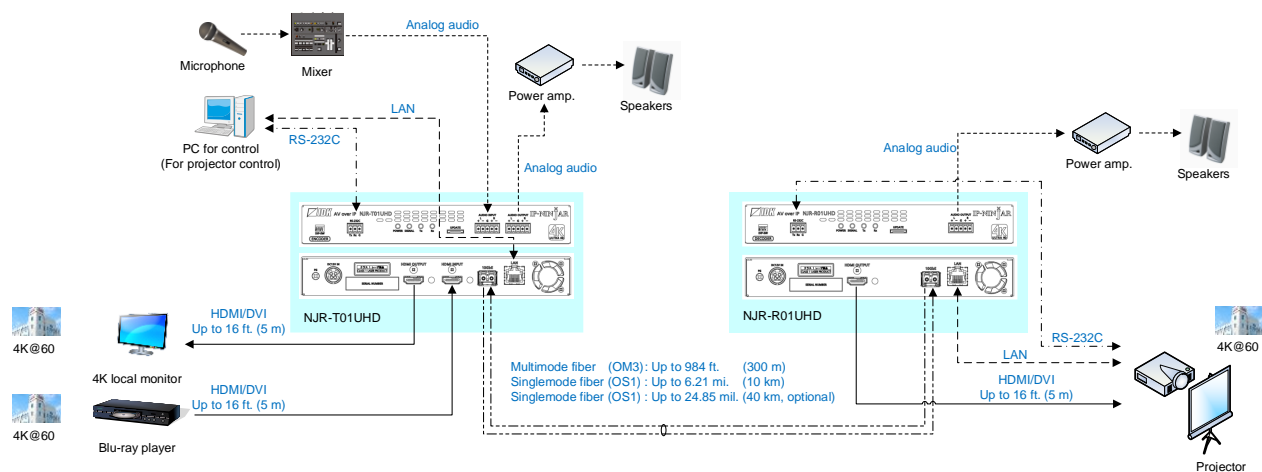
■ Application examples

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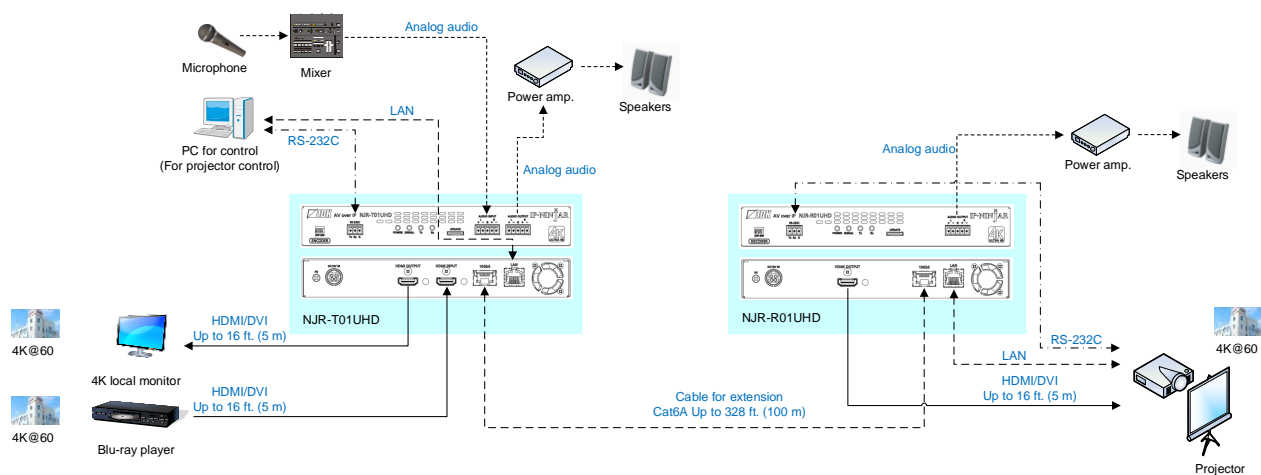


<Used as extender>

NJR-T01UHD-MM
NJR-T01UHD-SM
NJR-R01UHD-MM
NJR-R01UHD-SM



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NJR-T01UHD-CAT
NJR-R01UHD-CAT


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■ Models

Model		Type	Model number
Fiber optic	No SFP+ optical transceiver	Encoder	NJR-T01UHD
		Decoder	NJR-R01UHD
	Multimode fiber	Encoder	NJR-T01UHD-MM
		Decoder	NJR-R01UHD-MM
	Singlemode fiber	Encoder	NJR-T01UHD-SM
		Decoder	NJR-R01UHD-SM
Cat6A (No SFP+ transceiver)		Encoder	NJR-T01UHD-CAT
		Decoder	NJR-R01UHD-CAT

[Features]

■ Video

- Up to 4K@60 (4:4:4)
- HDCP 1.4/2.2
- HDR
- Local monitor output
- Transmission distances
 - Fiber optic cable (NJR-T01UHD-MM/SM, NJR-R01UHD-MM/SM)
 - Multimode fiber (OM3) : Up to 984 ft. (300 m)
 - Singlemode fiber (OS1) : Up to 6.21 mi. (10 km) (Up to 24.85 mi. (40 km, optional))
 - Category cable (NJR-T01UHD-CAT, NJR-R01UHD-CAT)
 - Cat6A : Up to 328 ft. (100 m)

■ 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

- EDID emulation
- DDC buffer
- Connection Reset
- AC adapter with locking mechanism