

NU-IP3R

IP Converter/Receiver for NUCLeUS™



Overview

Converts IP data streams to video signals for viewing on a medical monitor

The NU-IP3R is complemented by the NU-IP3T (IP Transmitter) that converts medical imaging sources to an IP data stream for networked transmission to other devices on the NUCLeUS network.

The NU-IP3R (IP Receiver) receives IP data with high quality and low latency of less than 1 frame^{*1} through higher specification network cable or fiber network interfaces from a NU-IP3T converter (transmitter). IP data comprising visually lossless video, or uncompressed^{*2} video and control signals are converted to 4K, HD, SD or 3D 2D video signals for display on a connected medical monitor.

Converted video streams can be displayed in a variety of different formats for convenient viewing in the Operating Room. Preconfigured layouts include quad-view, a combination of PIP, and PAP layout options.

Note: This product is available as part of the NUCLeUS platform only, not to be sold separately.

**1. This is for native stream. Based on Sony internal testing. Latency varies and depends on usage conditions.*

**2 Uncompressed video requires 10G fiber network interfaces. Availability may vary depending on the country. For further information please contact your nearest Sony dealer.*

Features

Flexible Network Architectures

The NU-IP3R can receive, handle and accommodate any video streams from the NU-IP3T, or IP cameras over CAT5e or higher specification network cable, or fiber network cable.

Higher specification network cable can be used with existing network infrastructures under a relatively low network load outside the OR. Sony's IP Converter technology can therefore easily be integrated into existing hospital network infrastructure.

KVM Function

The NU-IP3R can send KVM (keyboard, video and mouse) signals via IP to an NU-IP3T transmitter. By connecting a keyboard and mouse to the NU-IP3R, you can remotely control the device connected to the source transmitter without extra hardware or cabling. As OR staff switch from one source to another their keyboard and mouse will be able to control different devices in the OR, providing flexible control and simplified workflow.

A Wide Variety of Video Formats

NU-IP3R supports video outputs from HD, up to 4K 3D @60p 4:4:4^{*3}. To achieve 4K image workflow, the image source needs to be 4K resolution and the optional 4K license needs to be applied to the NU-IP3T, but no additional 4K license is required for the NU-IP3R. Furthermore, 4K 3D and HD 3D videos can be converted to 2D 3D depending on the monitors.

**3 For the details of the supported signal types, resolutions and frequencies, please refer to the Instruction Manual.*

Data Safety

Data and control interfaces to the NU-IP3R are encrypted using SSL. Bandwidth optimised streams are always secured with AES-128 encryption used with a GCM rolling key scheme. This prevents third-party eavesdropping, spoofing and other tampering to ensure the integrity of data between the transmitter, receiver and server.

Multiple Display Layouts

The NU-IP3R can receive additional HD proxy streams (max 4 streams in total) on top of the 4K native stream and can display these in different layouts. A set of preconfigured layouts include quad-view^{*4}, PIP, and PAP, and these can be combined in a number of different layout options. 4K 3D and HD 3D native streams in Line by Line are also supported for these multiple layouts.

**4 Optional license (NU-IP3RE) is necessary for quad-view functionality.*

Discreet Mounting

The NU-IP3R can be 'invisibly' mounted between the boom arm and the surgical monitor using the optional NUA-BK30 mounting bracket. The bracket can also be used to mount the NU-IP3R on the back of a larger wall mounted display.

Safety Feature

The NU-IP3R can automatically detect IP transmission failure and remotely control the display device to switch to a secondary video signal input as a safety feature.

Visual Feedback

The NU-IP3R provides valuable visual feedback for clinical teams in the Operating Room. A status LED confirms power and correct system operation, while blinking patterns indicate loss of network connection or absence of an IP address.

Compliance with medical standards

This product is distributed to the US as a medical device and to the EU as an accessory for medical devices, and satisfies product safety standards (e.g. IEC60601-1).

Specifications

Video Specifications

Inputs	Native and proxy streams
Outputs	Up to 4K/3D ^{*1} @60 fps 4:4:4 ^{*2}

Connectivity

USB	USB Type A (Reserved for future use) (2)
Control and Data	SFP+ (Ethernet network) ^{*3} (2)
	RJ-45 (Ethernet network) (1)
	RJ-45 (for serial control) (1)

Connectivity

Video Connectors (out)	12G-SDI (1) 3G-SDI (4), Display Port 1.2 (1), HDMI 2.0 (1) DVI ^{*4} / VGA ^{*4} / Component ^{*4} / YC ^{*4} / Composite video ^{*4}
Power	Medical grade power supply (AC-82MD) is optional
Display Control	RS-232 (RJ-45) serial interface for control to other devices and configuring the connected display ^{*5}

Functions

Encryption	SSL + AES128 with GCM rolling key scheme ^{*6}
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General

Power Requirements	+24 V DC
Input Current	2 A
Operating Temperature	0 °C to +40 °C (32 °F to 104 °F)
Operating Humidity	30% to 85% (No condensation allowed)
Operating Pressure	700 hPa to 1,060 hPa
Storage and Transport Temperature	-20 °C to +60 °C, -4 °F to 140 °F
Storage and Transport Humidity	20% to 90%
Storage and Transport Pressure	700 hPa to 1,060 hPa
Noise Level	28 dBA (20 °C (68 °F), 1 m)
Mass	1.2 kg (2 lb 10 oz)
Dimensions (W x H x D (excluding projection))	approx. 189 x 47 x 157 mm (approx. 7 1/2 x 1 7/8 x 6 1/4 inch)
Supplied Accessories	HDMI Cable Clamper (1) Before Using This Unit (1) CD-ROM (1) Service Contact List (1)

- *1. Optional license is required for 4K.
- *2. Support signal type, resolution and frequency are limited.
- *3. Optional SFP+ module is required.
- *4. Exchange adaptor is required.
- *5. Serial control is only supported on selected surgical display models. Contact nearest Sony dealer for details.
- *6. For proxy stream only.

Related products



NUA-BK30

IP Converter Bracket for NU-IP3R



NUCLeUS

The smart digital imaging platform for medical environments

Gallery



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