



# NU-IP3T

## IP Converter

### Transmits 4K\*1, HD, and SD\*2 video streams with a low latency of less than 1 frame\*3

The NU-IP3T converts medical imaging signals to IP data and transmits this IP data, including 4K\*1, HD, and SD\*2 video and control signals, to a variety of medical equipment\*4 in real time\*5. In a combination with the receiver, the NU-IP3R accepts 4K\*1 or HD visually lossless video data and with low latency of less than 1 frame\*3 through copper or fiber network interfaces. The unit supports three different outputs at the same time. A native video stream as a primary output is mainly used for live viewing by surgeons in the operating room. A bandwidth-optimized streams (so-called proxy stream) as a secondary output enables medical team in offices or lecture rooms to view the same surgical image as the surgeon in OR. The proxy stream is transported through the network backbone without a major risk for network congestion. Besides, the NU-IP3T offers a secure SSL + AES128 with GCM rolling key scheme encryption to protect privacy. A primary video stream as third output is always secured as a safety-line which is format independent and has standard 3G-SDI interface to the primary monitor.

\*1. Optional license is required for 4K.

\*2. SD video is sent as HD with black bars around.

\*3. This is for native stream. Based on Sony's internal testing. Latency varies depending on usage condition.

\*4. Please contact your nearest Sony dealer

\*5. Confirmed under Sony internal validation test.

## Key Features

### Support of Different Network Architectures

The NU-IP3T transmits any video stream from a connected medical device over a CAT5e or higher cable, or a fiber network cable. Copper cable can be used with the existing infrastructure under a low network load outside the OR. Fiber cable can be used if it is necessary to reduce electromagnetic interference artifacts (e.g., image distortion caused by electronic scalpels).

### Large Video Format Support\*4

The NU-IP3T supports SD\*2 via HD, up to 4K\*1@60fps 4:4:4\*6 video input.

### Data Safety

Data and command interfaces to the NU-IP3T are encrypted using SSL. Bandwidth optimized streams are always secured with AES128 encryption used with a GCM rolling key scheme. This prevents third-party eavesdropping, spoofing, data tampering. Encrypted communication between the transmitter, receiver and server ensures safe handling of information.

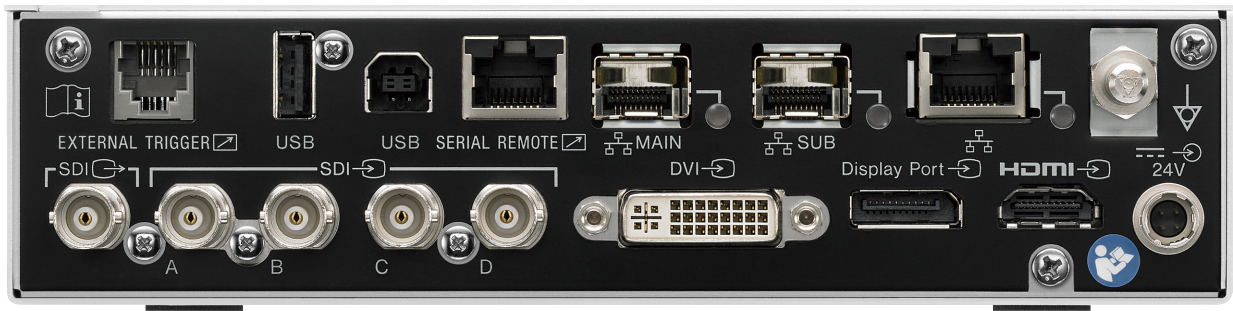
### Modality Control

During medical procedures, surgeons often capture still images or make a recording of the video for self-review, education purposes, and archiving. There are 'trigger' or 'print' buttons on most endoscopic devices, and some also support a foot-switch to control this functionality. The NU-IP3T is equipped with a GPIO interface to trigger start/stop commands to connected devices. Other input/output functions can be implemented via this interface.

### User Feedback

The digital operating room gives user feedback on various system levels. The system LED indicates whether the transmitter has power, and shows whether the unit is working properly. The system LED displays specific blinking patterns which indicate the loss of a network and the absence of an IP address, making it easy for users to diagnose any problem. Further status information is available via the OR controller or the system interfaces.

\*6. Support signal type, resolution and frequency are limited.



Rear Panel

## Specifications

### Video Specifications

Inputs	Up to 4K*1 @ 60 fps 4:4:4*2
Outputs	Native and proxy streams
Primary Output	3G-SDI safety line/SMPTE 424M

### Connectivity

USB	USB Type A (Reserved for future use) (1) USB Type B (Reserved for future use) (1)
Control and Data	SFP+ (Ethernet network) (2)*3 RJ-45 (Ethernet network) (1) RJ-45 (for serial control) (1) RJ-11 GPIO 5pin, GND 1pin (1)
Video Connectors (in)	3G-SDI (4K/HD) (4), DVI-I (1), Display Port 1.2 (1), HDMI 2.0 (1) VGA*4/Component*4/YC*4/Composite video*4
Power	Medical grade power supply (AC-82MD) is optional
Device Control	RS-232 (RJ-45) serial interface for control to other devices

### Functions

Encryption	SSL + AES128 with GCM rolling key scheme*5
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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	1.0 kg (2 lb. 3.2 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 in.)
Supplied Accessories	NUA-AA10 (Analog adapter) (1), 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. For proxy stream only

This product is distributed to EU as a medical device (Before the submission of 510(k) notice in US).

## Related Products

IP Converter (Receiver)

**NU-IP3R**

IP Converter 4K License

**NU-IP3TE**

Switching & Routing

Pro License

**NU-SR30E**

Pro+ License

**NU-SR30F**

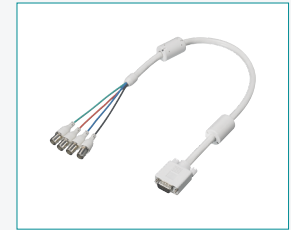
Network System Manager

**NU-NM30E**



AC Adaptor

**AC-82MD**



Signal Cable

**SMF-405**



SFP+ Transceiver Module

**OTM-10GSR1**

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