

iSwitch 2000HC-T

4K HDMI and USB-C AV over IP TX/Encoder

Datasheet V1.0



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1. INTRODUCTION

1.1 OVERVIEW

The **iSwitch 2000HC-T** encoders work with the decoders (**iSwitch 2000H-TR/ iSwitch 2000U-TR/ iSwitch 2000HC-R**) to deliver AV signals over standard Gigabit Ethernet networks. They support UHD resolutions up to 3840 × 2160 @ 60 Hz, 4:4:4. They provide end-to-end AV over IP solutions, enabling flexible routing of audio, video, USB, RS-232, and IR signals across networked AV systems.

With Dante support, the encoders integrate with Dante-enabled audio systems for flexible audio distribution. Supporting low-latency transmission and scalable system deployment, they are suitable for a wide range of professional AV applications, including classrooms, conference rooms, auditoriums, and other commercial environments.

Note: Dante license need to be purchased separately and activated. Dante is not activated by default.

1.2 FEATURES

- Includes one **HDMI** input and one **USB-C** inputs, with support for Auto, Manual and Priority input switching modes.
- Features **three Ethernet ports**, any one of which can be used to transmit A/V streams, control data, and Dante audio streams.
- Supports input and output resolutions up to **3840 x 2160@60Hz 4:4:4**.
- Supports **HDR10** and **Dolby Vision**.
- Supports **CEC**.
- Supports **multi-channel audio** up to PCM 7.1, Dolby Atmos, DTS HD Master and DTS:X.
- Configurable audio input/output direction.
- HDMI **eARC** audio return.
- **HDCP 2.2/2.3** compliant.
- Flexible routing of **audio, video, USB, RS-232 and IR** signals independently or together throughout the matrix system.
- Extends **audio, video, USB, RS-232, IR, and power** signals up to **328 ft (100 m)** over a single Cat 5e (or higher) cable.
- Supports **bidirectional RS-232** communication.
- Supports **bidirectional IR** passthrough for controlling remote source and display devices between encoders and decoders.
- Supports IR generation, allowing IR codes to be sent through the API.
- Supports **point-to-point, point-to-multipoint, multipoint-to-point, multipoint-to-multipoint** applications.
- Supports **PoE**, allowing the device to be remotely powered by compatible power source equipment such as a PoE-enabled Ethernet switch, eliminating the need for a nearby power outlet.
- Supports **DHCP** by default, and falls back to Auto-IP if no DHCP server is available in the system.
- Supports control via **Telnet API** or an IP controller (**iSwitch 2000-CTL**).
- Supports the **Telnet, SSH, HTTP, and HTTPS** protocols.



- Supports **2-channel Dante** transmit and 2-channel Dante receive audio streams when Dante is licensed (**default: Dante unlicensed**).

1.3 PACKAGE CONTENTS

- 1 x iSwitch 2000H-T Encoder Unit
- 1 x 20V DC 6A Power Adapter (US/EU/UK/AU)
- 1 x 3.5mm 3-pin Phoenix Male Connector
- 1 x IR Emitter (3.94ft/1.2m)
- 1 x Broadband IR Receiver (3.28ft/1.0m, 30–50kHz)
- 4 x Wall-Mount Brackets
- 4 x Screws

1.4 SPECIFICATIONS

Video	
Input Video Port	1 x USB-C; 1 x HDMI Type A (19 pins)
Input Video Type	HDMI 2.0, HDCP 2.2/2.3
Input Resolutions	3840 x 2160p@24/25/30/50/60Hz 4:4:4, 1920 x 1200@50/60Hz, 2400x1350p@60Hz, 1920 x 1080p@24/25/30/50/60/100/120Hz, 1920 x 1080i@50/60Hz, 1680 x 1050@60Hz, 1600 x 1200@60Hz, 1600 x 900@60Hz, 1400 x 1050@60Hz, 1440 x 900@60Hz, 1366 x 768@60Hz, 1360 x 768@60Hz, 1280 x 1024@60Hz, 1280 x 960@60Hz, 1280 x 800@60Hz, 1280 x 768@60Hz, 1280 x 720p@60/100/120Hz, 1024 x 768@60Hz, 800 x 600@60Hz, 720 x 576p@50Hz, 720 x 480p@60Hz, 640 x 480p@60Hz
Output Video Port	2 x RJ-45; 1 x Optical; 1 x HDMI Type A (19 pins)
Output Video Type	IP Stream; HDMI 2.0, HDCP 2.2/2.3
Output Resolutions	Up to 3840 x 2160p@60Hz 4:4:4
Average Encoding Data Rate	3840 x 2160@60Hz: 650Mbps (avg) / 900Mbps (max)
Input/Output Video Signal	0.5~1.2 V p-p
Input/Output DDC Signal	5 V p-p (TTL)
Video Impedence	100 Ω
Maximum Data Rate	18 Gbps (6 Gbps per color)
Maximum Pixel Clock	600 MHz

Audio	
Input Audio Port	1 x USB-C; 1 x HDMI Type-A; 1 x 3.5mm stereo jack (configurable)
Input Audio Signal	• HDMI/USB-C IN: Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X • AUDIO IN: Analog
Output Audio Port	2 x RJ-45; 1 x Optical; 1 x HDMI; 1 x S/PDIF Out; 1 x 3.5mm stereo jack (configurable)
Output Audio Signal	• LAN/HDMI: Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X • S/PDIF Out: Digital audio • AUDIO OUT: Analog
Dante Audio Type	LPCM 2.0, 44.1/48/88.2/96 KHz

Audio	
Input Audio Port	1 x USB-C; 1 x HDMI Type-A; 1 x 3.5mm stereo jack (configurable)
Input Audio Signal	- HDMI/USB-C IN: Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X - AUDIO IN: Analog
Output Audio Port	2 x RJ-45; 1 x Optical; 1 x HDMI; 1 x 3.5mm stereo jack (configurable)
Output Audio Signal	- LAN/HDMI: Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X - AUDIO OUT: Analog
Dante Audio Type	LPCM 2.0, 44.1/48/88.2/96 KHz
Control	
Control Method	Telnet API, IP Controller (iSwitch 2000-CTL)
General	
Operating Temperature/ Humidity	32°F – 113°F (0°C – 45°C), 10% – 90%, non-condensing
Storage Temperature/ Humidity	-4°F – 158°F (-20°C – 70°C), 10% – 90%, non-condensing
ESD Protection	Human body model: ±8kV (air-gap discharge) / ±4kV (contact discharge)
Power Supply	20V DC 6A; PoE
Power Consumption	- No load: 6W - Typical: 9.8W (device only) - Max.:73W (with 60W USB-C PD output)
Device Dimension (W x H x D)	8.46" x 0.98" x 6.30" (215 mm x 25 mm x 160 mm)
Net Weight	2.22lbs (1.01kg)

2. PANEL OVERVIEW

2.1 FRONT PANEL

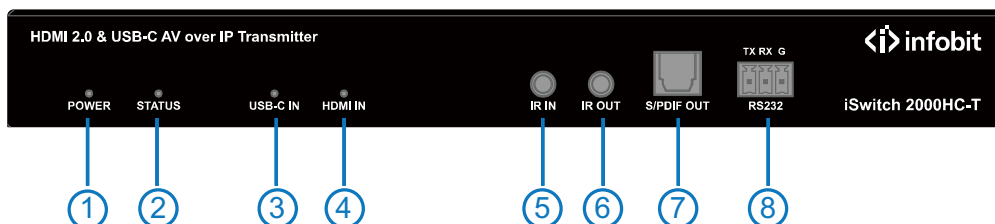


Figure 1: Front Panel

#	Name	Description
1	POWER LED	On: The device is powered on. Blinking: The device is booting. Off: The device is powered off.

#	Name	Description
2	STATUS LED	On: The device is working properly. Blinking: The device is connected to the network but doesn't detect valid signal input. Blinking slowly: The device is being upgraded. Blinking rapidly: The Find me function is activated through the control API to help locate a specific device. For more information, refer to the API documentation. Off: The device is not connected to the network.
3	USB-C IN LED	On: The corresponding input channel is selected, and a valid A/V signal is detected. Blinking: The corresponding input channel is selected, and there is a 5V signal input, but no valid A/V signal is detected. Off: The corresponding input channel is not selected. / The corresponding input channel is selected but no 5V signal is detected.
4	HDMI LED	
5	IR IN	3.5mm TRS jack. Connect to an IR receiver for IR communication with an IR emitter at the decoder side on the network.
6	IR OUT	3.5mm TS jack. Connect to an IR emitter that is with 5V output for IR communication with an IR receiver at the decoder side on the network.
7	S/PDIF OUT	Optical S/PDIF connector. Connect to an audio receiver for digital audio output.
8	RS232	3-pin phoenix connector. Connect to an RS-232 device for directional RS-232 communication.

2.2 REAR PANEL

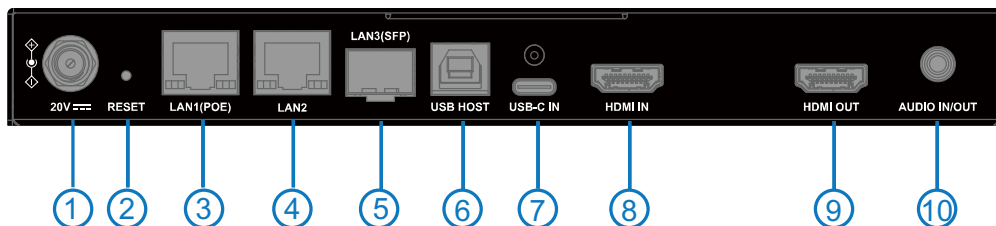


Figure 2: Rear Panel

#	Name	Description
1	20V	20V DC power connector. Connect to included power adapter for power input.
2	RESET	Press and hold the recessed button for at least five seconds, then release to restore the device to its factory default settings. Note: Restoring factory default settings erases all configurations and custom data. Back up any important settings before proceeding.
3	LAN1 (POE)	By default, use one of the following ports to connect the device to an Ethernet switch for transmission of A/V streams, Dante audio streams, and control data: LAN1 (POE), LAN2, or LAN3 (SFP). LAN1 (POE) - Supports PoE. LAN2 - When configured as an independent Dante port, LAN2 is used for Dante audio transmission, while LAN1 (POE) or LAN3 (SFP) is used for A/V streams and control data. LAN3 (SFP) - Connect this optical port to a Gigabit Ethernet switch using a single-mode or multimode SFP module.
4	LAN2	
5	LAN3 (SFP)	

#	Name	Description
		- SFP module is not included. - The maximum transmission distance depends on the specifications of the installed SFP module. IMPORTANT: - By default, connect only one of the LAN1 (POE), LAN2, or LAN3 (SFP) ports to an Ethernet switch. - When LAN2 is configured as an independent Dante port, LAN2 can be connected to a dedicated Dante network, while either LAN1 (POE) or LAN3 (SFP) can be used for A/V streams and control data. Do not connect both LAN1 (POE) and LAN3 (SFP) simultaneously, as this may cause unexpected network behavior.
6	USB HOST	USB Type-B port. Connect to a PC for USB 2.0 extension.
7	USB-C IN	USB 3.0 Type-C port. Connect to a USB-C source. This port supports DP 1.3, HDMI 2.0, USB 2.0, and up to 60W PD (power delivery). Note: Charging the connected peripheral device is available only when the unit is powered by a DC power supply rather than PoE.
8	HDMI IN	19-pin HDMI Type-A port. Connect to an HDMI source. This port supports HDMI 2.0b, HDCP 2.3 and bandwidth up to 18Gbps.
9	HDMI OUT	19-pin HDMI Type-A port. Connect to an HDMI display.
10	AUDIO IN/OUT	3.5mm TRS port for unbalanced stereo input or output. This port can be configured as AUDIO IN or AUDIO OUT. • AUDIO IN: Connect to an audio source for audio input. • AUDIO OUT: Connect to an audio receiver for audio output. Default: AUDIO OUT

3. SYSTEM CONNECTION

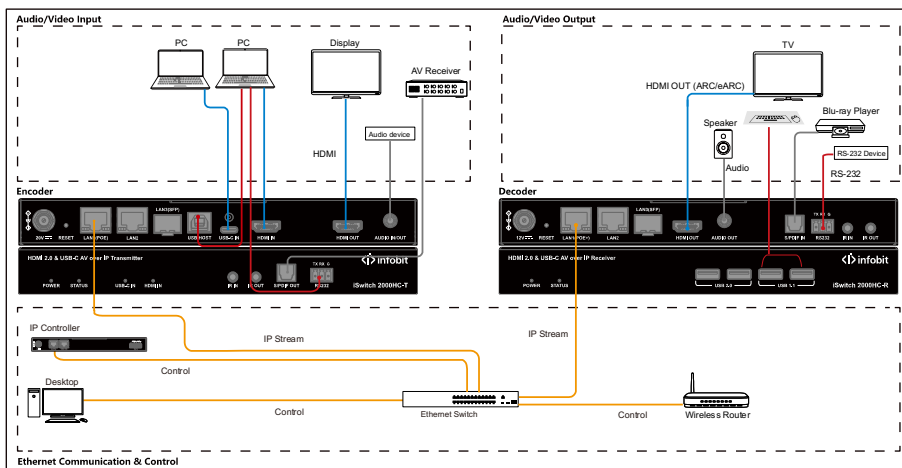


Figure 3: Basic System Connection

Notes

- If the Ethernet switch doesn't support PoE, connect each encoder and decoder to its corresponding power adapter.
- The **HDMI OUT** port on the decoder supports ARC/eARC for returning audio from a connected TV.

- The **AUDIO IN/OUT** port on TX can be configured as an audio input or output.
- The SPDIF ports support digital audio transmission between the encoder and decoder.

4. TYPICAL APPLICATIONS

4.1 VIDEO WALL APPLICATION

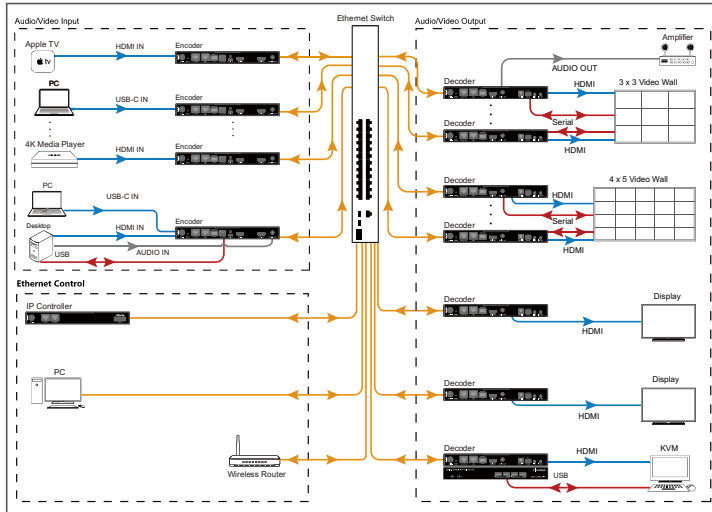


Figure 4: Video Wall Application

4.2 MULTI-ROOM AV DISTRIBUTION

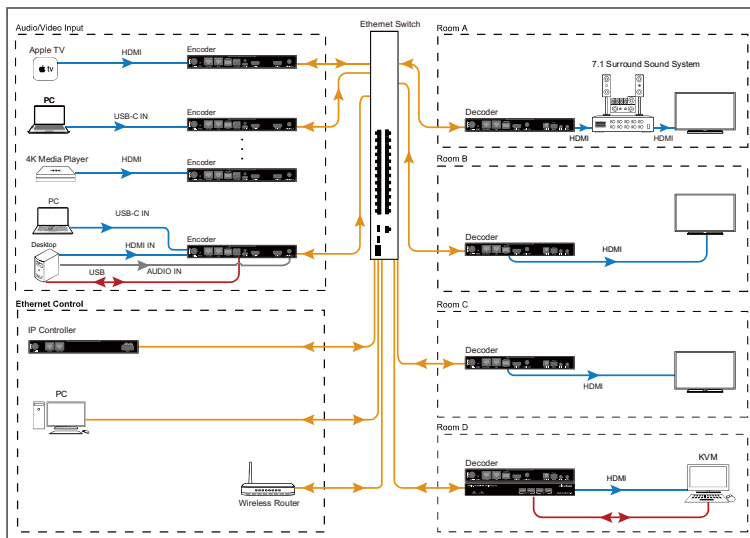


Figure 5: Multi-Room AV Distribution

4.3 DANTE AUDIO DISTRIBUTION

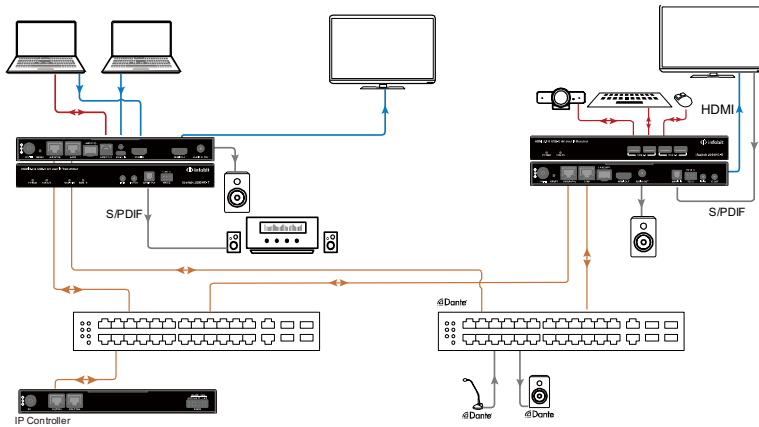


Figure 6: Dante Audio Distribution

Note: LAN 1 (PoE) / LAN 3 carries A/V and control data. LAN 2 carries Dante audio and connects to a dedicated Dante network. The Ethernet ports connect to separate networks.