

# Q-SYS NV-21-HU

## Native Network Video Endpoint for Q-SYS

### KEY FEATURES

- Single cable solution for video distribution, AV bridging, and device charging<sup>1</sup>
- Native HDMI video and audio distribution for Q-SYS
- Q-SYS Shift™ adaptive video compression
- Software configurable as an encoder or decoder
- Dual Streaming via HDMI and USB-C
- Q-SYS AV Bridging feature license



The Q-SYS NV Series NV-21-HU enables native video distribution on the Q-SYS Platform. The NV-21-HU is a software configurable endpoint offering a comprehensive single-cable solution for video distribution, AV bridging, and device charging via USB-C. The NV-21-HU's compact size and reduced I/O make it ideal for supporting meeting rooms, learning spaces, hospitality and entertainment installations. The NV-21-HU can be used alongside other Q-SYS NV Series video endpoints, providing system design flexibility. Like all Q-SYS products, the NV-21-HU offers native integration and control, simplifying configuration and operation.

### SINGLE CABLE SOLUTION

The Q-SYS NV-21-HU simplifies the user experience and intuitively supports a wide range of devices. A single USB-C connection to the NV-21-HU enables a user's device to distribute video formats up to 4K60 4:4:4 via Q-SYS Shift™ video codec, integrates Q-SYS network camera and audio feeds into a supported collaboration application and charges their device simultaneously<sup>1</sup>.

### MAXIMIZE FLEXIBILITY IN DESIGN & SPECIFICATION

The NV-21-HU is software-configurable as an encoder or decoder in Q-SYS Designer Software and offers the ability to operate in either HDMI or USB-C mode, supporting a broader range of user devices without adapters or converters. In addition, the integrated AV Bridging capability eliminates the need for additional hardware and infrastructure to connect Q-SYS network cameras and audio feeds to a UC application.

- **HDMI Mode:** In HDMI mode, the NV-21-HU enables video distribution from the HDMI input and uses the USB-C connection to offer AV bridging and device charging.
- **USB-C Mode:** In USB-C mode, the NV-21-HU enables video distribution, AV bridging and device charging via the USB-C connection.
- **Dual Streaming Support (when set as encoder):** In dual streaming mode, the NV-21-HU enables both the HDMI in and USB-C to encode separate video streams to the network (1080p maximum resolution). Supported in Q-SYS Designer Software v9.10 and later.
- **Mediacast Mode:** Optional Mediacast Mode allows for use in same design along NVM Series network video encoders and decoders, supporting video formats up to 1080p30 4:2:0.

### RIGHT-SIZED

The NV-21-HU provides designers with a more compact endpoint within the NV Series. The smaller design and reduced I/O (compared to the Q-SYS NV-32-H) enable simple and scalable designs across various applications, including meeting rooms, learning spaces, hospitality, and entertainment installations.

### DESIGNED FOR Q-SYS

Q-SYS NV Series network video endpoints are native to Q-SYS, which is powered by the Q-SYS OS; this software foundation manages NV Series endpoints and all other Q-SYS Products from a single application. The Q-SYS Platform's modern IT architecture and development tools enable an entire ecosystem of third-party integrations developed by approved Q-SYS Partners and a worldwide community of developers using the available tools found in Q-SYS Open.

<sup>1</sup>. An external power supply is required for any device charging over the USB-C connection. NV-21-PSU available separately.

## CONTROL

- **RS-232:** Three Pin Euro terminal connection to control third-party devices with Q-SYS Control, user-configurable.

## USB

- **USB HID control:** Control host PCs with a USB connection using USB HID components in Q-SYS Designer Software.
- **Q-SYS AV Bridging:** The Q-SYS AV Bridging feature licenses expands the functionality of the NV-21-HU, allowing users to connect their devices via USB-C directly to the network video endpoint to integrate Q-SYS audio and camera feeds for remote meetings easily. The NV-21-HU emulates a webcam (for video streams from Q-SYS network cameras), a speakerphone, and a multi-channel soundcard over a single driverless USB connection.

## AUDIO

- **HDMI Audio Input:** Receive up to 8 channels of PCM audio from your video source, which are routable within Q-SYS Designer Software.
- **USB-C Audio Input:** Receive up to 8 channels of PCM Audio from your video source, which are routable within Q-SYS Designer. Additional 1x1 Speakerphone and 2x2 Soundcard options are available with the Q-SYS AV Bridging feature licenses<sup>1</sup>.
- **HDMI Audio Output:** Embed up to 8 channels of PCM audio from Q-SYS to the HDMI output of the NV-21-HU to utilize the built-in speakers of a display as a Q-SYS audio destination for source audio content or any other audio, including paging, background music, etc.

## SECURITY AND AUTHENTICATION

- **AES-128:** NV Series supports AES-128 encryption for audio and video signals from encoders to decoders
- **Content Protection:** HDCP 1.4 & HDCP 2.3 complaint
- **802.1x:** 802.1x authentication is available and configurable through Q-SYS Peripheral Manager

## Q-SYS SHIFT™ ADAPTIVE BITRATE CODEC

Q-SYS Shift™ video compression provides high-quality, low-latency video streaming, supporting video formats up to 4K60 4:4:4 over a standard gigabit network. Q-SYS Shift™ leverages DCT and temporal compression technologies, much like those found in H.264 and H.265 video compression codecs. Q-SYS optimized Shift™ to provide flawless image quality from the most demanding content sources. Further, Shift™ intelligently manages and optimizes the resulting network bitrate by only refreshing changes within each frame, allowing for significantly reduced bandwidth usage as compared to other compression codecs.

- **Modes:** Multicast and Unicast
- **Bitrates:** 10 Mbps - 800 Mbps
- **Streaming Protocol:** RTP

## SCALER

The NV-21-HU features a robust 4K60 4:4:4 scaler that can accommodate the most challenging resolution and frame rate conversions from network streams or local HDMI and USB-C sources. The scaler is capable of operating in three modes (configurable within Q-SYS Designer Software):

- Stretch-to-fit
- Maintain aspect ratio
- 1:1 pixel mappin

## SUPPORTED VIDEO FORMAT

| Codec                                                                                               | Network Stream Resolution | Frame rate (Hz)                  | Chroma sampling level | Bit Depth |
|-----------------------------------------------------------------------------------------------------|---------------------------|----------------------------------|-----------------------|-----------|
| Q-SYS SHIFT®<br>(All video formats are progressive; 4:2:0 Chroma subsampling and HDR not supported) | 3840 × 2160 (4K UHD)      | 60, 59.94, 50, 30, 29.97, 25, 24 | 4:4:4                 | 8 bit     |
|                                                                                                     | 3440 × 1400               | 60                               | 4:4:4                 | 8 bit     |
|                                                                                                     | 2560 × 1600               | 60                               | 4:4:4                 | 8 bit     |
|                                                                                                     | 2560 × 1440               | 60                               | 4:4:4                 | 8 bit     |
|                                                                                                     | 2560 × 1080               | 60, 59.94, 50, 30, 29.97, 25, 24 | 4:4:4                 | 8 bit     |
|                                                                                                     | 1920 × 1200               | 60                               | 4:4:4                 | 8 bit     |
|                                                                                                     | 1920 × 1080 (1080 p)      | 60, 59.94, 50, 30, 29.97, 25, 24 | 4:4:4                 | 8 bit     |
| Mediacast                                                                                           | 1920 × 720 (720 p)        | 60, 59.94, 50, 30, 29.97, 25, 24 | 4:4:4                 | 8 bit     |
|                                                                                                     | 640 × 480                 | 60                               | 4:4:0                 | 8 bit     |
|                                                                                                     | 1920 × 1080 (1080 p)      | 30, 29.97, 25, 24                | 4:2:0                 | 8 bit     |
|                                                                                                     | 1920 × 720 (720 p)        | 30, 29.97, 25, 24                | 4:2:0                 | 8 bit     |
|                                                                                                     | 640 × 480                 | 30                               | 4:2:0                 | 8 bit     |

## CONNECTORS

- **Power In:** Two-pin euroblock terminal connection for an external 12 V DC, 9 A power supply (not included, NV-21-PSU available separately). **An external power supply connection is required for any device charging over the USB-C connection.**
- **POE/LAN:** Connection to Q-LAN network; includes PoE Type 3, Class 5 capability via a network switch or midspan injector. **When powered via PoE, the NV-21-HU cannot charge devices over the USB connection.**
- **USB-A:** Supports USB HID Routing (5 V DC 900 mA)
- **RS-232:** Three-pin euroblock terminal connection for extension of the Q-SYS Control Engine to third-party devices.
- **USB-C:** USB-C connection capable of receiving alt-mode DisplayPort video formats up to 4K60 4:4:4, Q-SYS Audio and Video Bridging and device charging up to 65 W. **An external power supply is required for any device charging over the USB-C connection.**
- **HDMI IN:** HDMI connection capable of receiving video formats up to 4K60 4:4:4, up to 8 channels PCM Audio from a connected source.
- **HDMI OUT:** HDMI connection capable of transmitting video formats up to 4K60 4:4:4, up to 8 channels PCM Audio to a connected output.
- **Simple Mounting:** Optional surface mounting brackets (included) provide installers with multiple options to optimize airflow in various installation scenarios. Mounting options and installation instructions are available in the hardware user guide.

<sup>1</sup>Not supported at initial release, please use the 2x2 USB Soundcard for USB-C audio routing.

## VIDEO I/O

|                        |                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| HDMI 2.0 input         | 1x HDMI 2.0, capable of receiving input video formats up to 4K60 4:4:4                                                           |
| USB-C input            | USB 3.2 Gen 1x1 (5Gbps) Type-C Device Port<br>- supporting DisplayPort Alt-Mode (DP 1.4 Sink)<br>- USB Power Delivery up to 65 W |
| HDMI 2.0 output        | 1x HDMI capable of scaling and outputting video formats up to 4K60 4:4:4                                                         |
| Scaler                 | HDMI output features a robust 4K60 4:4:4 scaler that can accommodate the most challenging resolution and frame rate conversions. |
| Supported video codecs | <b>Q-SYS Shift™:</b> Up to 4K60 4:4:4 (Up to 1080p60 4:4:4 for dual streams)<br><b>Mediacast:</b> Up to 1080p30 4:2:0            |

## AUDIO I/O

|                  |                                                                      |
|------------------|----------------------------------------------------------------------|
| HDMI inputs      | 8-channel PCM audio, Q-SYS routable                                  |
| USB Type C input | 8-channel PCM audio, 1x1 speakerphone, 2x2 soundcard, Q-SYS routable |
| HDMI output      | 8-channel PCM audio, Q-SYS routable                                  |

## OTHER CONNECTORS

|                        |                                                                                                                                                                                                                                                                                                                                  |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USB Type C input       | <b>AV Bridging:</b> Route Q-SYS network camera and audio feeds to a host via USB connection.<br>- Supports resolutions up to 1920x1080p30 YUY2 for UC&C YUY2 and HD YUY2 video formats<br><b>Device Charging:</b> Supports charging up to 65 Watts (requires an external power supply)<br>- 3A: 5V, 9V, 12V, 15V<br>- 3.25A: 20V |
| USB Type A input       | USB HID Routing<br>- 5 V DC 900 mA                                                                                                                                                                                                                                                                                               |
| LAN                    | 1000BASE-T, 2.5GBASE-T compliant                                                                                                                                                                                                                                                                                                 |
| Power Over Ethernet    | PoE Type 3, Class 5 (40W at PD, 45W at PSE) <sup>1</sup>                                                                                                                                                                                                                                                                         |
| Auxiliary Power Supply | 12 V DC 10 A Power Supply NV-21-PSU sold separately<br>90 W PoE injector POE-90W-PSU sold separately                                                                                                                                                                                                                             |

## GENERAL

|                    |                                                                                                                                 |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Dimensions         | 7.3 × 5.2 × 1.2 in (185 × 131.5 × 30.5 mm)                                                                                      |
| Weight             | 1.75 lbs (794 g)                                                                                                                |
| Mounting options   | Flexible surface mounting hardware included                                                                                     |
| What's in the box? | NV-21-HU video endpoint<br>Euro Terminal connector for RS-232<br>Surface mounting accessories<br>Safety and warranty statements |

## ENVIRONMENTAL

|                                                                      |                             |
|----------------------------------------------------------------------|-----------------------------|
| Ambient operating temperature range                                  | 0° to 40° C                 |
| Humidity                                                             | 5 to 90 RH % non-condensing |
| Storage temperature                                                  | -20 to 70° C                |
| Expected Product lifecycle                                           | 10 years                    |
| Thermal dissipation                                                  |                             |
| Without device charging over USB-C (PoE or aux power) @ 25°C ambient | 30 W max (102 BTU/hr)       |
| With device charging over USB-C (aux power) @ 25°C ambient           | 35 W max (119 BTU/hr)       |

NV-21-PSU (SOLD SEPARATELY)

|                           |                                                |
|---------------------------|------------------------------------------------|
| Output power              | 120 W                                          |
| Output voltage            | 12.0 V                                         |
| Output current            | 10.0 A                                         |
| Input                     | 2 A @ 115 VAC / 1 A @ 230 VAC                  |
| BTU usage/heat generation | 18 W                                           |
| PS dimensions (L x W x H) | 6.61 × 2.80 × 1.48 in (168.0 × 71.0 × 37.5 mm) |
| Cable length              | 47.24 in (1.2 m)                               |
| Output connector          | 2-position 5.08mm-pitch Euroblock connector    |
| Power supply weight       | 1.27 lbs (580 g)                               |

