TNET-ENC-C211-DA

1G 4K60 AVoIP Encoder with Dante AV

Version: TNET-ENC-C211-DA_2025V1.3

Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different models and specifications are subject to real product.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated till Oct 2025. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user’s authority to operate the equipment.

SAFETY PRECAUTIONS

To ensure the best performance from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to people.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration, or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with good ventilation to avoid damage caused by overheating.
- Keep the module away from liquids.
- Spillage in the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical waste.

Table of Contents

1. Product Introduction

The T-Network series includes two encoder models and one decoder model, making it ideal for both small- and large-scale AV over IP applications, such as hospitality environments, universities, and BYOM (Bring Your Own Meeting) rooms. The series supports 4K60 4:4:4 video over Gigabit networks with sub-frame latency. It also features USB 2.0 data passthrough for BYOM or interactive applications, along with advanced security and networking capabilities, including advanced VLAN tagging, 802.1x authentication, HTTPS, and LDAP integration.

The TNET-ENC-C211-DA encoder includes a USB-C input, alongside the HDMI input, that supports 4K60 4:4:4 video, USB 2.0 data, and up to 100W power delivery (requires an external power supply).

1.1 Features

- Supports resolutions up to 4096x2160 at 60Hz with 4:4:4 chroma subsampling
- USB-C input with DisplayPort Alt mode support
- 100W PD over USB-C, requires an external power supply.
- Operates over 1G LAN
- Dante AV enabled, with Dante 2-channel audio and one video stream
- Sub-frame latency for seamless performance
- Audio embedding and de-embedding support
- Video wall configurations up to 16x16
- USB 2.0 support with mouse roaming functionality
- Power options: PoE+, PoE++, or DC power adapter
- Web-based user interface (WEB UI) and direct control API
- Networking and security protocols: 802.1Q VLAN tagging, HTTPS, SSL/TLS, SSH, 802.1x, IPv6, SNMP, LDAP, and LLDP

1.2 Package List

- 1x TNET-ENC-C211-DA
- 2x Mounting ears with 4 screws
- 1x 5-pin black terminal block
- 1x 3-pin black terminal block + IR Emitter
- 1x 2-pin black terminal block + IR Receiver
- 1x 3-pin black terminal block
- 4x Rubber feet
- 1x User Manual

Note: *Please contact your distributor immediately if any damage or defect to the components is found.*

1.3 Customer Service

TiGHT AV provide a limited warranty for the product within **five years** counting from date of purchase (The purchase invoice shall prevail).

For more information see TiGHT AV general Warranty Statement at https://tightav.com/warranty-statement or just scan the QR-code below.

SCAN ME

2. Specification

VIDEO	
Digital Video Inputs	HDMI 2.0 USB-C, DisplayPort alt mode 1.0, DisplayPort 1.4a
Digital Video Output	Streaming video via RJ45, Dante AV-A or TNET Video Stream Local HDMI 2.0 output
Max Resolution	4096x2160P 4:4:4
HDR	HDR10/HLG/HDR10+/Dolby Vision support
HDCP Support	HDCP 2.3/1.x
Color Space Support	RGB, YCbCr
Deep Color Support	1080p and under: 24, 30, 36 bpp 2160p YUV444: 24 bpp 2160p YUV422: 24/30/36 bpp
EDID	Passthrough, Predefined or Custom EDID
Compression Standard	AGIC3, Visually Lossless Compression
Encryption	TNET Video Stream: AES256 Dante AV-A
Bandwidth	4K Peak: 850Mbps +- 20 Mbps 4K Average: 442 Mbps 1080P Average: 187Mbps
Latency Encode-Decode	ULL Mode (Ultra Low Latency): 2160p60Hz: 2ms Normal Mode: 2160p60Hzs: 16ms 2160p30Hz: 33ms 1080p60Hz: 16ms 720p60P: 16ms 1080i30Hz: 33ms Scaling will not add additional latency* *Rotation CW 90 and 270 will introduce 1 extra frame latency.
Input Switching Time	5s

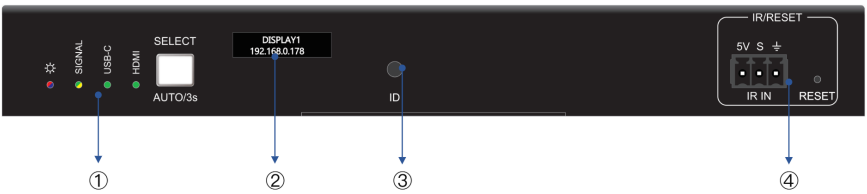
AUDIO	
Input Signal Types	Embedded audio on HDMI or USB-C Dante Audio Analog Stereo (Balanced or Unbalanced)
Output Signal Types	Analog Stereo (Balanced or Unbalanced) Dante Audio and/or TNET Audio Stream
HDMI Embedded Audio Formats	PCM 2.0
Analog Audio Format	LPCM 2.0
Dante Audio Format	LPCM only
Dante Audio Sample Rate	44.1, 48, 88.2, 96 kHz
ANALOG AUDIO PERFORMANCE	
Frequency Response	20Hz - 20kHz, ±0.5dB
S/N Ratio	>90 dB 20 Hz -20 kHz (0dB gain) A-weighted
THD +N	< 0.01% 1 kHz
Stereo Separation	> 90 dB
Volume	- 80 to 0 dB
Delay	0-170ms
USB	
USB HOST	USB 2.0 Type B port or USB-C Port
Support	USB 2.0
USB Virtual Hub	1 level virtual USB 2.0 hub (maximum 7 USB Devices)
PORTS	
Power	1x 4-pin DC Power Connector
LAN1 PoE+/PoE++	8-wire RJ45 port 10/100/1000 Mbps 10/100/1000Base-T auto-sensing gigabit Ethernet switch port VLAN tagging
LAN2	8-wire RJ45 port 10/100/1000 Mbps 10/100/1000Base-T auto-sensing gigabit Ethernet switch port Supports PoE/PoE+ Pass-through if LAN1 is provided PoE++ VLAN tagging
IR IN (front panel)	3-pin terminal Phoenix connector. Provides Infrared (IR) input only and passes signal back to connected decoder (33-60 kHz; typically, 39 kHz)
IR OUT	2-pin terminal Phoenix connector Provides Infrared (IR) output only (33-60 kHz; typically, 39 kHz).
RS232	3-pin terminal Phoenix connector. Full duplex communication. Baud Rate: 2400, 4800, 9600(default), 19200, 38400, 57600, 115200

AUDIO	5-pin terminal Phoenix connector which provides user-selectable balanced/unbalanced input or output
HDMI OUT	HDMI video output (Loop-out from HDMI IN or USB-C IN)
HDMI IN	HDMI video input
USB-C IN	USB-C Video and USB Host, locking
USB HOST	USB 2.0 Type B Host port to be combined with HDMI
Power	
Optional Power Supply	DC24V 6.5A power adapter or PoE++/PoE+
PoE	POE+ (802.3at), PoE++ (802.3at) for PoE/PoE+ passthrough
POE Pass-through (LAN2)	POE (802.3af), POE+ (802.3at). LAN1 require PoE++ (802.3at)
Max power consumption (no USB-C PD)	16.9W(Max)
Max power consumption (USB-C PD)	6.4W
ENVIRONMENTAL	
Operating Temperature	-5°C ~ +55°C
Storage Temperature	-20°C ~ +70°C
Humidity	10 - 90% RH (non-condensing)
Heat Dissipation	26.5 BTU/hr (Typical) 48.7 BTU/hr (Max)
Cooling	Fan (User Configurable) Auto, OFF, Ultra Low, Low, Medium, High, Super high
Noise Level at 1m	Fan Settings • OFF: 3.7 dB • Ultra Low (2700 RPM): 9.8 dB • Low (3900 RPM): 16.2 dB • Medium (5000 RPM): 22.4 dB • High (6000 RPM): 27.3 dB • Super High (6300 RPM): 29.0 dB
GENERAL	
Product Dimensions	196 x 165 x 25 mm
Product Weight	805g
Shipping Weight	1050g
SUBSTREAM MJPEG	
Resolution Support	1280x720, 960x540, 640x360
Frame Rate	15, 20, 25, 30
Bitrate Range	Default/target consumed network bandwidth is < 8Mbps
Streaming Protocols	Motion-JPEG format (MJPEG)
PROTCOLS	
Video Streaming	RTSP Multicast, RTSP Unicast, IGMPV2 or IGMPV3
Audio Streaming	AES67, Dante

Addressing	DHCP or Static IP
Encryption	AES256
Discovery	Broadcast, mDNS, Node Query
Authentication	IEEE 802.1x
Other Supported Protocols	SNMP, MQTT, LLDP, LDAP, HTTPS, SSH, SSL/TLS
INDICATORS AND CONTROL	
POWER	Illuminates red when power off, illuminates blue when power on.
SIGNAL	Illuminates green when there is a valid video signal; Illuminates yellow when streaming with no source image (No valid signal).
HDMI	Illuminates green when the corresponding source is selected.
USB-C	Illuminates green when the corresponding source is selected.
SELECT	Press and hold 3s to toggle between manual and auto switching modes. Short press to switch input source: USB-C/HDMI
ID-Button	Multi-purpose button, refer to manual
RESET	Factory reset
Control	WEB UI, Open API via Ethernet or RS-232, Dante Controller, DDM, Dante Director, Front panel

3. Panel Description

3.1 Front Panel



① **LED Indicators and Buttons:**

- **Power LED:** Blinks red during boot-up; illuminates red when powered off; illuminates blue when powered on.
- **Signal LED:** Illuminates green when a valid video signal is detected; illuminates yellow when streaming without a source image (no valid signal).
- **USB-C & HDMI LED:** Illuminate green when the corresponding input source is selected.

- **Select Button:** Press and hold for 3 seconds to toggle between manual and automatic switching modes; short press to switch between USB-C and HDMI input sources.

② **OLED Display:** Displays information configured in the web UI. By default, it shows the device name and IP address. If more than two items are selected in the web UI, the display loops through the information two rows at a time.

③ **ID Button:** Used to enable or disable the "Display Always On" function and to switch IP address modes.

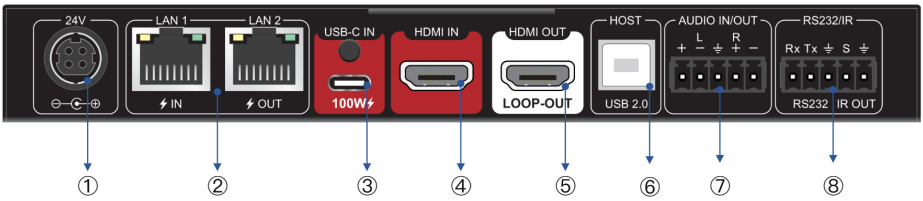
- In the default state, the display shows the device name and IP address (configurable in the web UI) and remains always on.
- Press and hold for 3 seconds to disable the "Display Always On" function; in this mode, a short press on the ID button temporarily displays the configured information from the web UI.
- Press and hold for 10 seconds to switch between DHCP and Static IP modes.

④ **IR IN:** 3-pin terminal block for connecting an IR sensor.

⑤ **Reset:** Used for rebooting or performing factory resets.

- Short press: Reboots the unit.
- Press and hold for 3 seconds: Performs a factory reset while retaining IP settings.
- Press and hold for 10 seconds: Performs a full factory reset, including resetting IP settings to DHCP (default)

3.2 Rear Panel



① **DC24V:** 1x Power port for connecting to a 24V/6.5A DC power adapter (sold separately)

② **NETWORK:**

- LAN1: 1x RJ45 port supporting PoE+/PoE++, 10/100/1000 Base-T, half/full duplex, auto-negotiation, and VLAN.
- LAN2: 1x RJ45 port supporting 10/100/1000 Base-T, half/full duplex, auto-negotiation, VLAN, and PoE/PoE+ passthrough.

③ **USB-C IN:** 1x USB-C input

- Supports DisplayPort Alt Mode and DisplayPort 1.4 with HBR3.
- Video capabilities: 4K@60Hz 4:4:4, HDCP 2.3/1.x, HDR10, HLG, HDR10+, and Dolby Vision.
- USB 2.0 host passthrough to the USB-C input (switches with video).
- Power delivery: Up to 100W (requires local power supply for USB-C charging).
- Includes a screw hole to secure the USB-C connector (USB-IF standard).

④ **HDMI IN:**

- **1x HDMI 2.0 input:** Video capabilities: 4K@60Hz 4:4:4, 18Gbps bandwidth, HDCP 2.3/1.x, HDR10, HLG, HDR10+, and Dolby Vision.

⑤ **Loop out:** 1x HDMI 2.0 loop-out port.

⑥ **USB Host:** 1x USB 2.0 Type-B host port to combine with HDMI source.

⑦ **Audio IN/OUT:**

- Balanced/unbalanced line-level audio input or output via a 5-pin terminal block.
- Analog Audio Output Sources:
  - HDMI/USB-C
  - Dante RX
- Analog Audio Input Destinations:
  - TNET audio
  - Dante TX
- Audio IN/OUT selection configurable via web UI or API.
- Balanced/unbalanced mode selection configurable via web UI or API.

⑧ **RS232/IR Out**

- RS232: 3-pin terminal block with RTG line sequence.
- IR OUT: 2-pin terminal block for connecting an IR emitter.

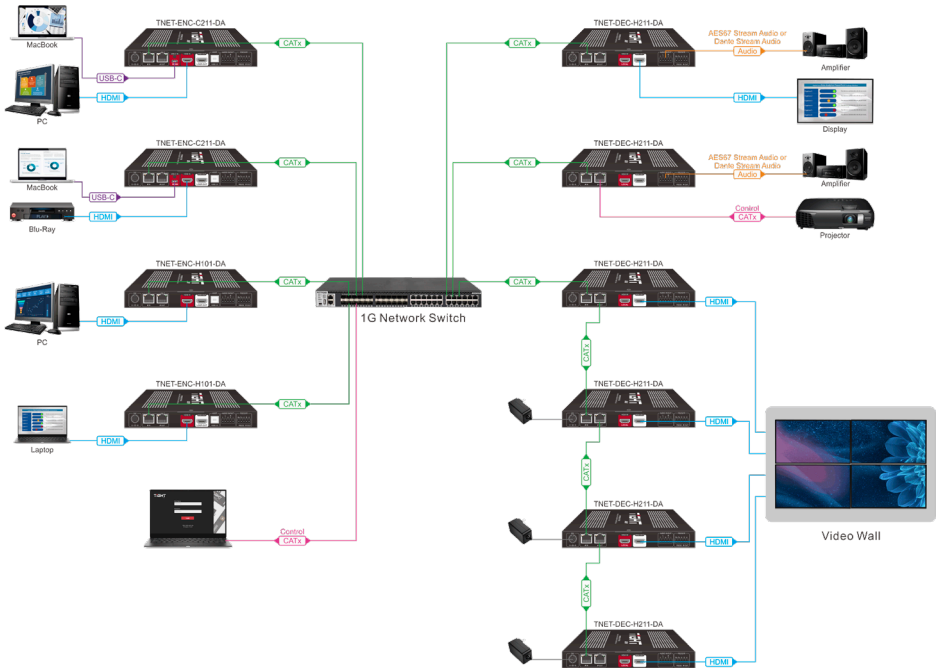
4. System Connection

4.1 Usage Precaution

- Verify that all components and accessories are included before beginning installation.
- Install the system in a clean environment with appropriate temperature and humidity levels.
- Ensure all power switches, plugs, sockets, and power cords are properly insulated and safe.
- Connect all devices before powering on the system.

4.2 System Diagram

The following diagram illustrates typical input and output connections that can be utilized with the T-Network series:



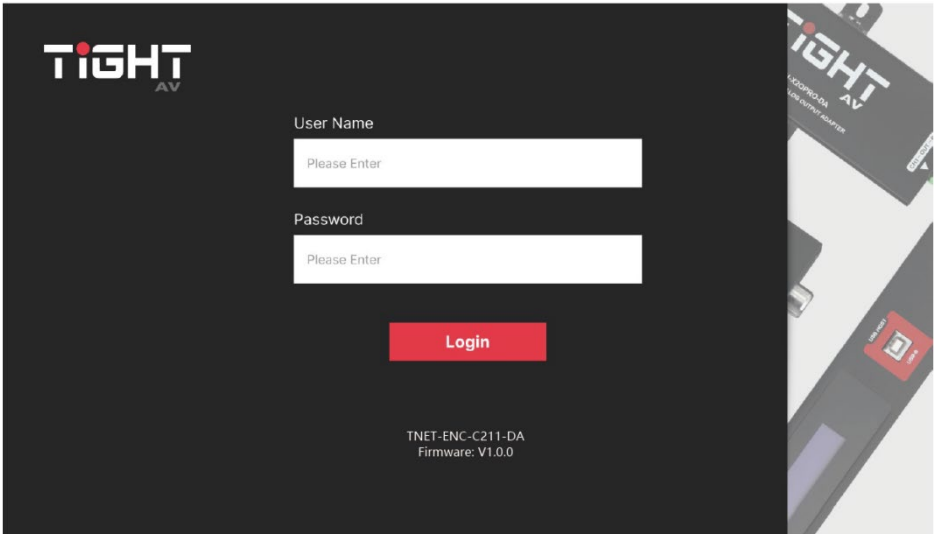
5. Operation of the WEB UI

TNET series supports controlling the units through TCP/IP, RS232 commands, T-COMM software and WEB UI.

This section primarily introduces WEB UI control. By default, the IP address for the T-Network series is set to DHCP, and the current IP address can be viewed on the OLED display on the front panel.

To access the WEB UI, open a web browser and enter the IP address displayed on the unit. The WEB UI will appear as shown in the figure below.

The default username is "admin" and the default password is "admin". It is highly advisable to change the default password to enhance security. After logging in, the user can access all configuration options for the unit.



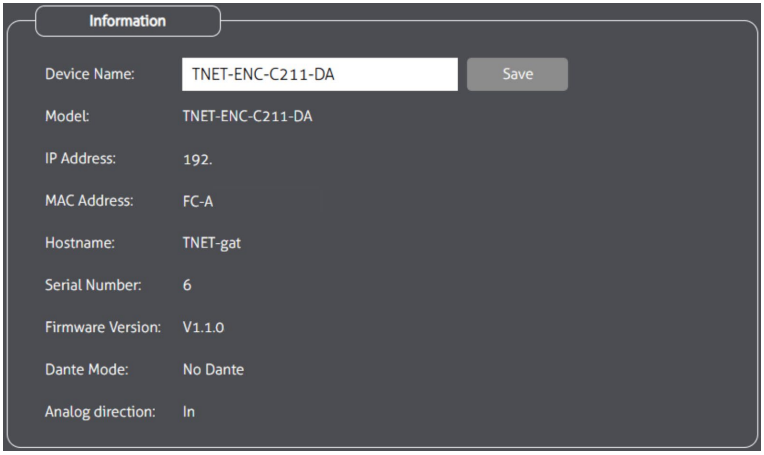
Note: At the bottom of the web UI, the model name and firmware (FW) version are displayed. It is recommended to use latest FW version for optimal performance and compatibility.

5.1 Start

In the Start section, the web UI displays the unit's information along with settings for video, audio, and Dante/AES67 features.

5.1.1 Information

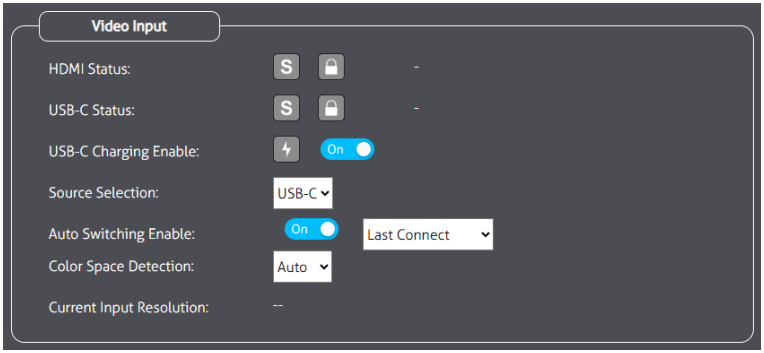
This subsection shows the unit's basic information, including the device name, model, IP address, MAC address, hostname, unique serial number, and firmware version.



- **Device Name:** By default, this is set to the model name. Users can customize it with up to 32 characters by entering the desired name in the input field and clicking the Save button.

5.1.2 Video Input

This subsection displays the settings and status for the video inputs.



- HDMI/USB-C Status: Show the source status, HDCP status and version.

Signal Indicator: Illuminates when a signal is present; remains off if no input is detected.

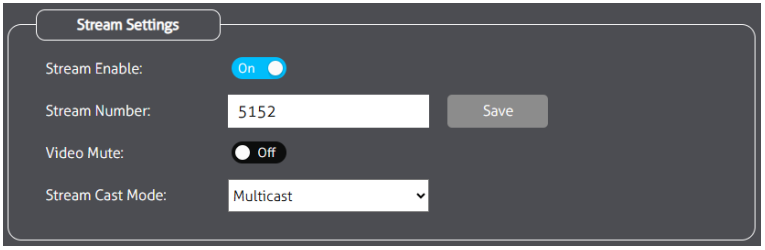
HDCP indicator: Illuminates when the input signal includes HDCP; remains off if no HDCP is present.

- **USB-C Charging Enable:** Enables or disables USB-C Power Delivery (PD) charging up to 100W maximum.
    - When enabled, connect a DC 24V/6.5A power adapter.

Charging Indicator: Illuminates when the DC 24V/6.5A power is connected and the unit is charging the connected USB-C input device.

- **Source Selection:** Allows selection of either the USB-C input or HDMI input for the unit.
- **Auto Switching Enable:** When enabled, the unit automatically switches inputs. Supports priority selection for different inputs:
    - **Last Connect:** Prioritizes the most recently connected input.
    - **Prio USB-C, HDMI:** Prioritizes USB-C input, followed by HDMI.
    - **Prio HDMI, USB-C:** Prioritizes HDMI input, followed by USB-C.
- **Color Space Detection:** Auto / RGB / YCbCr.
    - **Auto:** Auto detection.
    - **RGB:** Force RGB detection if for some reason unit cannot detect correct color space.
    - **YCbCr:** Force YCbCr detection if for some reason unit cannot detect correct color space.
- **Current Input Resolution:** Displays the resolution information for the current input source.

5.1.3 Stream Settings

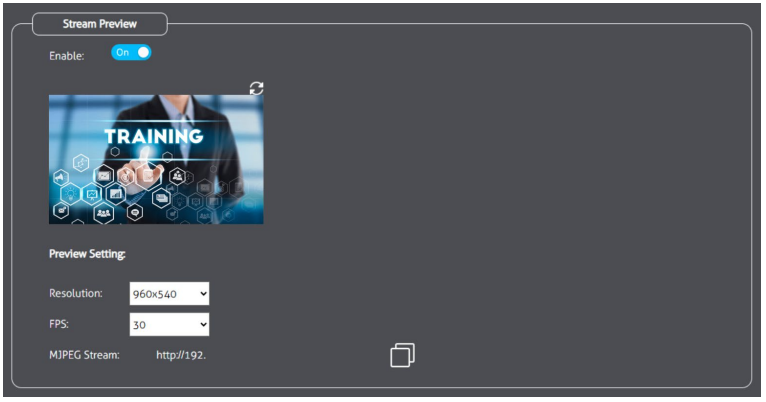


- **Stream Enable:** Enables or disables the stream.
- **Stream Number:** Allows setting a custom stream number.
- **Video Mute:** When enabled, mutes the video image, transmitting only audio.
- **Stream Cast Mode:** Select between Multicast (default) or Unicast.

5.1.4 HDMI Loop-out

HDMI Loop-out Enable: Enables or disables the HDMI signal loop-out function. With the HDMI loop-out function enabled, the unit can output the HDMI signal to a local display.

5.1.5 Stream Preview

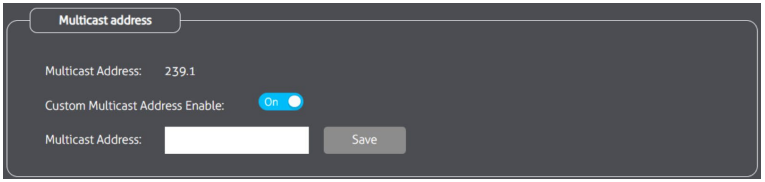


- **Stream Preview Enable:** Enables or disables the stream preview function.
- **Resolution:** Sets the resolution for the MJPEG stream preview. Supported options: 1280x720, 960x540, 640x360 (default).

- **FPS:** Sets the preview frame rate for the MJPEG stream. Supported options: 30 (default), 25, 20, 15.
- **MJPEG Stream:** Displays the URL link for the stream preview.

Note: The preview image displayed in the WEB UI refreshes every 5 seconds.

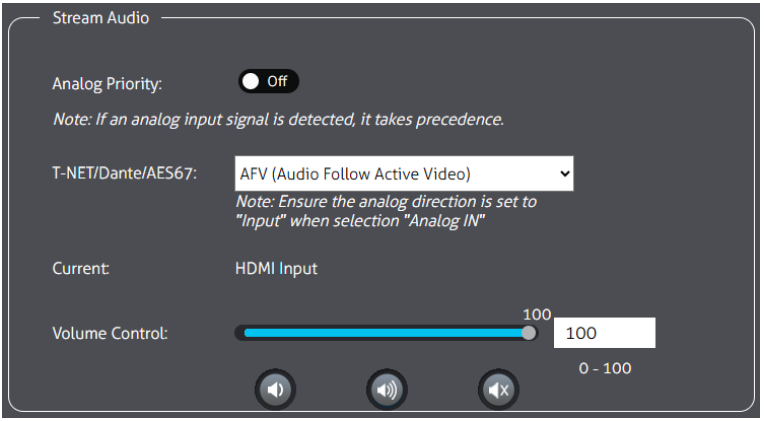
5.1.6 Multicast address



- Multicast Address: Displays the system-generated address, which refreshes on every reset.
- Custom Multicast Address Enable: Enables or disables the use of a custom multicast address.

5.1.7 Audio Settings

5.1.7.1. Stream Audio



- **Analog Priority:** When enabled, the analog signal input takes priority.
- **TNET/Dante/AES67:** Selects the stream audio source.
    - **AFV (Audio Follow Active Video):** Uses audio from the active video source as the stream audio.

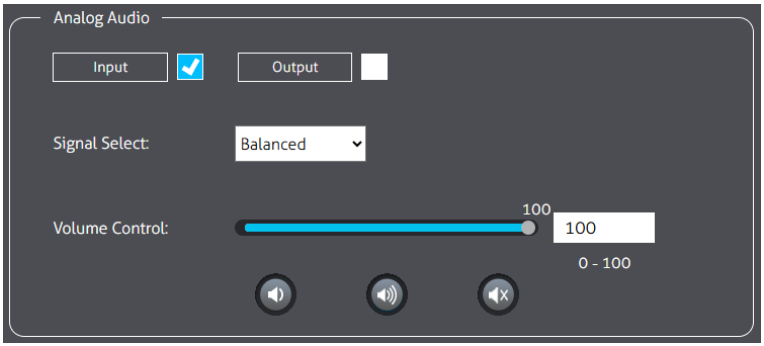
- **USB-C:** Uses audio from the USB-C input as the stream audio.
- **HDMI:** Uses audio from the HDMI input as the stream audio.
- **Analog IN:** Uses audio from the analog input as the stream audio.

Note: When set to Analog IN, configure the analog audio to input mode in the Analog Audio settings.

- **Current:** Displays the current stream audio source.
- **Volume Control:** Adjust the volume by sliding the volume bar left or right to decrease or increase it or use the Volume Up/Down/Mute buttons. Alternatively, enter a specific volume level in the input field.

5.1.7.2. Analog Audio

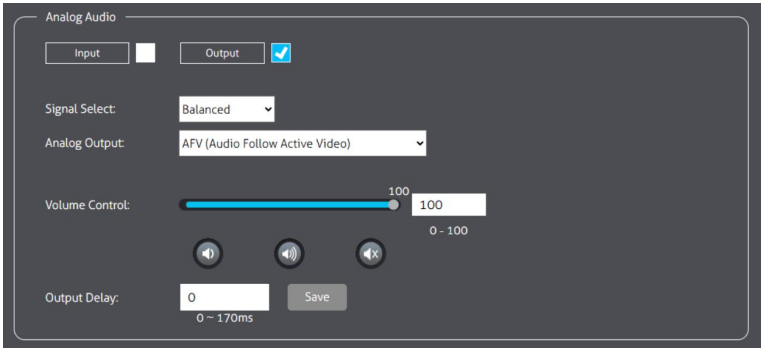
Analog Audio - Input



Configure the 5-pin Audio In/Out terminal as an analog audio input.

- Signal Select: Sets the analog input to Balanced or Unbalanced mode.
- Volume Control: Adjusts the input analog audio volume.

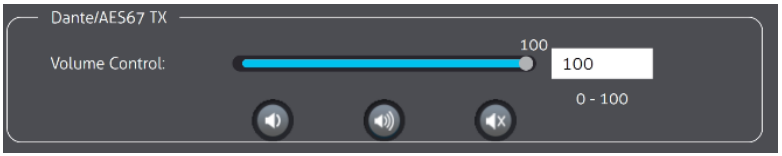
Analog Audio - Output



Configure the 5-pin Audio In/Out terminal as an analog audio output.

- **Signal Select:** Sets the signal transmission method to Balanced or Unbalanced.
- **Analog Output:** Selects the analog output audio source. Supported options: AFV, USB-C, HDMI, Dante&AES67 RX.
    - **AFV (Audio Follow Active Video):** Uses audio from the active video source as the analog audio output.
    - **USB-C:** Uses audio from the USB-C input as the analog audio output.
    - **HDMI:** Uses audio from the HDMI input as the analog audio output.
    - **Dante/AES67 RX:** Uses audio from Dante/AES67 RX as the analog audio output.
- **Volume Control:** Adjusts the output analog audio volume.
- **Output Delay:** Sets the analog audio output delay, with a supported range of 0–170 ms.

5.1.7.3. Dante/AES67 TX

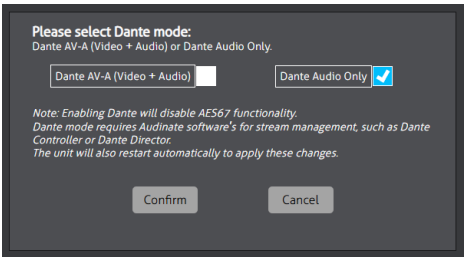


- Volume Control: Adjusts the Dante or AES67 TX audio volume.

5.1.8 AES67(Coming Soon)

5.1.9 Dante

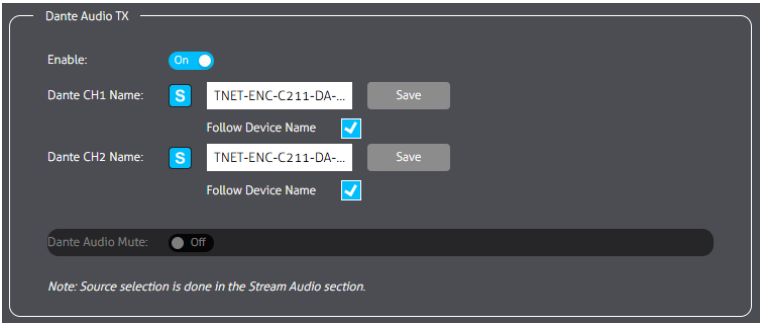
When enabling the Dante function in the web UI, a pop-up window will appear allowing selection of the Dante mode: Dante AV-A or Dante Audio Only. Press the Confirm button to enable the Dante mode.



Notes:

- Enabling Dante will automatically disable AES67 mode.
- Dante stream management requires Audinate softwares.
- The unit will restart automatically to apply these changes.

5.1.9.1. Dante Audio TX

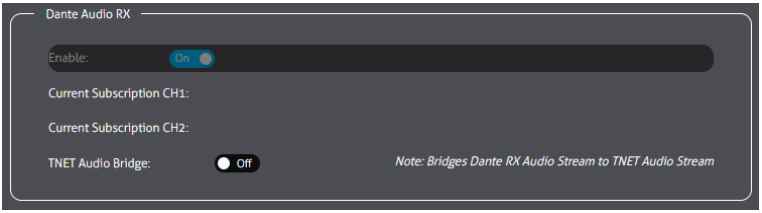


- **Enable:** Supports independent enabling or disabling of Dante Audio TX.
- **Dante CH1/CH2 Name:** Supports setting the Dante Audio TX channels name to synchronize with Dante Controller.
    - **Follow Device Name:** Sets the channel name to Device Name, see section 5.1.1.

S The signal indicator shows when the signal is active.

- **Dante Audio Mute:** Mutes Dante TX audio (comming soon)

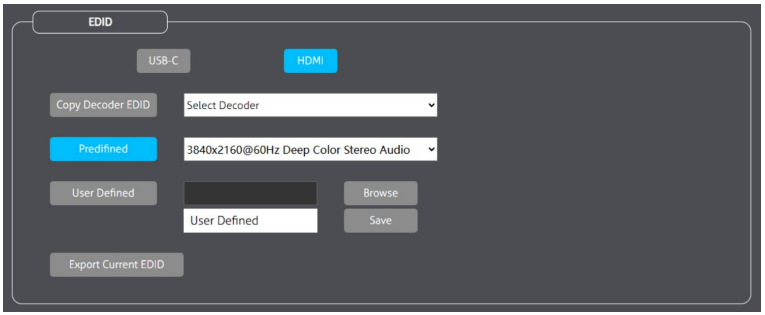
5.1.9.2. Dante Audio RX



- **Enable:** Supports independent enabling or disabling Dante Audio RX. (coming soon)
- **Current subscription CH1/CH2 :** Supports querying Dante Audio RX subscription information.
- **TNET Audio Bridge**: When enabled, the TNET Audio Bridge feature bridges the Dante RX audio stream to the TNET audio stream.

5.2 EDID/HDCP

5.2.1 EDID



Configure the EDID for the USB-C and HDMI inputs.

- Supports selection from predefined options, user-defined EDID, or copying from a Decoder.
- **Copy from Decoder:** Displays all connected and available Decoders in the local network for selection.
- **Predefined EDID List:**
  - 1920x1080@60 8bit Stereo Audio
  - 1920x1080@60 8bit High Definition Audio
  - 3840x2160@30Hz 8bit Stereo Audio
  - 3840x2160@30Hz Deep Color High Definition Audio
  - 3840x2160@60Hz 4:2:0 Deep Color Stereo Audio

- 3840x2160@60Hz Deep Color Stereo Audio
- 3840x2160@60Hz Deep Color High Definition Audio
- 3840x2160@60Hz Deep Color HDR LPCM 6CH
- User Defined

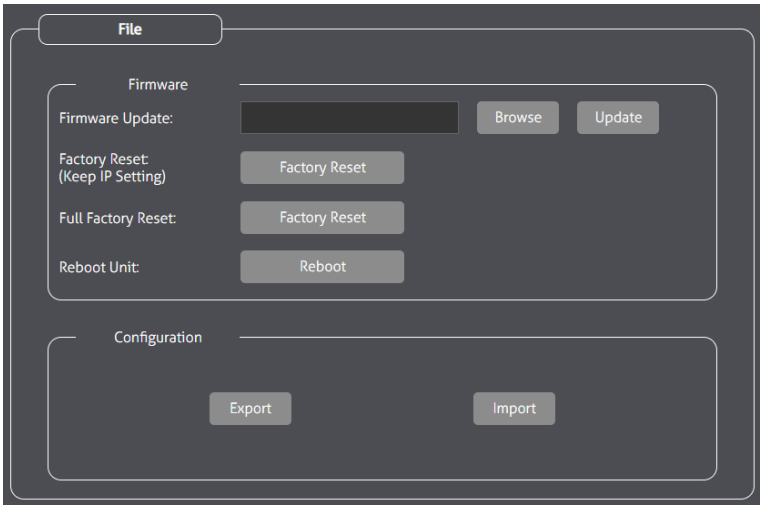
- User Defined: Click the “Browse” button to select a local EDID file (must be a .bin file) and assign a name to the user-defined EDID, which will then appear in the predefined list.
- Export Current EDID: Allows exporting the current EDID to a local file (.bin).

5.2.2 HDCP Settings

- **Output HDCP Mode:** Users can select the output HDCP mode for the HDMI loop-out port:
  - Follow Display: Adapts to Local HDMI display HDCP support.
  - HDCP 1.4: Force HDCP 1.4 if content is encrypted.
  - HDCP 2.2: Force HDCP 2.2 if content is encrypted.
- **USB-C/HDMI:** Configure HDCP compatibility mode for the USB-C and HDMI inputs independently.

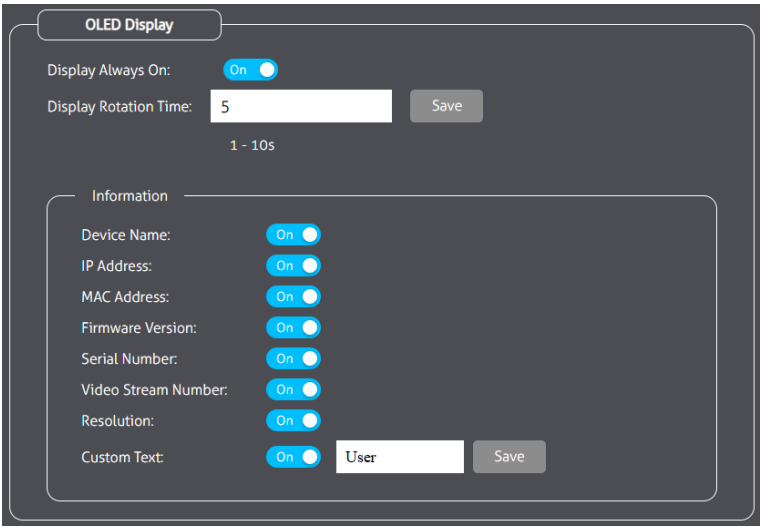
5.3 Device

5.3.1 File



- **Firmware Update:** Click the “Browse” button to select a firmware file from your local device, then click the Update button to upgrade the unit's firmware.
- **Reset/Reboot:** Provides options for Factory Reset (with IP settings reserved), Full Factory Reset, and Reboot.
- **Configuration:** Allows exporting and importing device configurations.

5.3.2 OLED Display



Configure settings for the front panel OLED display.

- Display Always On: When enabled, the display remains on continuously; when disabled, it turns off after one minute of inactivity unless the ID button is pressed.
- Display Rotation Time: Sets the interval for cycling through the OLED display text lines.
- Information: Select which items to display when enabled. Available options:
    - Device Name
    - IP Address
    - MAC Address
    - Firmware Version
    - Serial Number
    - Video Stream Number
    - Resolution
    - Custom Text

Note: Custom text is limited to a maximum of 16 characters.

5.3.3 Fan Control

- **Enable:** Enable or disable the built-in fan. When enabled, set the fan speed to Auto, Super High, High, Medium, Low, or Extra Low.
- Auto Fan Speed: In this mode, the fan automatically adjusts speed based on the unit's internal temperature to maintain optimal performance.

Caution: If the fan is disabled, implement additional cooling measures to prevent overheating and protect the unit!

5.3.4 Date and Time (Coming Soon)

5.3.5 USB Host

- **Enable USB Host:** When enabled, configure the decoder-connected KM/USB devices to associate with either the HDMI input or USB-C input.
- **Host Select:** Select the USB HOST to be associated with input
  - **Auto:** Automatically assigns the decoder-connected KM/USB devices to follow the source selected in the “Video Input” settings.
  - **USB-C:** Sets the USB-C input as the USB host.
  - **HDMI:** Sets the HDMI input to be associated with the USB host on the USB-B port.

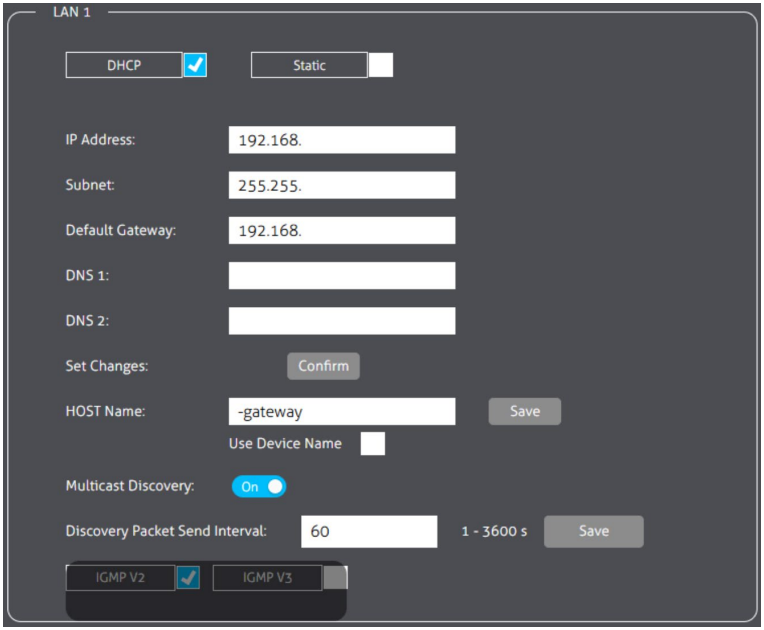
5.4 Network

5.4.1 Network Configuration

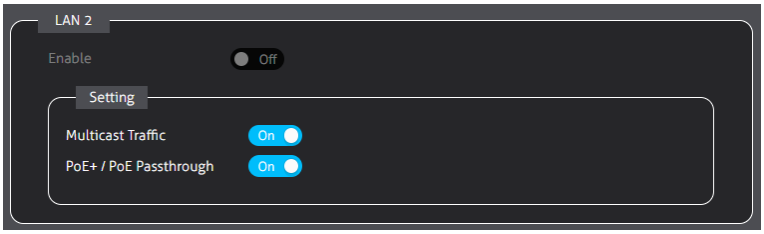
5.4.1.1. LAN1 Settings

- Supports DHCP or Static IP addressing
  - When set to Static IP, manually configure the subnet mask, default gateway, and DNS, then click the “Confirm” button to apply the settings.
- **Host Name:** Set a custom host name or use the default device name by ticking the “Use Device Name” box, see section 5.1.1.
- **Multicast Discovery:** When enabled, allows device discovery via multicast in the local network. Supports setting a custom Discovery Packet Send Interval (1–3600 seconds).

- **IGMP v2 or IGMP v3:** Select IGMP version for the network. (Coming soon)

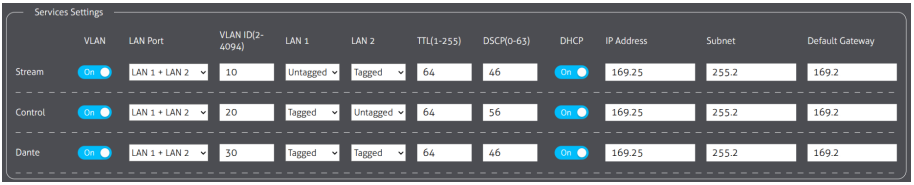


5.4.1.2. LAN2 Settings



- **Multicast Traffic:** Enables or disables multicast traffic on LAN2.
- **PoE+/PoE Passthrough:** Enables or disables PoE+/PoE passthrough through LAN2. This requires LAN1 to be powered using PoE++. When enabled and the unit is powered appropriately, it provides PoE/PoE+ to connected devices via LAN2.

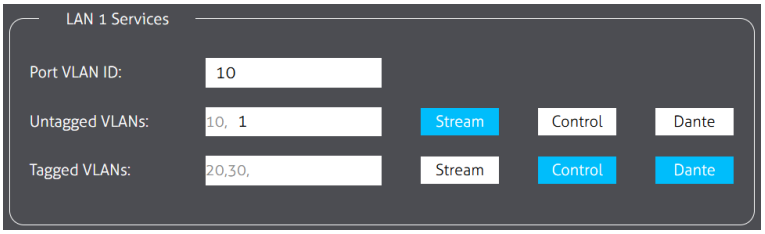
5.4.1.3. VLAN Settings

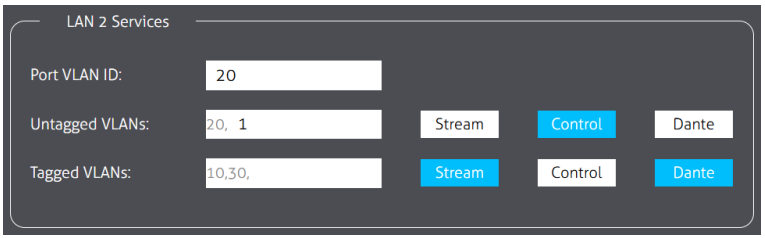


Services settings: Configure VLAN functions for Stream, Control, and Dante services to enable independent broadcasting, data segregation, simplified network management, and optimized bandwidth usage.

- **LAN Port**: Configure affected LAN port. When setting LAN1+LAN2 the two ports are bridged.
- **VLAN ID:** Configure service VLAN ID.
- **LAN1/LAN2:** Configure the VLAN tagged mode for each port.
- **TTL (Time To Live):** Configure the TTL for the service.
- **DSCP:** Sets the QoS (Quality of Service) DSCP (Differentiated Services Code Point) level for the service.
- **IP- settings:** Set DHCP/Static IP mode for each service

5.4.1.4. LAN1/LAN2 Services





- Gray characters in the “LAN1/LAN2 Services” section display values set in “Services Settings” and can be modified there.
- Users can manually add extra VLAN IDs, separated by commas (e.g., “1,2,3,4,5,6”).

- Click Confirm button to activate the settings.

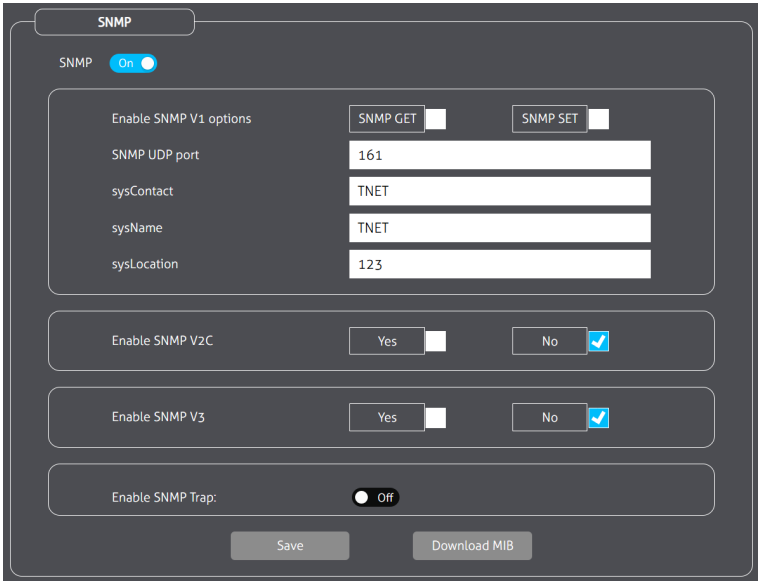
Caution: After completing all settings, click the "Confirm" button to apply changes. Alternatively, click "Cancel" to revert to previous settings.

5.4.2 SNMP (coming soon)

Supports SNMP for monitoring the unit on your local network, including the ability to download the MIB file directly from web UI. Versions V1, V2C, and V3 are supported, along with SNMP Trap.

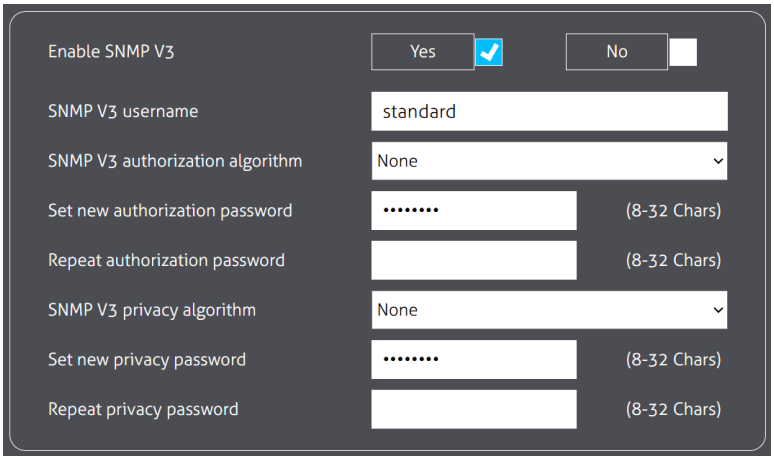
Users can configure the UDP port, contact, name, and location for management.

Note: After completing settings in this section, click the "Save" button to apply the SNMP configurations.



5.4.2.1. SNMP V3

SNMP V3 is the latest version and provides a higher level of security. It is recommended for use in public networks.



When enabling SNMP V3, set an authorization password and a privacy password for SNMP management.

5.4.2.2. To set up SNMP:

1 Enable SNMP using the toggle.
2 For SNMP V1 options: Enter SNMP GET and SNMP SET community strings.
3 Enter the SNMP UDP Port (default: 161).
4 Enter sysContact (e.g., contact name or email).
5 Enter sysName (e.g., device name).
6 Enter sysLocation (e.g., physical location).
7 Enable SNMP V2C by selecting Yes or No.
8 Enable SNMP V3 by selecting Yes or No. If enabled, configure SNMP V3 username (default: standard), select Authorization algorithm (e.g., None, MD5, SHA), set and repeat new authorization password (8-32 characters), select Privacy algorithm (e.g., None, DES, AES), and set and repeat new privacy password (8-32 characters).
9 Enable SNMP Trap using the toggle (On/Off).
10 If SNMP Trap is enabled, select the Trap version: V1 Trap, V2C Trap, or V3 Trap.
11 For V3 Trap: Enter SNMP V3 username, SNMP V3 Engine ID, select SNMP V3 authorization algorithm (e.g., None), enter Authorization password (8-32 characters), select SNMP V3 privacy algorithm (e.g., None), enter Privacy password (8-32 characters), and enter SNMP trap receiver 1 and/or SNMP

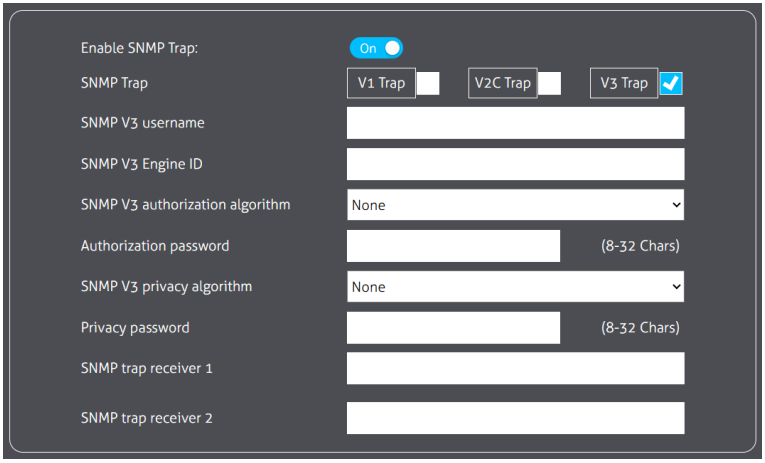
trap receiver 2 (e.g., IP addresses or hostnames).

12 Click Download MIB to retrieve the Management Information Base file if needed.

13 Click Save to apply changes.

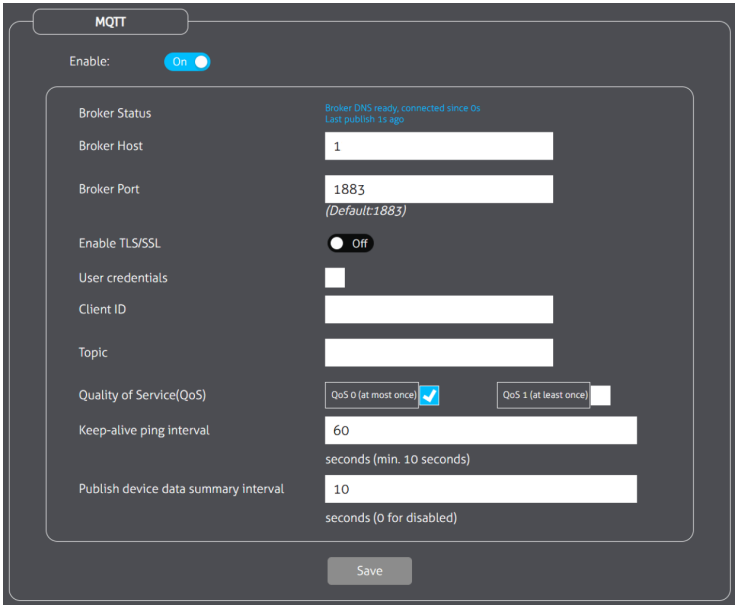
5.4.2.3. SNMP Trap

When enabling SNMP V3 Trap, configure the username, authorization password, authorization algorithm, privacy password, privacy algorithm, and trap receiver. These settings must match those in your management tool to ensure proper functionality.



5.4.3 MQTT

MQTT (Message Queuing Telemetry Transport) is a lightweight, publish/subscribe protocol for efficient machine-to-machine communication, ideal for IoT devices with limited resources. It runs over TCP/IP, enabling real-time message publishing to topics via a broker. It supports real-time monitoring, event triggering, device control, and data exchange with IoT sensors.



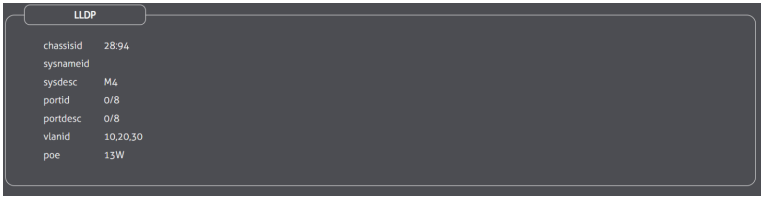
When enabled, configure the Broker Host (IP address), Broker Port, QoS, and Keep-Alive Interval. You can also enable TLS/SSL and user credentials if necessary.

5.4.3.1. To set up MQTT:

- Enable MQTT using the toggle.
- View the Broker Status to confirm connection (e.g., "Broker DNS ready, connected since last publish 1s ago").
- Enter the Broker Host (e.g., IP address or domain).
- Enter the Broker Port (default: 1883).
- Enable TLS/SSL for secure connections if required.
- Check User Credentials and provide username/password if authentication is needed.
- Enter the Client ID to identify the device to the broker.
- Enter the Topic for publishing/subscribing messages.
- Select Quality of Service (QoS): QoS 0 (at most once) or QoS 1 (at least once).
- Set the Keep-alive Interval in seconds (minimum 10 seconds).
- Set the Publish Device Data Summary Interval in seconds (0 to disable).
- Click Save to apply changes.

5.4.4 LLDP

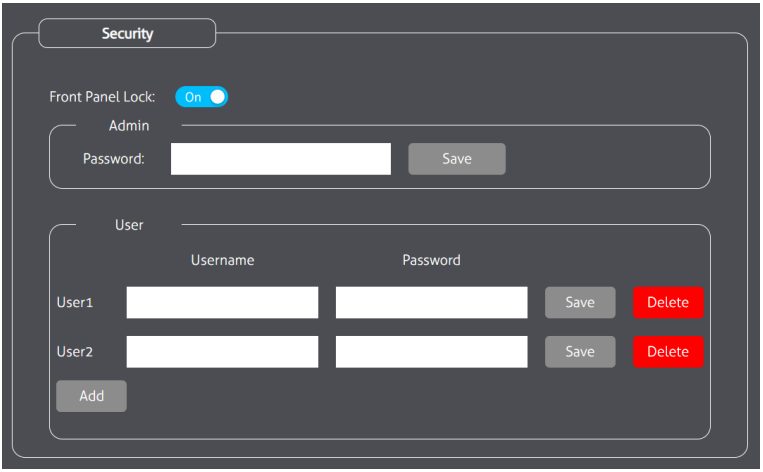
LLDP (Link Layer Discovery Protocol) is a vendor-neutral Layer 2 protocol that enables network devices to advertise their identity, capabilities, and neighbors to adjacent devices on a local area network, facilitating easier network management and troubleshooting.



This section displays the Chassis ID, Port ID, and other information received from the connected switch when the switch's LLDP function is enabled.

5.5 Security

5.5.1 Security Configuration



- **Front Panel Lock:** Enables or disables the buttons on the front panel, including the Select button and ID button.
- **Admin:** Changes the admin login password for the unit. After the change, the system will automatically log out, requiring re-login for security purposes.
- **User:** Adds guest users with access to the web UI. Supports a maximum of 10 users, and the admin can delete users.

5.5.2 LDAP

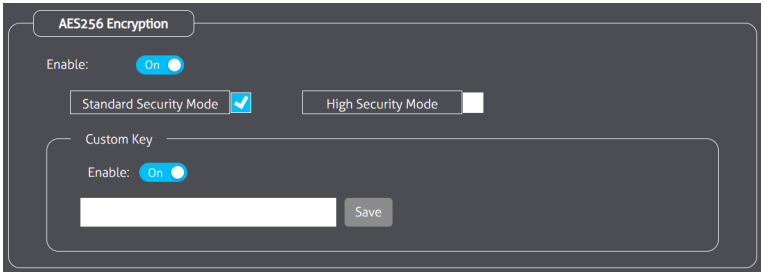
LDAP (Lightweight Directory Access Protocol) is an open-standard protocol for accessing and managing directory information services over a network, often used for centralized user authentication, authorization, and directory searches in enterprise environments.

When LDAP is enabled, configure the LDAP URL, Base DN, Query Attr, and other related settings for your environment requirements.

5.5.2.1. To set up LDAP:

1 Enable LDAP using the toggle.
2 Enter the LDAP/LDAPS URL (e.g., ldap://server:port or ldaps://server:port for secure connections).
3 Enter the LDAP/LDAPS Base DN (Distinguished Name), which specifies the starting point for directory searches (e.g., dc=example,dc=com).
4 Enter the User Query Attr (attribute for querying users, e.g., uid or sAMAccountName).
5 Enter the Search Password for binding to the LDAP server.
6 Enable TLS (checkbox) for secure communication if using LDAPS or requiring encryption.
7 Click Test to verify the configuration.
8 Click Save to apply changes.

5.5.3 AES256 Encryption



AES256 Encryption Enable: The system defaults to Standard Security Mode; users can select High Security Mode.

- **Standard Security Mode:** Uses AES-256 software-based encryption to secure the header of the video stream.
- **High Security Mode:** Uses AES-256 hardware-engine encryption to secure the entire video stream. Requires Jumbo frames.
- **Custom Key**：When enabled, users can set custom AES256 key for the encryption process to enhance security. The same custom key must be configured on all decoders that should receive the video stream.

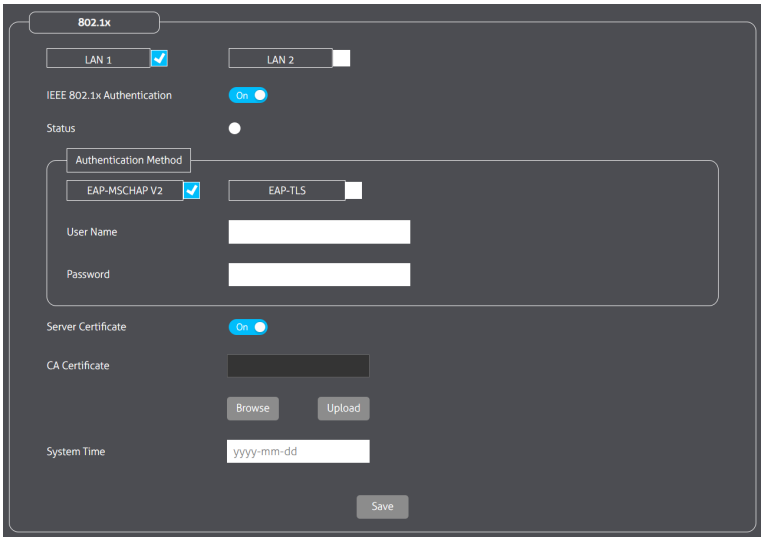
Note: When selecting High Security Mode, a pop-up window will appear to inform users. After confirmation, the system will reboot automatically.

5.5.4 HTTPS (Coming Soon)

Coming Soon

5.5.5 802.1x

IEEE 802.1X is a port-based network access control protocol that authenticates devices connecting to a LAN or WLAN, ensuring only authorized users and devices gain network access to prevent unauthorized entry.



Users select the LAN port for the 802.1x function and enable or disable IEEE 802.1x Authentication.

When enabled, users can view the authentication status and configure the Authentication Method and Server Certificate for enhanced security.

5.5.5.1. To set up 802.1x:

1 Select the LAN port(s) (LAN1 and/or LAN2) to apply authentication.

2 Enable IEEE 802.1x Authentication.

3 View the Status indicator to confirm authentication state.

4 Choose the Authentication Method (e.g., EAP-MSCHAP V2 or EAP-TLS).

5 Enter the User Name and Password if required by the method.

6 Enable Server Certificate validation if needed and upload a CA Certificate by browsing and selecting a file, then clicking Upload.

7 Set the System Time if necessary for certificate validation.

8 Click Save to apply changes.

5.5.6 SSH (Coming soon)

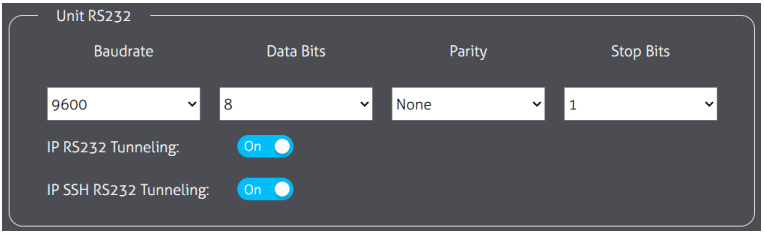
5.6 Control

5.6.1 RS232

Configure RS-232 settings for the system, including baud rate, passthrough, and custom commands. The web UI supports importing and exporting configurations.

5.6.1.1. Unit RS232

Set RS232 configurations and enable IP RS232/SSH RS232 Tunneling.



- Set Baud Rate: 2400, 4800, 9600, 19200, 38400, 57600, or 115200.
- Set Data Bits: 5, 6, 7, or 8.
- Set Parity: Even, Mark, None, Odd, or Space.
- Set Stop Bits: 0, 1, 1.5, or 2.
- Enable IP RS232 Tunneling (TCP port 4002) for IP tunneling.
- Enable IP SSH RS232 Tunneling (port 4005) for secure tunneling

5.6.1.2. RS232 Passthrough

Enable to set second unit IP address to connect, for serial pass-through function.

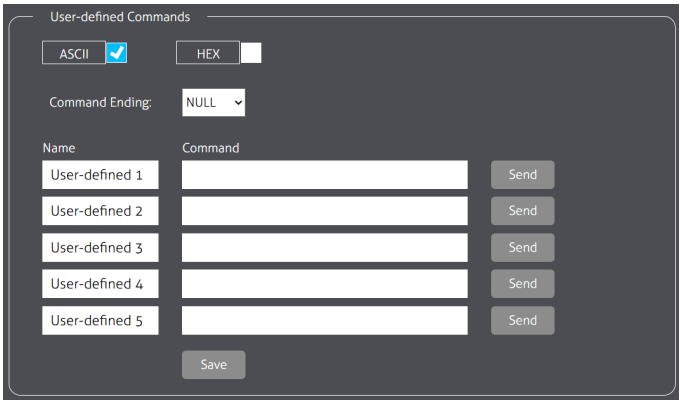
- Enable the toggle to activate RS-232 passthrough.
- View Connected Unit status (e.g., "-" if disconnected) and use Disconnect if needed.
- Enter the 2nd Unit IP Address and click Connect to link devices

5.6.1.3. User-defined command

Supports set ASCII / HEX custom command commands ending Null/CR/LF/CRLF.

- Select format: ASCII or HEX.
- Select Command Ending: NULL, CR, LF, or CRLF.
- Add up to 5 commands: Enter Name (optional) and Command for each

(User-defined 1–5), then click Send to test or Save to apply.



5.6.2 IR

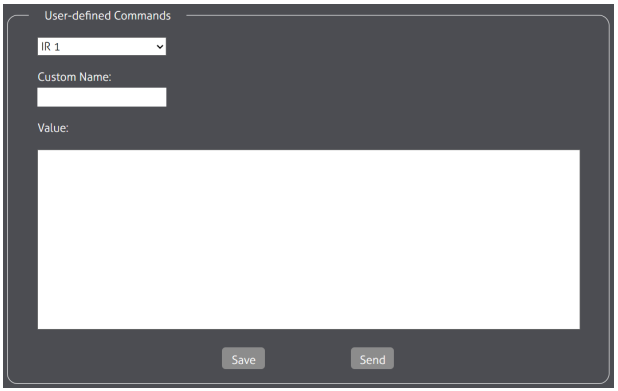
Configure IR (Infrared) settings for the system, including IR reading, passthrough, transmission settings, and custom commands. The web UI supports importing and exporting IR configurations.

5.6.2.1. IR reading

Enable to read IR responses and copy the readings from a remote control.

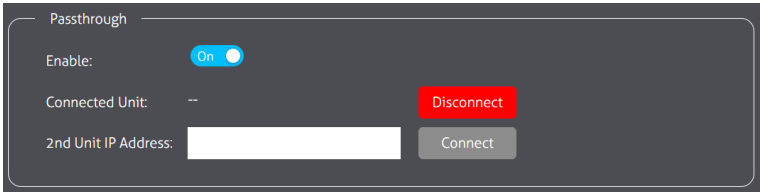
5.6.2.2. User-defined Commands:

- Set customized IR commands.
- Supports a maximum of 40 user-defined IR commands.
- These can be trigger from web UI or by API.



5.6.2.3. IR Pass-through

Enable the toggle to activate IR passthrough. Enter the 2nd unit IP address and connect for passthrough functionality

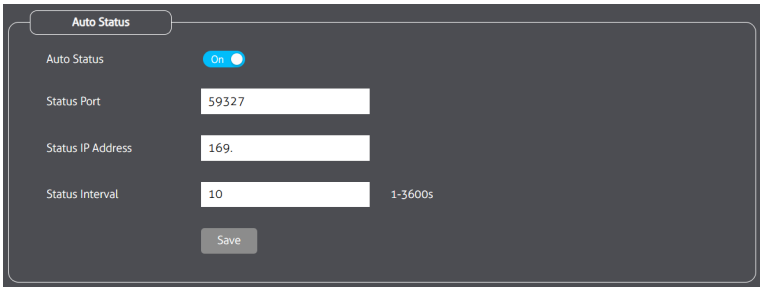


- Enable the toggle to activate IR passthrough.
- Enter the 2nd unit IP address and connect for serial passthrough functionality.

5.6.2.4. IR Transmission Settings

- **Delay(ms):** Sets the delay between any two consecutive IR commands.
- **Repeat Times:** Sets the number of times the same commands is being sent.
- **Repeat Delay(ms):** Sets the delay between the repeated commands.

5.6.3 Auto Status

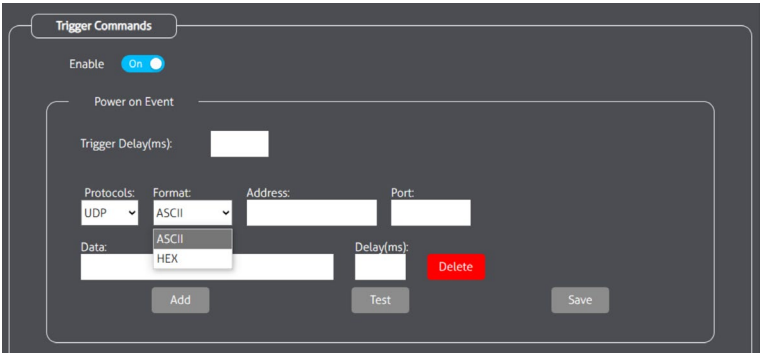


When enabled, the unit sends status information to the network whenever the status changes and at a user defined time interval.

- **Auto Status:** Enable the toggle to activate automatic status updates.

- **Status Port:** Set the UDP port for destination device (e.g., 59327).
- **Status IP Address:** Set the destination IP address for status updates (e.g., 192.168.100.45).
- **Status Interval:** Set the update interval in seconds (range: 1–3600s).

5.6.4 Trigger Commands

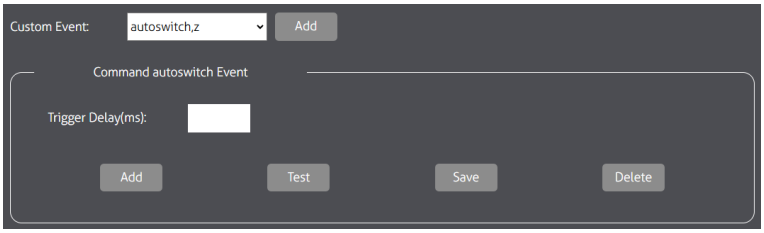


When enabled, the web UI sends predefined data to a specified IP address upon event occurrence. Supports exporting and importing trigger command configurations.

Default Events: Includes Power On Event, Source Connection Event, and Source Disconnection Event.

- **Enable:** Toggle to activate trigger commands.
- **Trigger Delay (ms):** Set the delay in milliseconds before sending the command.
- **Protocol:** Select the protocol, UDP, TCP, RS232 or IR.
- **Format:** Select the data format ,ASCII or HEX.
- **Address:** Enter the destination IP address TCP and UDP..
- **Port:** Enter the destination port for TCP and UDP.
- **Data:** Enter the command data to send.
- **Delay (ms):** Set command delay relative the event trigger.
- Use Add to create new commands, Test to verify, Delete to remove, and Save to apply changes.

Custom Events: Configure user-defined trigger commands.



- Select or enter a Custom Event name (e.g., autoswitch.z) and click Add to create.
- Set Trigger Delay (ms) for the event.

5.6.5 CEC

CEC (Consumer Electronics Control) is an HDMI feature that enables interconnected devices to communicate and control each other using a single remote or command set, simplifying operations like power on/off, input switching, and volume control across compatible AV equipment.

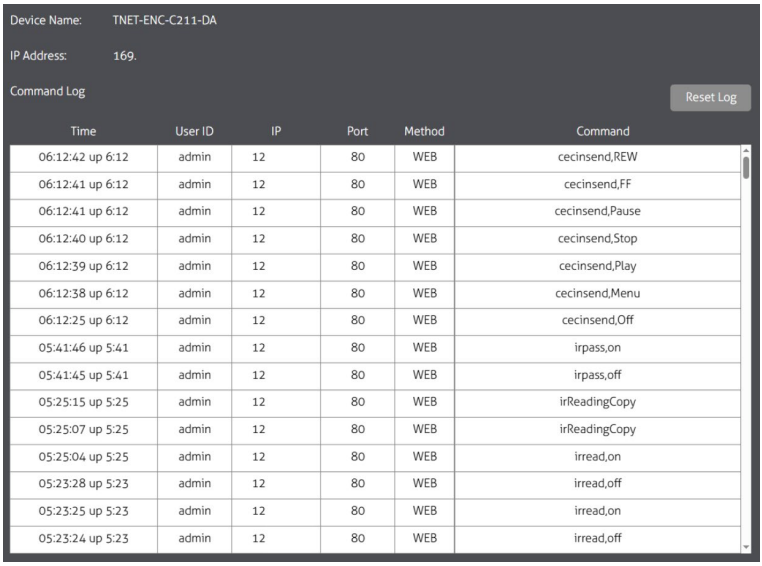
Control multiple HDMI displays using predefined buttons or by entering HEX CEC commands for equivalent functions.

HDMI IN: Press the buttons or send HEX CEC commands to control the HDMI input display.

HDMI Loopout: Press the buttons or send HEX CEC commands to control the HDMI loopout display.

5.7 LOG

Upon boot-up, the system logs the device name, IP address, and every operation performed in the web UI and API communications. Click the “Reset Log” button to clear all logs.



Time	User ID	IP	Port	Method	Command
06:12:42 up 6:12	admin	12	80	WEB	cecinsend,REW
06:12:41 up 6:12	admin	12	80	WEB	cecinsend,FF
06:12:41 up 6:12	admin	12	80	WEB	cecinsend,Pause
06:12:40 up 6:12	admin	12	80	WEB	cecinsend,Stop
06:12:39 up 6:12	admin	12	80	WEB	cecinsend,Play
06:12:38 up 6:12	admin	12	80	WEB	cecinsend,Menu
06:12:25 up 6:12	admin	12	80	WEB	cecinsend,Off
05:41:46 up 5:41	admin	12	80	WEB	irpass,on
05:41:45 up 5:41	admin	12	80	WEB	irpass,off
05:25:15 up 5:25	admin	12	80	WEB	irReadingCopy
05:25:07 up 5:25	admin	12	80	WEB	irReadingCopy
05:25:04 up 5:25	admin	12	80	WEB	irread,on
05:23:28 up 5:23	admin	12	80	WEB	irread,off
05:23:25 up 5:23	admin	12	80	WEB	irread,on
05:23:24 up 5:23	admin	12	80	WEB	irread,off

5.7.1 Debug Log

When enabled, users can export all logs for troubleshooting.

6. API Commands

The T-Network series supports API control primarily via TCP protocol, with additional options like SSH for secure usage. This enables integration with control systems, automation scripts, or third-party applications for tasks such as configuration, status querying, and real-time management of features like video switching, audio routing, and device control. Detailed API documentation, including command syntax, parameters, response formats, and examples, is available at https://www.tightav.com. Use a TCP client (e.g., Telnet or custom software) to connect to the device's IP address on the specified port (refer to the API docs and port table below for details).

6.1 TCP/IP Control

T-Network devices can be controlled using TCP/IP over a network connection.

- Command ending symbol: <CR>
- Feedback ending symbols: <CR><LF>
- Delimiter symbol: “!”
- Sending multiple chained commands: Use delimiter ";"
- Commands are case-sensitive.

Description	Protocol	Network Port
TCP/IP Control	TCP	4001
SSH Control	TCP	4005
TCP/IP to RS232 Tunnelling	TCP	4002
TCP/IP to RS232 Tunnelling (SSH)	TCP	4003

6.2 RS-232 Tunnelling

T-NETWORK devices support TCP/IP to RS232 tunnelling. Default serial settings:

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

Note: For TCP commands and further details, refer to T-NETWORK API documentation: https://www.tightav.com.

7. T-COMM

T-COMM is TiGHT AV's proprietary management and mass deployment software for the T-NETWORK series. It provides an intuitive interface for discovering, configuring, and controlling multiple encoders and decoders across a network, making it ideal for large-scale AV over IP installations such as conference rooms, universities, hospitality venues, and digital signage systems. The software enables seamless oversight, routing, and maintenance of devices, ensuring efficient operation and scalability.

7.1 Key Features

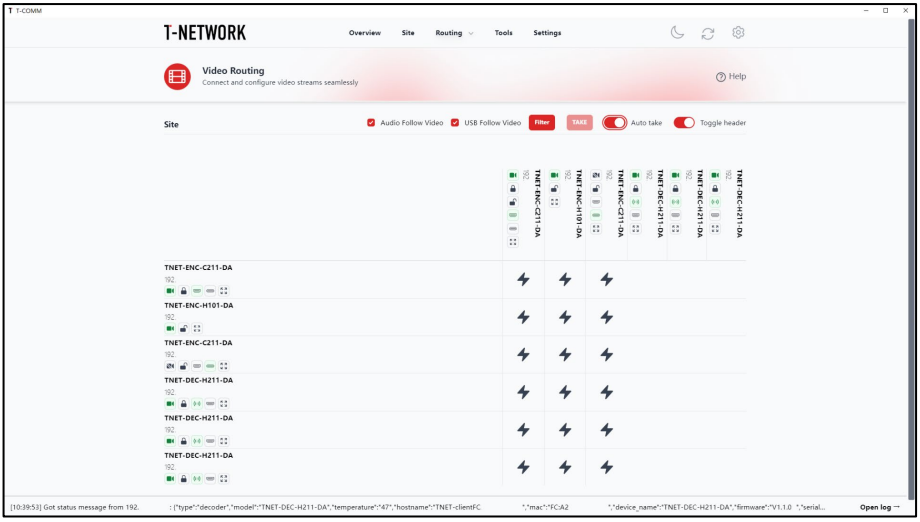
- **Management Software:** Centralizes control of all T-Network devices, allowing users to monitor status, temperatures, IP addresses, MAC addresses, firmware versions, serial numbers, and more in real-time.
- **Mass Deployment Tool:** Facilitates bulk configuration and deployment of settings across multiple units, including device grouping, site segmentation, and automated discovery on the network.
- **Routing for Video, Audio, USB, IR, and RS-232:** Supports intuitive drag-and-drop or matrix-style routing for signals. Options include Audio Follow Video (AFV), USB Follow Video, filtering, and bi-directional passthrough for RS-232 and IR, enabling linked control between encoders and decoders.
- **Video Preview:** Displays live thumbnails or previews of video streams from encoders, aiding in quick verification and troubleshooting.
- **Firmware Upgrades:** Manages firmware checks and updates for individual or grouped devices. Users can upload new firmware files and apply them selectively to encoders or decoders, with version tracking.
- **Monitoring:** Provides logs, status messages (e.g., connection events, errors), and tools for real-time oversight, including open log views for detailed diagnostics.
- **Segmentation into Groups and Levels:** Organizes devices into sites, buildings, or custom groups (e.g., "Install 1," "Building 1") for hierarchical management, with toggles for encoders/decoders and options to add, remove, or discover devices.

7.2 To use T-COMM

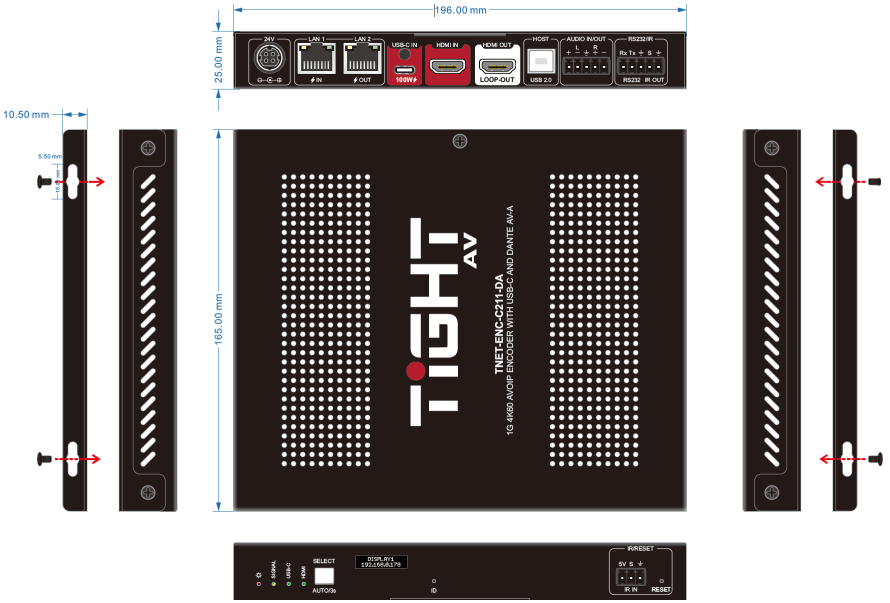
- Download and install from the TiGHT AV website or distributor.
- Launch on a PC connected to the same network as the T-Network devices.
- Use auto-discovery or manual IP addition to populate devices.

- Navigate tabs (Overview, Site, Routing, Tools, Settings) for management.

For advanced routing or troubleshooting, refer to the dedicated T-COMM user manual.



8. Drawings and Dimensions



9. Environment and recycling information

9.1 Disposal of electric and electronic devices EC Directive 2012/19/EU

This product is not to be treated as regular household waste but must be returned to a collection point for recycling electric and electronic devices. Further information is available from your municipality, your municipality's waste disposal services, or the retailer where you purchased your product.

9.2 Packaging recycling information

20 PAP	SCATOLA CORRUGATED PAPER BOX	RACCOLTA CARTA MIXED PAPER AND CARD
22 PAP	PIATTINA ANIMATA CABLE TIE	RACCOLTA CARTA MIXED PAPER AND CARD

Verifica le disposizioni del tuo comune
Check the regulations of your municipality

Note: This manual is recycled as paper (mixed paper and card).