cymatic audio

uTrack24

AUDIOLAN

User's Manual

AudioLAN Module

Apr 2017

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1. INTRODUCTION

Congratulations on your purchase of the uTrack24 AudioLAN Module. This user-installable option card allows you to integrate your uTrack24's multi-channel audio input and output with AES67 standard as well as Ravenna standard devices. The AudioLAN Module can also exchange audio with other AES67 compliant networks like Dante®, QLAN®, AXIA® LIVEWIRE®.

With the uTrack24 AudioLAN Module, you can patch up to 24 channels of your uTrack24's inputs and outputs in and out of Ravenna/AES67 equipped sound consoles, stage boxes, installed sound systems and more. Record stage audio from the console and send multiple backing tracks to the networked system using the AudioLAN Module.

1.1. Features

- Interface for AES67 and Ravenna audio networking
- Record and Playback 24 channels @ 44.1 kHz and 48 kHz
- Record and Playback 8 channels @ 88.2 kHz and 96 kHz
- Stream 24 network channel inputs or outputs through USB to a PC or MAC
- Connects to AES67 compatible networks like for instance Dante®, AXIA® LiveWire® (may require latest AES67 firmware on the network nodes)

1.2. uTrack24 and AudioLAN Module Required Firmware

In order for the AudioLAN Module to operate correctly, both your uTrack24 and the AudioLAN Module must be updated to the latest available firmware version.

Download the latest uTrack24 firmware and the AudioLAN Module firmware from the http://www.cymaticaudio.com/downloads then follow the firmware update instructions for both the units.

Dante® is a registered trademark of Audinate Pty Ltd, AXIA® and LIVEWIRE® are registered trademarks of The Telos Alliance, QLAN® is a registered trademark of QSC Audio Products.

2. USAGE PRECAUTIONS

Electrical interference

For safety considerations, the AudioLAN Module has been designed to provide maximum protection against the emission of electromagnetic radiation from inside the device, and protection from external interference. However, equipment that is very susceptible to interference or that emits powerful electromagnetic waves should not be placed near the AudioLAN Module, as the possibility of interference cannot be ruled out entirely. With any type of digital control device, the AudioLAN Module included, electromagnetic interference can cause malfunctioning and can corrupt or destroy data. Care should be taken to minimize the risk of damage.

3. LIMITED WARRANTY

For the applicable warranty terms and conditions and additional information on Cymatic Audio's Limited Warranty, please see complete details online at www.cymaticaudio.com/warranty

CERTIFICATIONS

This product complies with the European Union Council Directives and Standards relating to Directive 2004/108/EC for Electromagnetic compatibility (EMC) and Low Voltage Directive 2006/95/EC

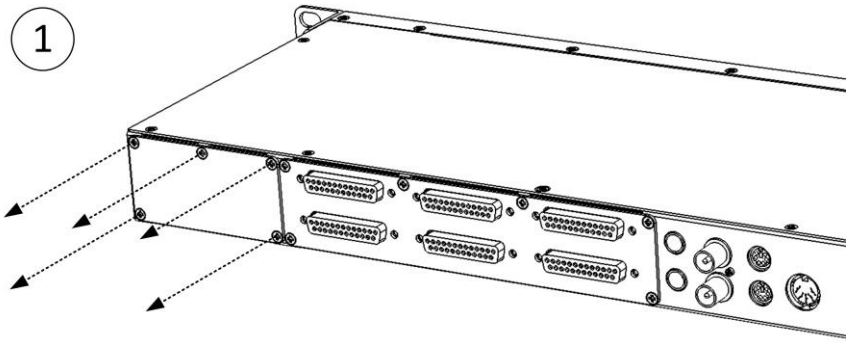
This product is compliant with the EU Directive 2011/65/EU for the Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment. No lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium (Cr+6), PBB or PBDE is intentionally added to this device. Any traces of impurities of these substances contained in the parts are below the RoHS specified threshold levels.

This equipment has been tested and found to comply with the requirements of 47 CFR of PART 15 limit for radiation and conduction emission relating to FCC rules Part 15B: 2010.

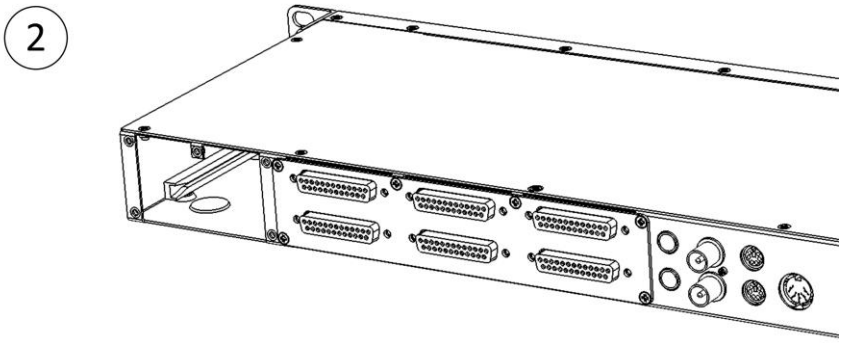
A NOTE ABOUT DISPOSAL:
This product must be disposed in accordance with the local recycling regulations. The crossed out wheeled bin symbol informs you that the product should not be disposed of along with municipal waste and invites you to use the appropriate separate take-back systems licensed for the recycling of electrical and electronic equipment (EEE).

4. INSTALLATION OF THE UTRACK24 AudioLAN Module

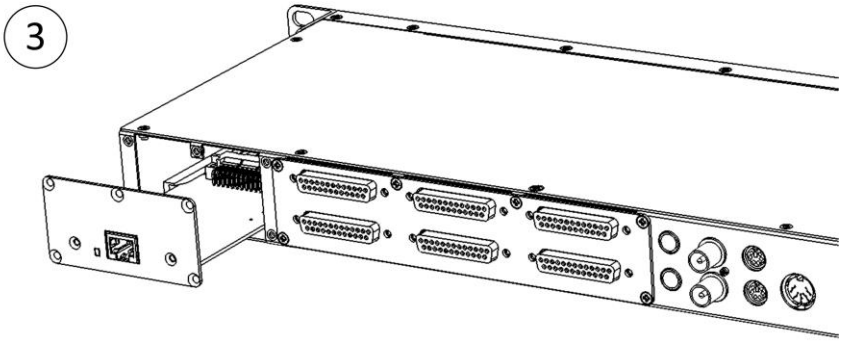
Unplug the power cable before installing the AudioLAN Module



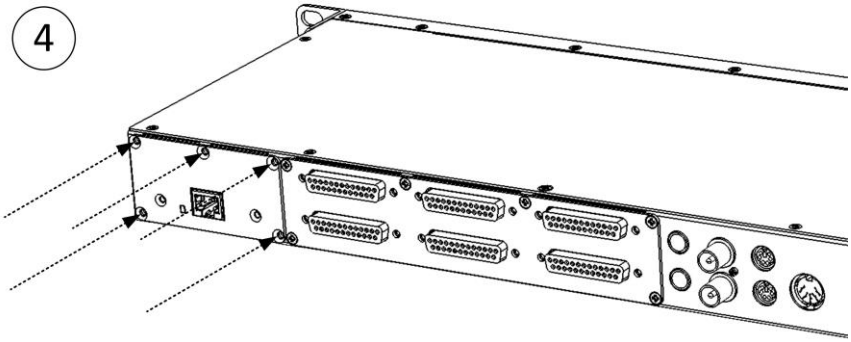
Remove the 5 screws of the digital slot



Remove the digital blind panel



Align the AudioLAN Module with the module guides,
then push it all the way into the internal connector socket.



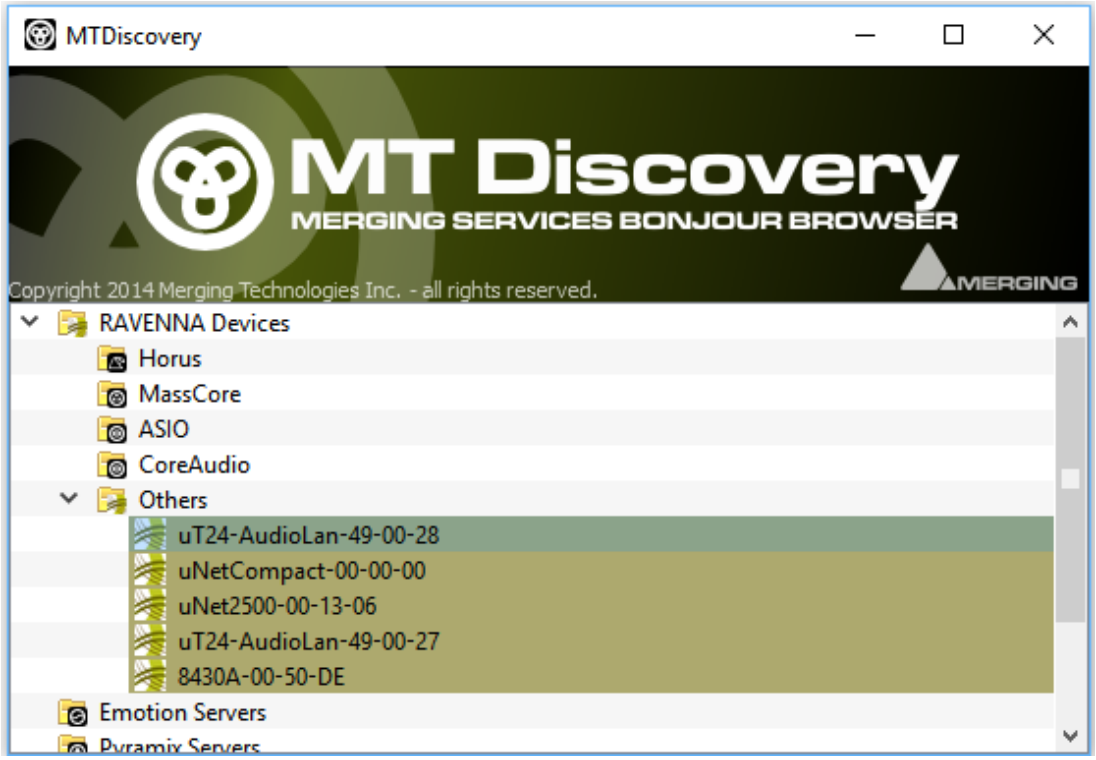
Tighten the 5 screws again. Do not use too much force,
in order to prevent the screws from breaking.

Power up the uTrack24. When the AudioLAN Module is recognized, a new menu option "**Inputs**" is present in the uTrack24 settings. The "Inputs" menu allows you to select either the Analog inputs or the Audiolan network inputs as a source to be recorded on the uTrack24. The selection of inputs is allowed in blocks of 8 channels.

When the uTrack24 is used as an interface device, another option "**AudioLan Card**" is available on the settings menu. The AudioLan card can be used as **Input** or as **Output** in Interface mode.

5. AUDIOLAN CARD CONFIGURATION

The AudioLAN Module configuration parameters are available through a webpage user interface. Access to the webpage is possible through a bonjour enabled application. For example, MTDiscovery (available from www.merging.com) can be used to see the list of bonjour devices in the network.



Launch the application making sure that your PC is also in the same network as the AudioLan Module. Double click on the uT24-AudioLan-XX-XX-XX item to open the AudioLAN Module webpage.

5.1. Clock Setup and Synchronization

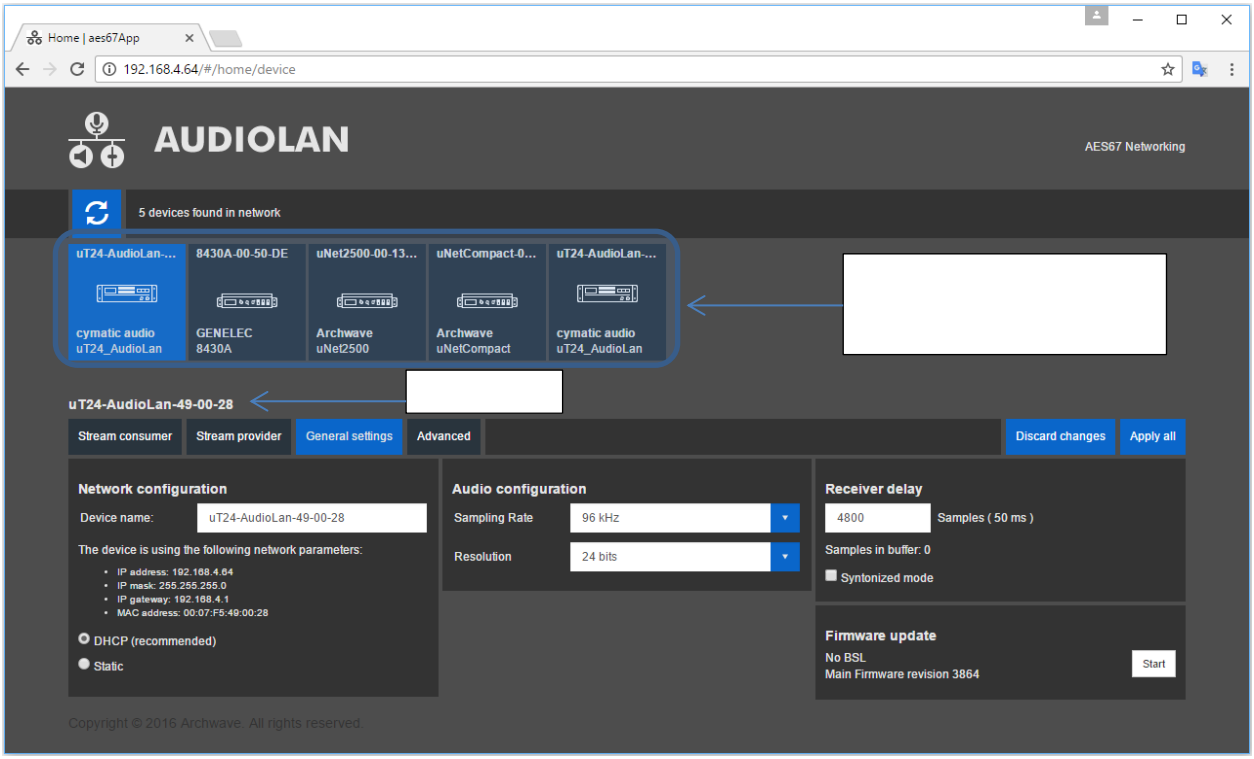
Time synchronization in the AES67 network system is achieved by using PTPv2. Choose the option “Digital I/O” in the clock setting of the uTrack24 to synchronize to the PTP clock available in the AudioLAN Module digital card.

When another option (other than “Digital I/O”) is chosen in the uTrack24, it is the responsibility of the user to make sure that the audio network is also synchronized with the same clock.

Note: The PTP option in the “Clock Source” menu of uTrack24 refers to the PTP available on the network port of the uTrack24 and not the PTP available on the AudioLAN Module digital card.

Note: The AudioLAN Module card does not automatically slave to the clocks available in the uTrack24. The AudioLan card can only sync with PTP available in the audio network that it is connected to. Hence choosing internal clock option in the uTrack24 does not make sense when using the AudioLAN Module. If external word clock is chosen, the user should make sure that the PTP clock of the AudioLAN Module is in sync with the external word clock.

5.2. WebPage User Interface

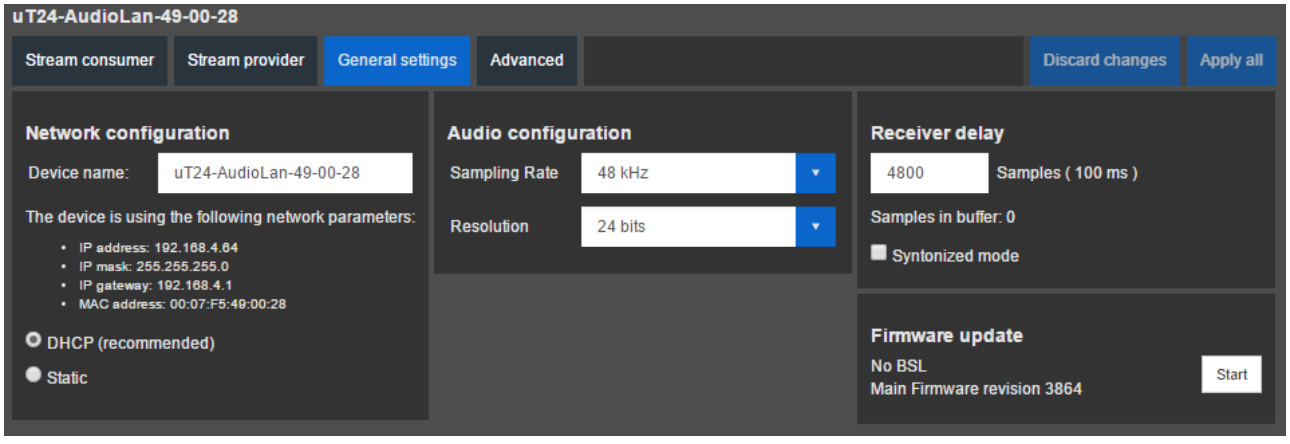


The list at the top of the page shows the Ravenna devices in the network, as they're listed through Bonjour. Devices from Cymatic and other Ravenna manufacturers are shown in this list. The lower part of the screen shows the AudioLAN Module configuration page.

The AudioLAN Module configuration page contains four tabs: Stream consumer, Stream provider, General settings and Advanced. These tabs offer access to different parameter sets of the AudioLAN Module.

When the user changes a parameter within a tab, the "Apply all" button becomes active. After changing all the desired parameters within a tab, the user can press this button to apply all the changes.

General Settings



Network Configuration

- Device Name: It is possible to change the device name (Host name) in this field
- IP Configuration
    a. DHCP: The IP configuration is obtained from a DHCP server
    b. Static: The user can provide the IP configuration manually.

Audio Configuration:

- **Sampling Rate**: Displays the sampling rate at which the AudioLAN Module is set to. This field cannot be changed. The sampling rate of the AudioLAN Module is set by the uTrack24 depending on the recording or playback parameters of the uTrack24.

- **Resolution**: The resolution selection affects the outgoing streams only. The audio channels that the module sends into the network will have the selected resolution.

Receiver delay:

This parameter applies to all streams that are received from the network. All devices in the setup are synchronized to a global absolute time. The samples exchanged between devices contain timestamps that defines the moment in which the samples were captured by the sender device. The receiver can receive audio channels from different providers and play them synchronized by using these timestamps.

The global receiver delay determines the time between sampling at the source device and reproduction at the destination device. If this time is too short, the samples will not arrive to the destination device on time because of the network delay; the destination device will discard expired samples. Increasing this value increases the latency. If this value is too large, the received samples may fall out of the receiver buffer and be discarded too.

Firmware Update:

The AudioLAN Module's firmware can be updated from here.

To update the firmware press the start button and follow the instructions on the screen. The update page lets you provide a .BCD file (available at http://www.cymaticaudio.com/downloads) and perform the update.

Detailed firmware update documentation is also available in the downloads section of the Cymatic website.

Stream Provider

The Steam provider tab, lists the available streams in the AudioLAN Module to feed into the network.

In this tab the user can change the names, multicast address and port of the streams. There is also the option to activate or de-activate the streams. The status column indicates the current status of the stream.

The output streams are bundled with a fixed number of channels that cannot be changed. At 48 Khz, there are 3 streams available with 8 channels each. At 96 Khz there are 2 streams available with 4 channels each.

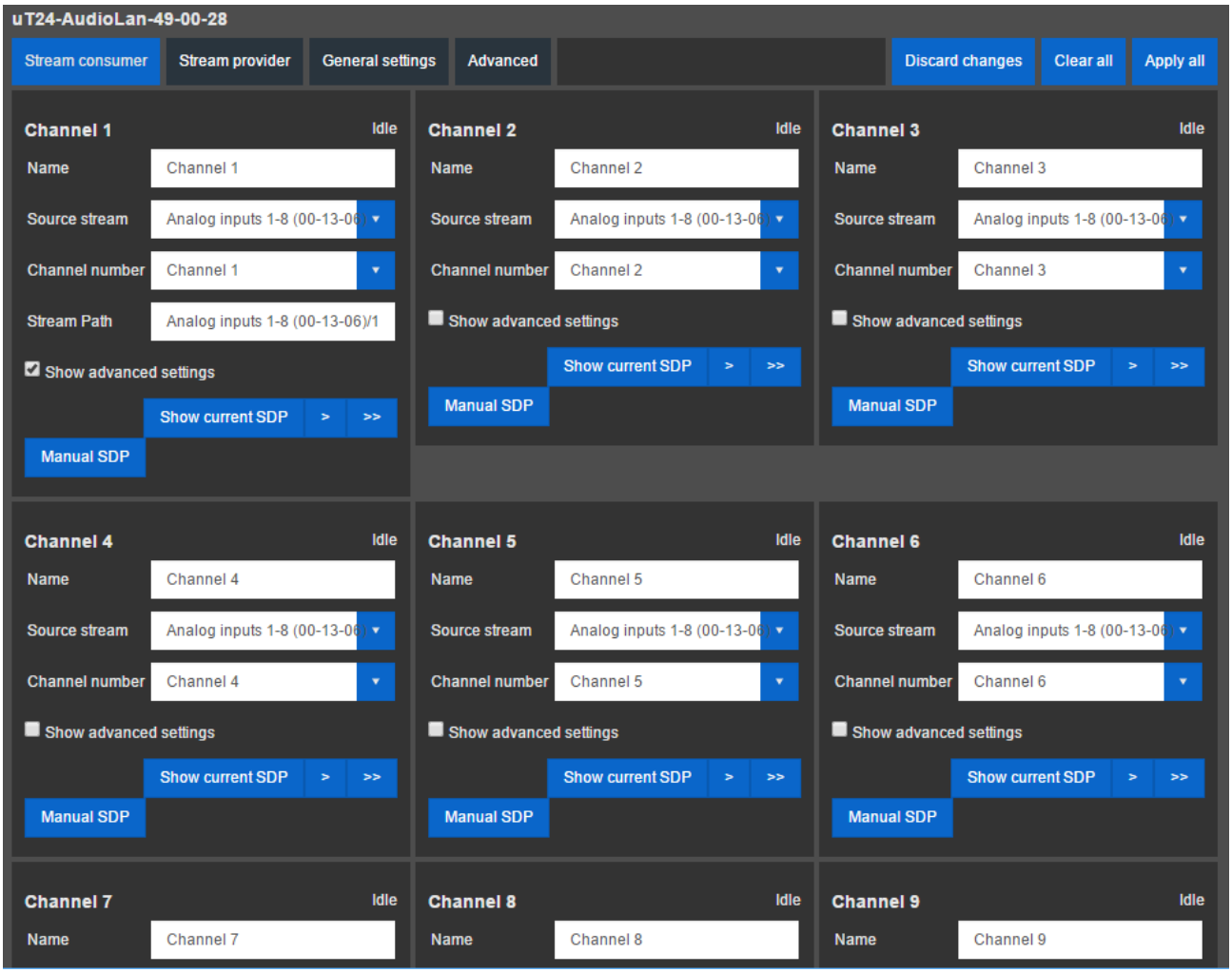
Automatic configuration

If the “Use automatic configuration” check box is activated, the fields for the multicast address and the port are no longer visible. The port is fixed to the default 5004 and the multicast address is computed from the current IP address of the device like follows: 239.N.AAA.AAA, where N is the stream number and AAA.AAA are the last two bytes of the device’s current IP address.

⚠ *Note: The streams will be actively transmitting only when the uTrack24 is playing back in standalone mode or when the AudioLAN Module is configured to act as an output when uTrack24 is used as an interface device. The Activate checkbox in the Stream provider section must also be enabled.*

Stream consumer

The Steam consumer tab allows to setup AudioLAN Module recording channels to be fed with AES67 streams available on the network. The number of recording channels available depends on the sample rate that the device is working on. At 48Khz, 24 recording channels are available and at 96 kHz, 8 channels are available.



Every active recording channel of the AudioLAN Module has a box with channel name, source stream and channel number. The source stream field and the channel number field are populated with the information gathered from the audio network.

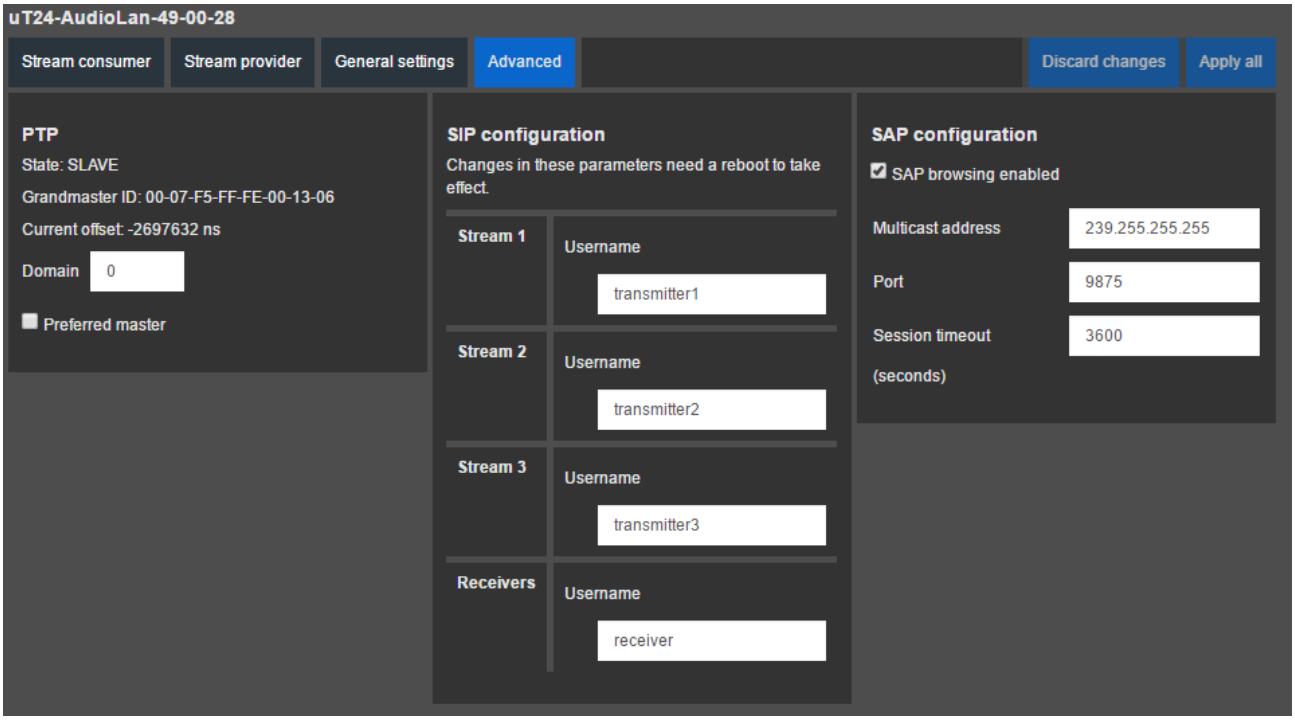
Clicking on the “show advanced settings” shows the stream path of the source. Alternatively, the user can provide an SDP file manually. The currently active SDP can be seen by clicking the “Show Current SDP” button.

The status (idle, waiting, receiving etc.) of the recording channel is shown on the top right part of the box.

The buttons “>” and “>>” help to automatically fill in the next recording channel(s) with the stream information.

Note: The streams will be actively receiving only when the uTrack24 is recording when in standalone mode or when the AudioLAN Module is configured to act as an input when uTrack24 is used as an interface device. When the uTrack24 is recording, make sure to use AudioLan “Inputs” in the settings menu for proper recording.

Advanced tab



PTP

Information about the current PTP state (master or slave), the Grandmaster ID and the current offset are shown in the PTP area.

It is possible to change the PTP Domain if the network has multiple PTP Domains. The AudioLAN Module can be chosen to be the preferred master if required.

SAP Configuration

SAP browsing should be enabled for interworking with Dante devices.

SIP Configuration

SIP stream parameters are possible using the SIP Configuration field.

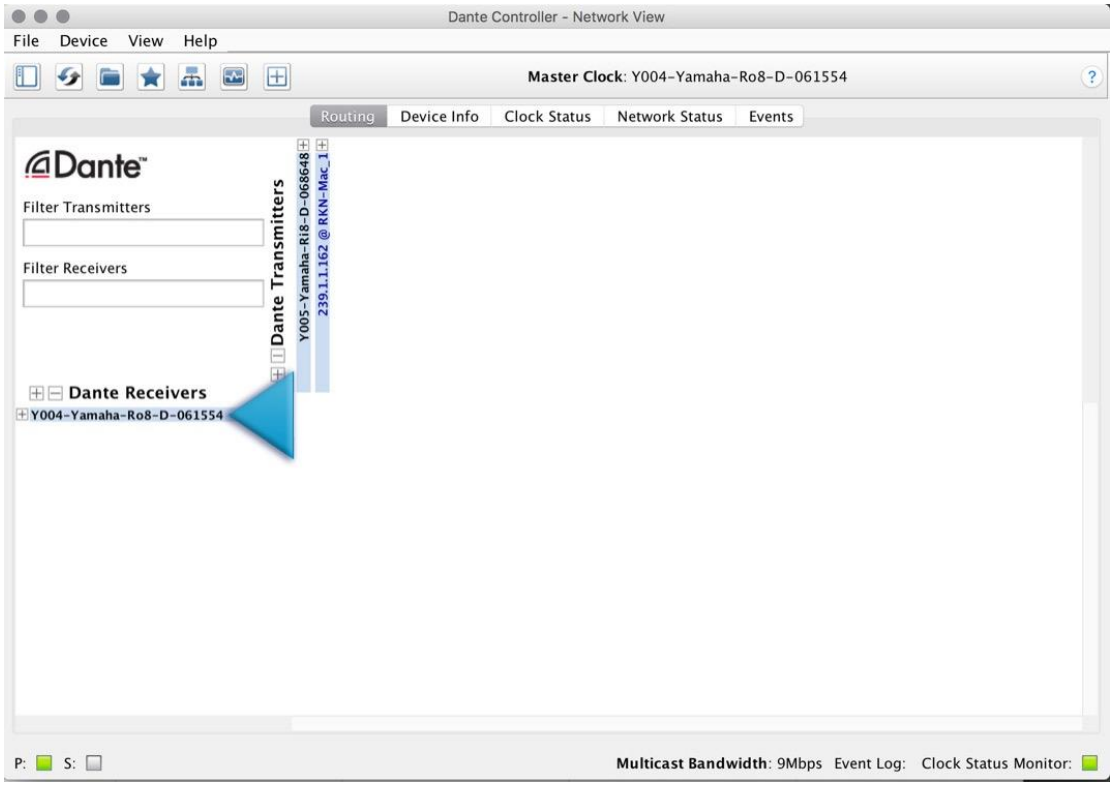
6. CONNECTING AudioLAN Module TO DANTE DEVICES

AudioLAN Module can be connected to Dante devices which support AES67 protocol to exchange audio with each other. Please make sure that you have the latest AudioLAN Module firmware loaded as well as a Dante firmware that supports the AES67 protocol.

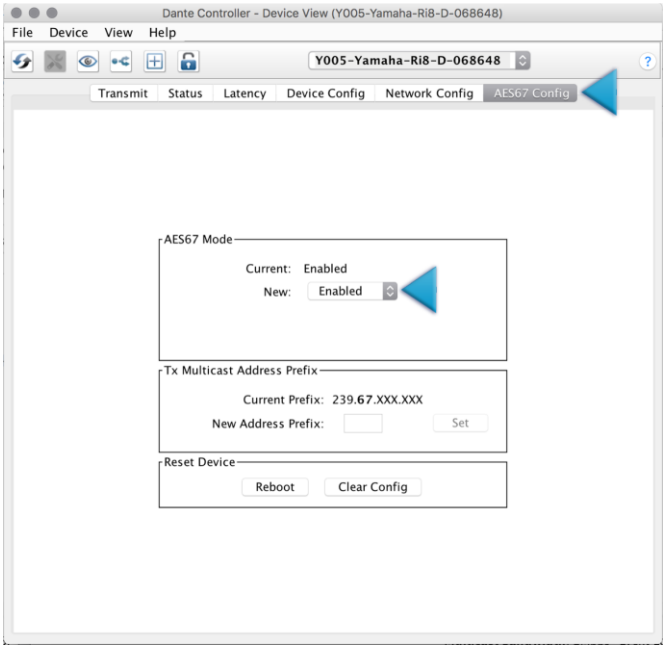
Connect the AudioLAN Module card and the Dante device in the same network. Make sure that both the devices are on the same subnet. When using DHCP this should be automatically done.

6.1. Configuring Dante device to be AES67 compatible

Download and install the Dante Controller. Open the Dante Controller and Select (Double Click) the Dante device you want to configure.



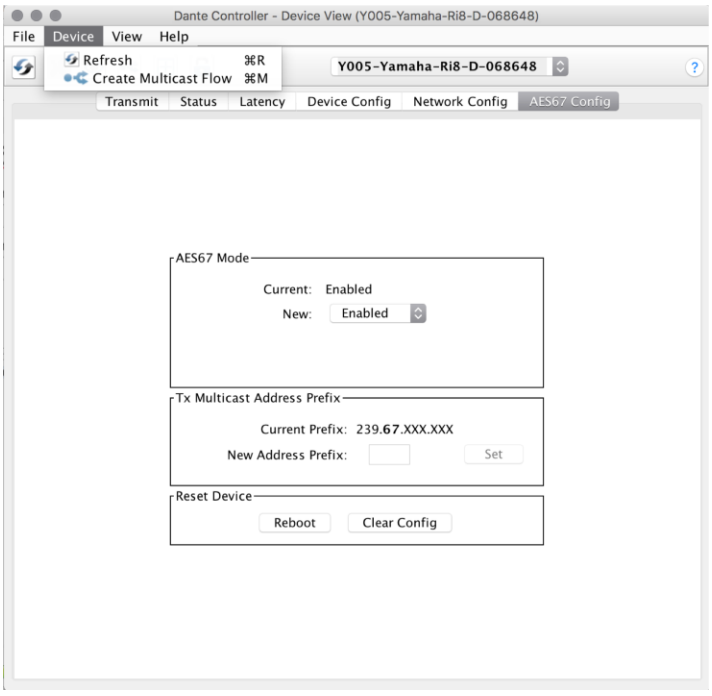
Go to the “AES67 Config” tab and enable the AES67 mode. Then reboot the device.



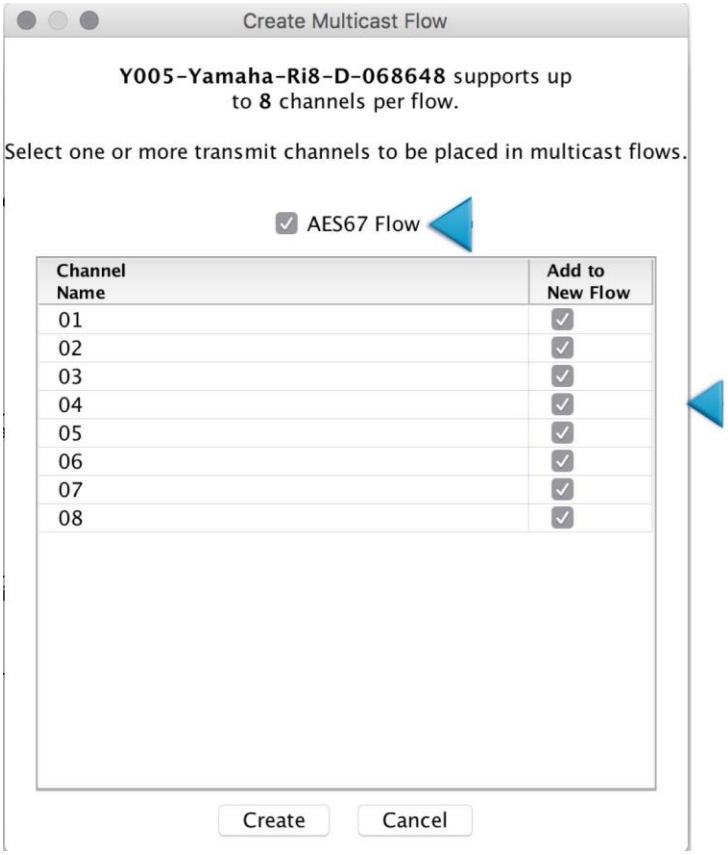
6.2. Setting up audio streams from Dante device

An AES67 audio stream in the Dante device is called an ‘AES67 Flow’.

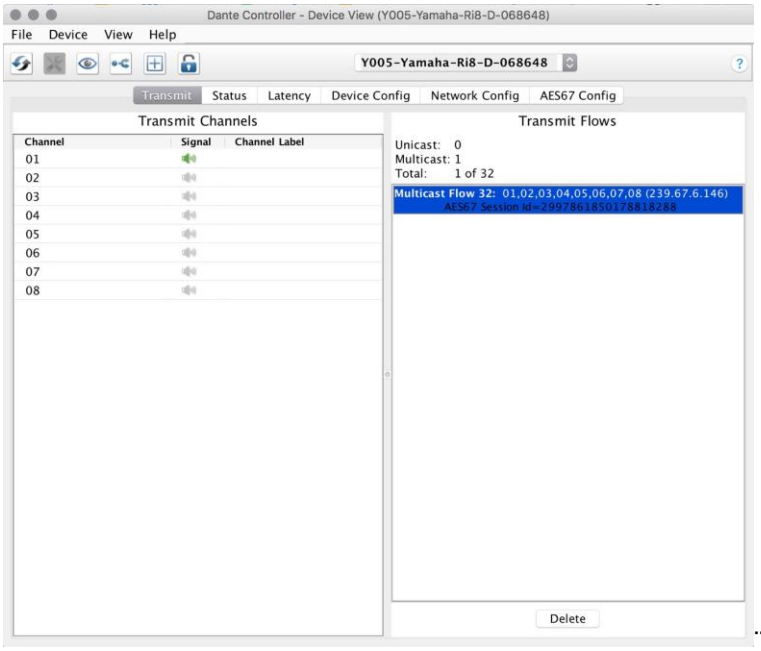
1. Open the device you wish to use as a source
2. From the Device menu select Create multicast flow



3. Tick AES67 flow
4. Select what audio channels you want to send as AES67 and click on Create

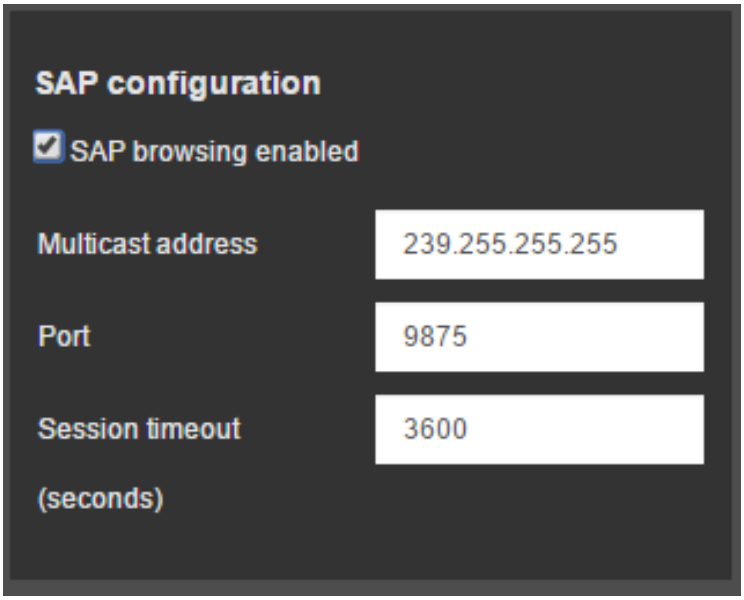


5. The device transmit status should look like this:

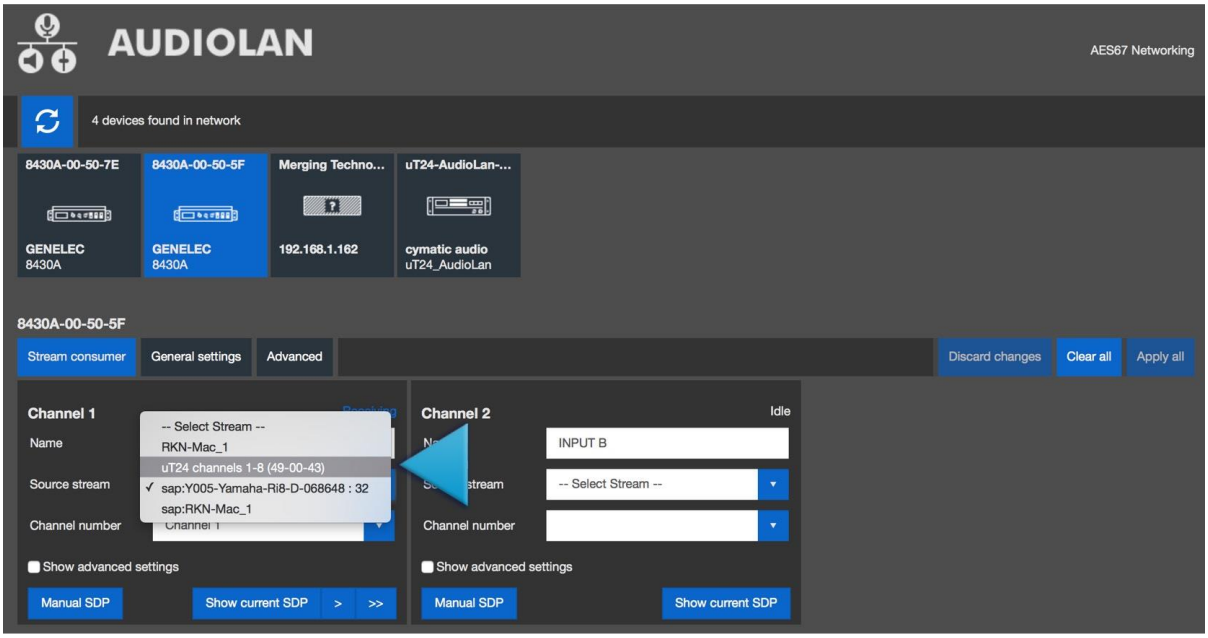


6.3. Receiving Dante streams in AudioLAN Module

Open your browser and access the configuration webpage of the AudioLAN Module. On the “Advanced” tab make sure that the “SAP browsing enabled” is checked:



On the Stream consumer tab for any recording channel, a list of sources should be available under the “Source stream” drop down list. Select the Dante stream and a channel number for the recording channel.



6.4. Sending streams from AudioLAN Module for Dante Device

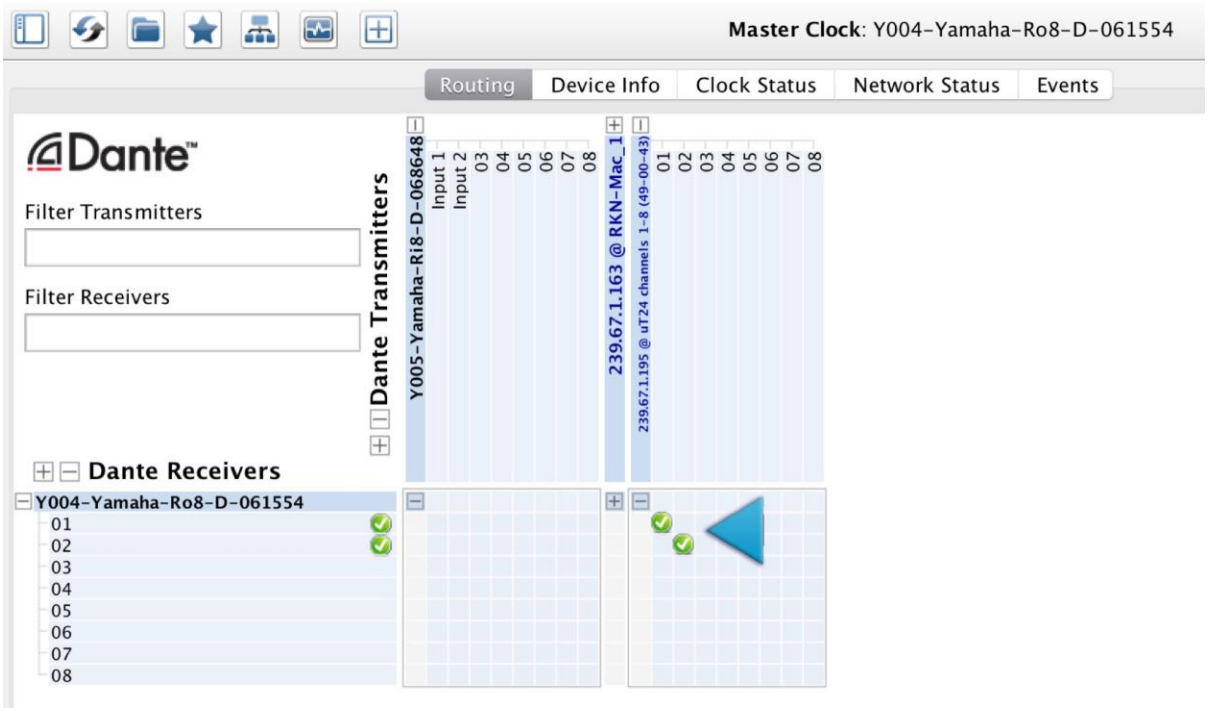
On the “Stream provider” tab, uncheck the “Use automatic configuration”

Make sure that the multicast address of each stream matches the multicast address prefix given in the Dante Controller (239.67.xxx.xxx as shown in section 6.2). The addresses have to be unique within the network.

As described in section 6.3, ensure that SAP browsing is enabled in the advanced tab.

6.5. Receiving streams from AudioLAN Module into Dante Device

The transmitted streams from the AudioLAN Module will be visible in the Dante Controller.



Audio connections can then be made in the normal way to devices that have been AES67 enabled

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uTrack24

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