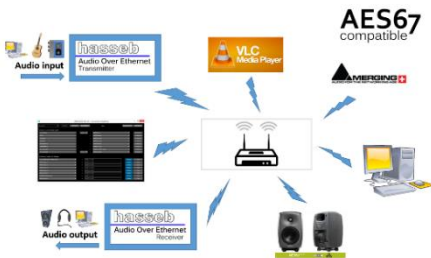


HASSEB AUDIO OVER ETHERNET



hasseb Audio over Ethernet is an easy to use and portable device used to send and receive lossless, real-time audio using Ethernet network. The device is compatible with AES67 standard and can be used as a standalone device or together with other AES67 compatible devices.

Four different version of the device exist with different audio connectors and power options.

	Audio connector	Power	Transmit / receive
Audio over Ethernet Transmitter/Receiver	2 x 3.5 mm plug	5 V USB	Transmit / receive
Audio over Ethernet Pro	4 x RCA, 2 x TOSLINK (optical)	5 V USB, PoE	Transmit / receive
Audio over Ethernet Receiver	2 x RCA	5 V USB, PoE	Receive only
Audio over Ethernet XLR	2 x XLR	5 V USB, PoE	Transmit only

The device can operate as a AES67 stream sender and/or receiver. Depending on the device type, different audio connector is used to connect the device to different audio inputs and outputs.

The device is configured using a web user interface. mDNS (multicast Domain Name System) protocol is supported to easily find the device IP addresses from the network.

For syncing the audio streams between different network devices PTP (Precision Time Protocol) based time synchronization is utilized. The device can act as a PTP grand master to provide synchronization clock signal to the network.

INSTALLATION

The device is powered through the USB connector using 5 V USB power supply or using a PoE (Power over Ethernet) switch.

DHCP (Dynamic Host Configuration Protocol) support is enabled by default, so the device will assign an IP address automatically. Devices and their names and IP addresses connected to the network can be found using any software, capable of searching the network for mDNS supported devices. For example, free third-party software such as *Bonjour* or *MT Discovery* can be used to search for the devices in your network.

If you have normal domestic network router, the web user interface of your router can also be used to find the IP addresses of the connected devices.

WEB USER INTERFACE

The device can be configured for network, audio, and stream settings using any web browser. By writing the IP address of the device to the address field of your web browser, the configuration page will be opened.

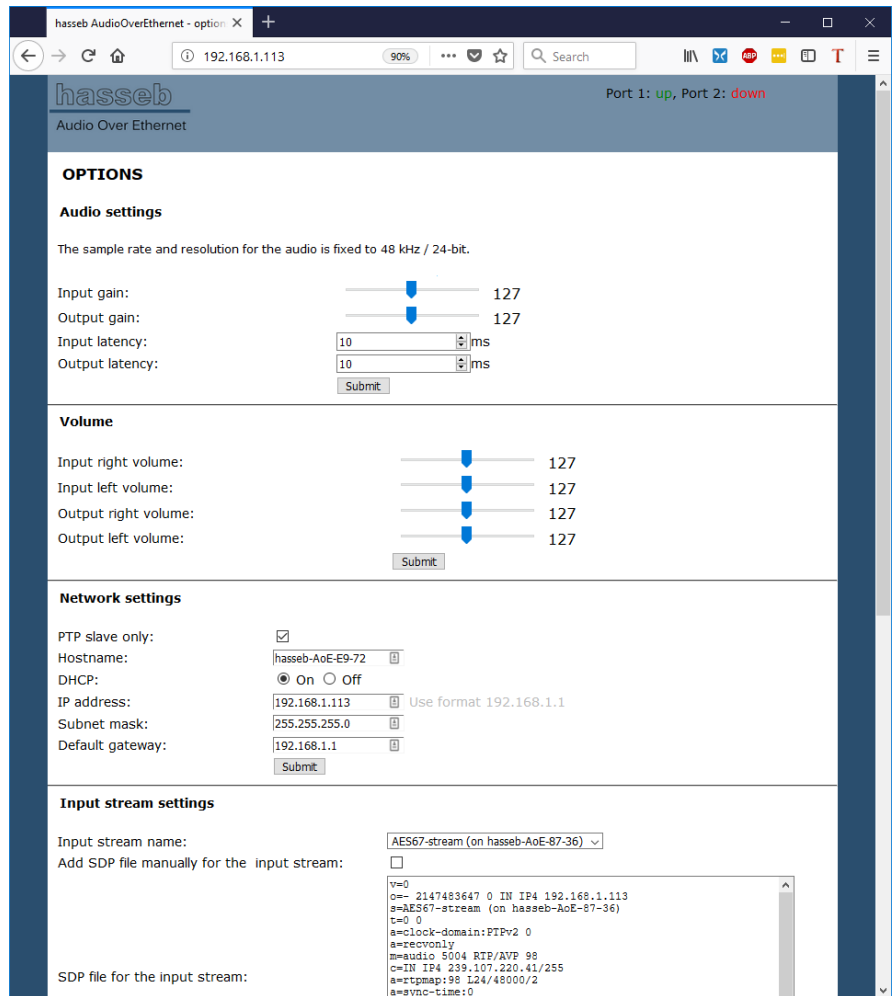


Figure 1: A web browser is used to configure the device.

The configuration web page differs slightly depending on the device version in use.

AUDIO SETTINGS

The default volume after restarting the device is set using the input and output gain sliders. The signal buffer/latency in milli seconds can be set individually for both the input and output streams.

The sample rate and resolution for the audio signal is fixed to 48 kHz / 24-bit.

For *Audio over Ethernet XLR* version of the device the phantom voltage can be set on/off using the audio settings.

For *Audio over Ethernet Pro* version of the device the audio settings can be used to configure the input port to use the analog RCA connector or the optical Toslink port. The output signal will be always sent to both the analog RCA connector and to the optical Toslink port.

The device will reboot automatically after audio settings have been changed.

VOLUME

The volume settings can be used to change the volume level for each audio channel separately. The volume settings are not saved to volatile memory, thus the default volumes set using the audio settings are used after reboot.

NETWORK SETTINGS

The hostname, IP address, subnet mask, and default gateway can be set using the web interface. The DHCP can also be enabled or disabled. By default, the device uses DHCP to assign the network settings. The default hostname for the device is *hasseb-AoE-XX-XX*, where *XX-XX* are the last two octets of the device MAC address. It is also possible to force the device to PTP slave mode if necessary. After configuration of new network settings, the device will reboot automatically.

STREAM SETTINGS

The input stream settings are used to choose the AES67 stream received from the network. The chosen stream name is stored to the internal memory of the device and will be used by default after power down. It is also possible to select the input stream manually by adding the SDP file for the input stream.

The stream sent by *hasseb Audio Over Ethernet Pro* device will be named as *AES67-stream (on 'network_hostname')*, where *'network_hostname'* is the hostname of the device as defined in network settings (for example *AES67-stream (on hasseb-AoE-AB-CD)*).

AES67 standard defines the audio stream following RTSP (Real Time Streaming Protocol) used also for example in internet radio stations. The address of the output stream is visible on the "RTSP address for the output stream" field. In addition to another *hasseb Audio Over Ethernet* device, the output stream can be listened using any media player supporting RTSP protocol, such as VLC media player.

By default, the IP address for the output data stream is chosen randomly between 239.1.1.1 and 239.255.255.255. If a static IP address is required, the IP address can be manually added by choosing the "Add IP address manually for the output stream" option and adding the wanted IP address to the "IP address"

field. The SDP file of the output data stream is visible on the “SDP file for the output stream” field.

STATUS LED

There is an LED inside the device to indicate the status of the device. The LED will blink once a second when the device is operating properly.

RESET FACTORY DEFAULTS

If something goes wrong with the network settings and you cannot access the device anymore through the network, you can reset the factory defaults using the push button on the circuit board. To access the button, you need to open the enclosure.

To reset the factory default settings, press the push button and power up the device. Keep the push button pressed for 5 seconds. This will reset the setting to factory defaults. The default network configuration is DHCP on.

QUESTIONS AND ANSWERS

I CAN NOT GET CONNECTION TO THE DEVICE

Make sure that you are using high quality USB cable and your power supply is strong enough to power the device.

I CAN NOT CHANGE AND SAVE THE PARAMETERS

Make sure that you are using high quality USB cable and your power supply is strong enough to power the device. Try using another web browser. Chrome or Firefox are recommended.

I DON'T SEE THE AUDIO STREAM IN MY DANTE NETWORK

AES67 does not define any standard method for stream advertisement. If you are using the device in Dante network you need to add the stream manually using SDP file. Read the manual of your Dante device to find out where to find the SDP file of your Dante device. You also need to make sure that your Dante devices are operating in AES67 mode.

WHAT IS THIS SDP FILE?

The Session Description Protocol (SDP) is a format for describing multimedia communication sessions for the purposes of session announcement and session invitation. It is a text file including all parameters to receive an audio stream. The SDP file of a hasseb audio stream can be found from the web user interface. If you want to listen a Dante stream, you need to have the SDP file of your Dante stream and copy-paste it to the web user interface of the hasseb device.

TECHNICAL SPECIFICATIONS

Audio over Ethernet Transmitter/Receiver

Input voltage	5 VDC
Input current	300 mA
Input audio voltage	2.1 V _{RMS}
Output audio voltage (1 k Ω load)	2.1 V _{RMS}
Operating temperature	0 – 50 °C
Dimensions	65 mm x 65 mm x 30 mm
Weight	100 g

Audio over Ethernet receiver

Input voltage	5 VDC
Input current	300 mA
Output audio voltage	2.1 V _{RMS}
Operating temperature	0 – 50 °C
Dimensions	65 mm x 65 mm x 30 mm
Weight	100 g

Audio over Ethernet Pro

Input voltage	5 VDC (USB) / 48 V (PoE)
Input current	300 mA (5 V)
Input audio voltage	2.1 V _{RMS}
Output audio voltage (1 k Ω load)	2.1 V _{RMS}
Operating temperature	0 – 50 °C
Dimensions	83 mm x 129 mm x 30 mm
Weight	210 g

Audio over Ethernet XLR

Input voltage	5 VDC (USB) / 48 V (PoE)
Input current	300 Ma (5 V)
Input audio voltage	50 mV
Phantom voltage	48 \pm 2 V
Operating temperature	0 – 50 °C
Dimensions	38 mm x 64 mm x 80 mm
Weight	150 g