# LESOUND

# AUDIOELEC⚡

# User's Guide

# BEFORE WE GET STARTED

Thank you for buying or trying AudioElec. Your support is greatly appreciated and be sure that any means we have goes directly into R&D and product enhancement. If you encounter any problem or simply if you want to give us a feedback, feel free to send us a mail at support@lesound.io, we will be happy to hear from you and/or help you if needed. Information in this manual is subject to change without notice and does not represent a commitment on the part of Le Sound. The software described in this manual is furnished under a license agreement. The software may be used only in accordance of the terms of this license agreement. It is against the law to copy this software on any medium except as specifically allowed in the license agreement. No part of this manual may be copied, photocopied, reproduced, translated, distributed or converted to any electronic or machine readable form in whole or in part without prior written approval of Le Sound.

# INTRODUCTION

AudioElec is a synthesizer dedicated to the emulation of electrical sounds. The synthesizer is based on Le Sound's dynamic modeling technology and uses sampling only for very specific modules. That is, it produces sounds by solving, on the fly, mathematical equations modeling the different components of electrical approximations developed by Le Sound. This complex synthesis engine responds dynamically to the control signals it receives and exposes high-level controls carefully mapped to the low-level synthesis model.

## Procedural audio

In the video game world, procedural audio refers to the computational process of generating audio from nothing, or almost nothing. The goal is to use almost no .wav data (pre-recorded audio files), but rather models that generate in real-time the equivalent audio data that would be contained in pre-recorded files. Procedural audio has many advantages: it saves memory by using code instead of .wav data; it's flexible (computation can depend on all game parameters); it can lighten the burden of specific tedious tasks (sounding hundreds of interacting objects or animations) and it brings flexibility to the pipeline (since sound is directly linked to game parameters, changes will modify audio generation accordingly to keep it synced, avoiding the need for sound redesign).

## System requirements

AudioElec is compatible with the following standard : VST, AAX, AU

*AAX 64bits is compatible with Pro Tools 11 and above. Please refer to Avid for precise system compatibility.

# INSTALLATION

## Windows

Double-click on audioelec*.exe to launch installation wizard. Click on "Next" to go to the next screen. You have to read and agree to the End User License Agreement before proceeding. On the following screen you'll be able to choose the components you want to install:

- Common files regroup all documentation related to this product
- VSTi 64-bit will install the 64-bit VST instrument
- AAX 64-bit: the 64-bit version of the AAX plugin for Pro Tools 11 and above exclusively.

The following screens of the installer will allow you to choose custom locations for common files, VSTi and AAX. Default installation paths are as follows:

Common files and databanks: "C:\Program Files (x86)\LeSound"
64-bit VSTi plug-in: "C:\Program Files\Vstplugins"
64-bit AAX plug-in: "C:\Program Files\Common Files\Avid\Audio\Plug-Ins"

You may have to install Microsoft Visual C++ redistributables. If you don't have them already installed on your computer, select "Yes" when the installer asks you if you want to install the package. Otherwise, you can click on "No". The installation is then complete.

## Mac OS X

Double-click on audioelec*.pkg to launch installation wizard. Please read and accept the End User License agreement in order to proceed. By default, the installer is set on "automatic" mode and you won't have anything to do, but you can also choose a "custom" installation mode and you'll be able to select which component you want to install and where to install it. The different choices are:

- Common files – regroups all documentation related to this product
- VSTi / 64-bit will install the VST instrument
- AudioUnit 64-bit will install the Audio Unit instrument
- AAX 64-bit will install the AAX plugin for Protools 11 (64-bit).

Default installation paths are:
Common files and databanks: "/Applications/LeSound"

64-bit VSTi plug-in: "/Library/Audio/Plug-Ins/VST"
64-bit AUi plug-in: "/Library/Audio/Plug-Ins/Components"
64-bit AAX plug-in: "/Library/Application Support/Avid/Audio/Plug-Ins"

## Activation

AudioElec uses iLok license activation. When you purchase AudioWind, an iLok license is associated and you need to transfer it to your iLok. Please enter your iLok account name while registering Le Sound.



If you encounter any problem with the activation process, please don't hesitate to send us an email at support@lesound.io.

# Table of Contents

# MODULES DESCRIPTION

## Hum

Combining several oscillators, the **Hum** module uses modulations and randomizations to synthesize the low sound of an electrical line, device or domestic appliance. It can typically be used to recreate a humming fridge, a buzzing transformer or these electric drones that you usually try to avoid in your recordings!



**Base Freq**: Fundamental frequency of the sound.
> 50 Hz: Set base frequency to 50Hz.
> 60 Hz: Set base frequency to 60Hz.

**Beat Freq**: Relative value for an typical beating interference between two close frequencies.

**Mod Freq** : Frequency of an amplitude modulation (0 deactivate the modulation).

**LoCut** : Cut of a low-cut filter.

**Liveliness** : Amount of randomization on the base frequency through time.

**Buzz** : Volume of an additional buzz.

**Mode** : Sustain: continuous sound

**Push** : sound is triggered by clicking on the jack logo right below. Use this mode typically to simulate a finger touching a plugged jack.

## Arc Impulse



Thanks to oscillators, wave shaping and sharp envelopes, the **Arc Impulse** module synthesizes sound of electricity arc which can for example accidently appear in power distribution centers or when objects touch high voltage lines.

**Impulse Count** : Numbers of Impulsions to trigger.

**Impulse Length** : Duration of each impulsion.

**Base Freq** : Fundamental frequency of the sound.

**Harmonics** : Volume of two harmonics of the base frequency

**Liveliness** : Amount of randomization on the impulses durations.

**BandPass** : Center frequency of a bandpass filter.

## Arc Sustain

Using the same kind of process than the Arc Impulse module, the **Arc Sustain** module helps you generate some continuous electric power noises like those in power relay stations

**Base Freq** : Base frequency of the signal.

**Pulse Depth** : Increases grainy aspect of the signal.

**Liveliness** : Adds fluctuations and irregularities in the signal.

**Harmonics** : Set the volume of the harmonics of the base frequency.

**BandPass** : Set the cut frequency of the bandpass

## HighVoltage

The High Voltage module is based on a static highvoltage line sound and let the user shape a periodic ramp on its frequency to create a flexible and lively hard electrical sound.

**On/Off** : Enable/Disable the module.

**Length Randomization** : Set the range of duration for ramps. Each new ramp will see its duration chosen at random from this Min-Max range.

**Pitch Amplitude** : Controls the width of frequencies along the ramp

## Sparks

The Sparks module synthesizes small sparks sounds by quickly switching generators frequency through time.

**Base Freq** : Base frequency of the signal.

**Density** : Set the hardness of the sparks.

**HiCut** : Set the cut frequency of the High Cut filter.

# Granulator

The Granulator module enables you to create new sounds from existing samples using granular synthesis. Recombining small chunks of the original sound, you can generate a new sample of any duration.



**On/Off** : Start/Stop the player.
**Speed Rate** : Increase/Decrease speed with transposition effect.
**Samples** : List the available samples for the module.

# Telemetry

The Telemetry module synthesizes the sound of communications and measurements process on computers or older electronic devices such as modems or radars. They are 3 different generators in this module each allowing different kinds of fine tuning.

## Generator 1



**Trigg push** : Generates a 1-shot sample which duration is defined by Trig length.
**Infinite toggle** : Generates sound continuously.
**Trig Length** : Define the sample duration triggered by the Trig push button.
**Freq Range** : Increase the range of randomly chosen frequencies.

## Generator 2



**Trigg push** : Generates a 1-shot sample which duration is defined by Trig length.
**Infinite toggle** : Generates sound continuously.

**Trig Length** : Define the sample duration triggered by the Trig push button.

**Base Freq** : Base (lowest) frequency of the signal.

**Freq Range** : Increase the range of randomly chosen frequencies, based on Base Freq.

**Repeat Rate** : Set the delay between each new frequency.

**LoCut** : Set the cut frequency of the Low Cut filter.


*Generator 3*



**Trigg push** : Generates a 1-shot sample which duration is defined by Trig length.

**Infinite toggle** : Generates sound continuously.

**Trig Length** : Define the sample duration triggered by the Trig push button.

**Freq Range** : Set the range (Min-Max) of randomly chosen frequencies.

**Repeat Rate** : Set the delay between each new frequency.

**LoCut** : Set the cut frequency of the Low Cut filter.


## Mixing Module

With the Mixer module, you can control the volume of each modules separately.



**TELE**: Telemetry                 **SPARKS**: Sparks

**HUM**: Hum                        **HV**: HighVoltage

**ARCI**: Arc Impulse               **GRANU**: Granulator

**ARCS**: Arc Sustain               **MASTER**: Volume control of all the modules at once.

# OTHER FUNCTIONALITIES

Click on the "AUDIOELEC" logo to see several options menu.

## Audio Options

*Link to host 'Play'*

When the tickbox is checked, sound will be produced only when your host is playing. When you hit "Stop", sound computing will stop too. By default, this tickbox is unchecked so you should always hear sound.

*Speakers arrangement*

Here you can select your favorite mapping for your outputs. Be sure to have configured your host correctly if you have a surround system, so that your outputs are mapped correctly. If your system only has two outputs, you will only be able to select "Mono" or "Stereo" for instance. The combobox allows you to switch between "Music" or "Cinema" mapping for surround systems.

## Open Sound Control (OSC)

AudioElec is an OSC friendly plugin, meaning that you can use any OSC enabled device or software you want to control it. We also provide a fully functional template for TouchOSC users on iPad. You can find the file here: http://lesound.io/download/

*TouchOSC setup guide*

The following guide covers the installation and configuration of TouchOSC on iPad for AudioElec.

TouchOSC is an OSC app available on the App Store. Search it in the App Store or go to hexler.net to download it on your computer. Once the app is installed, please plug your iPad, start iTunes and go to your device's "Apps" tab Scroll to the File Sharing section where you will find a list of Apps. Select TouchOSC from this list and a new list of TouchOSC related document should appear. You can now add the AudioElec template by dropping it into that list or by clicking the *Add* button.
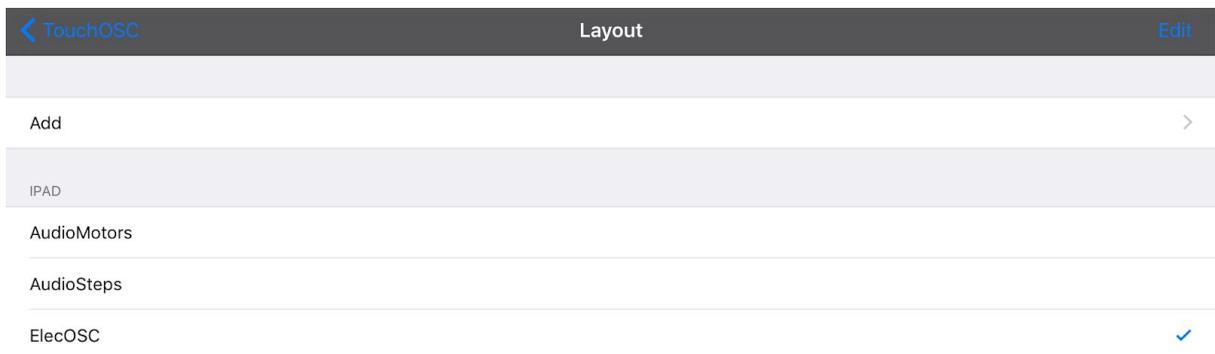
Next you will need to start TouchOSC on your iPad and tap on the OSC row in the *Connections* section of main menu and turn the *Enabled* switch on.

| TouchOSC | | Done |
|---|---|---|
| CONNECTIONS | | |
| OSC: Disabled | | > |
| MIDI Bridge: Disabled | | > |
| CoreMIDI: In(0/0) Out(0/0) | | > |

The host should be the IP address of the computer running AudioElec, please scroll to the next section if you don't know how to find your IP address. AudioElec is, by default, configured to send on port 9000 and receive on port 8000.

| < TouchOSC | OSC | |
|---|---|---|
| Enabled | | ⬤ |
| Host | | 192.168.x.x |
| Port (outgoing) | | 8000 |
| Port (incoming) | | 9000 |
| Local IP address | | 192.168.2.43 |

You can of course customize the ports to be used. Please make sure that those ports are not already occupied by any other process on your computer and to reflect your configuration in the AudioElec preferences (see section "AudioElec OSC Setup Guide" below). Once the configuration is done, go back to the main menu in TouchOSC and tap the *Layout* row. The AudioElec template should appear in the list, tapping it will make it the current active template.

| < TouchOSC | Layout | Edit |
|---|---|---|
| Add | | > |
| IPAD | | |
| AudioMotors | | |
| AudioSteps | | |
| ElecOSC | | ✓ |

The TouchOSC configuration is now over you can go back to the main menu and tap the *Done* button in the upper-right corner of the iPad.

## How to know my computer's IP address

If you're a Mac user click to the Apple icon on the upper-left corner of the screen and select System Preferences. Go to the Network button which should be on the third row. Then in the left-side list click on your WiFi connection and your IP address should appear.



If you're a Windows user, click the *Start Menu* (right click if your are on Windows 8.1), open the Control Panel and go to Network and Internet, then go to Network and Sharing Center. You should see your network under *View Your Active Networks*. Click the name of your network next to the *Connections* label on the right and then go to *Details*. Your computer's IP address should appear in the value column next to *IPv4 Address*.
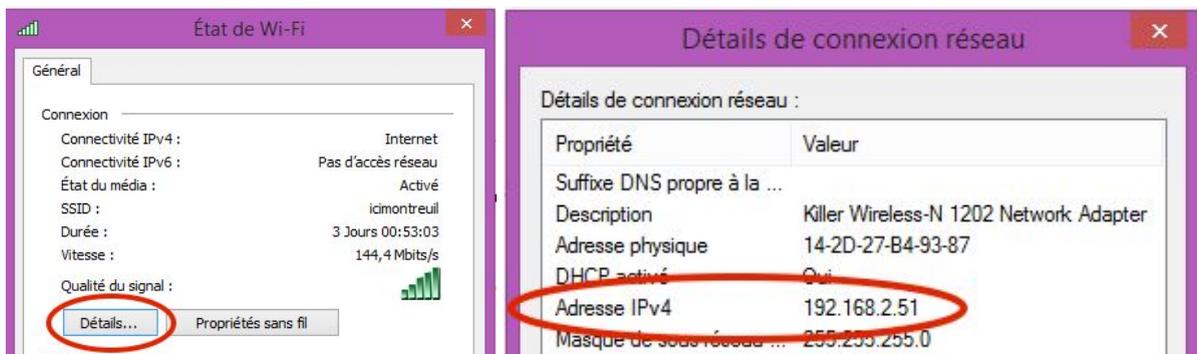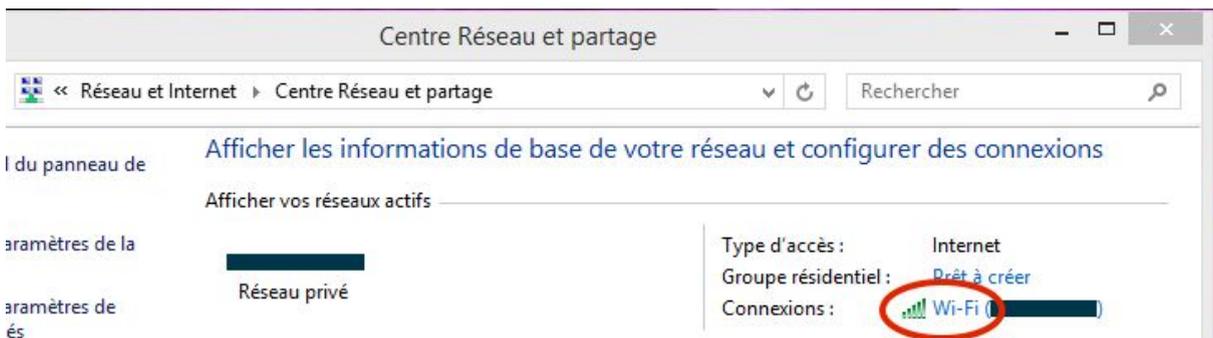


## AudioElec OSC Setup Guide

To enable OSC, open AudioElec preference by clicking the AUDIOELEC title of the plugin interface. Go to the OSC line and check the Enable OSC box, the IP field and input / output ports should now be editable. The IP should be the IP address of your iPad which can be found in the configuration page of the TouchOSC we have seen previously. If you configured

TouchOSC with our default port values, you shouldn't need to change anything else. Otherwise, make sure you reflect the exact same port configuration on both the computer and the iPad.



Click on the apply button to validate and come back to the plugin interface.

If you are having trouble finding the IP address to set you can open the Settings app on your iPad, go to the Wi-Fi tab and tap the circled-blue i next to the network you're currently connected.

Congratulations! Now you should be able to control AudioElec with your iPad !

## Random

Located in the upper right corner, the RANDOM button generates a new set of parameters for all the modules of the plugin. You can click on the button as much as you want until you hear a sound that suits you. If you need, you can reset to default parameters or other configurations with the PRESET menu next to it (see next section).

# Presets

## *Preset Manager*

The PRESET button located in the upper right corner allows you to display the preset manager which handles every basic preset operation.

There are two dropdown preset lists : *Factory presets* showing different usage of your AudioElec and *My presets* containing the presets you will save. To unroll the lists, click on the small white square on the left of the lists name. Then, load some factory preset by double clicking a its name.

After getting mad and turning every single button from min to max value, you can go back to the default state of the plugin by recalling the "Reset" preset.

Once you've sculpted the sound you were looking for, simply click on the SAVE button at the bottom of the preset manager to add a new preset corresponding to the current state of the plugin. The newly created preset will appear at the bottom of *My presets* list. You can rename it by double clicking on its name to recall it then click once more on it to get the typing cursor.

To delete a preset, double click on its name (which will recall it) then click the DELETE button at the bottom of the preset manager.

## *Factory Presets List*

The factory presets are organised by modules. Each preset of the list changes only the parameters of the module involved, leaving the other modules intact except for the their volume. Here is the list of all the factory presets :

- Hum module
    - Server Room
    - Mosfet Revolution
    - Idle Pod
    - Cheap Connector
    - Everlasting Generator


- Arc Impulse module
    - Fat & Crispy
    - Electric Needle
    - Entropic Com
    - Precision Welding
    - Faulty Terminal
- Arc Sustain module
    - Short Circuit

- - - Electric Fryer
    - Grainy Router
    - Roomba Purr
    - Bytes Grinder
  - HighVoltage module
    - Switchgear
    - Very Long Wire
    - Close to Surge
    - Bending the Line
    - Looped Fuse
  - Sparks module
    - Electric Log
    - Ionized Discharge
    - Plasma Flame
    - Ignition Coil
    - Drone Circling
  - Telemetry module
    - Generator 1
      - Chatty GameBoy
      - Instant Algebra
      - Data Monologue
    - Generator 2
      - Ancient Glitch
      - Access Granted
      - Faulty Drive
    - Generator 3
      - High Dial
      - Tattletale
      - RDroid
    - Generator 2 & 3
      - Swarming Radar
      - Singing Duet
      - HiLoWeen
      - Pac Mad
      - RJ45 Anthem
      - Jackpot

## Automation

All the parameters from your AudioElec plugin are available for automation in your favorite host including separate modules volumes and master volume. Simply go to the host automation menu or panel and all of them should appear, ordered alphabetically.

# TROUBLESHOOTING

If you followed this guide but still aren't able to control your AudioElec, you can try the following suggestions: - Try another port configuration. - Try closing other programs that are currently using your network. - Try to reboot devices, maybe a process is still bound to the port you're trying to use. If you're still experiencing troubles please do not hesitate to contact us at http://lesound.io/support/

Thank you!