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# **pysoundio Documentation**

*Release 2.0.0*

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A simple Pythonic interface for [libsoundio](#).

libsoundio is a robust, cross-platform solution for real-time audio. It performs no buffering or processing on your behalf, instead exposing the raw power of the underlying backend.



# CHAPTER 1

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## Installation

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You can use `pip` to download and install the latest release with a single command.

```
pip3 install pysoundio
```



See examples directory.

Some of the examples require [PySoundFile](#)

```
pip3 install soundfile
```

On Windows and OS X, this will also install the library `libsndfile`. On Linux you will need to install the library as well.

- Ubuntu / Debian

```
apt-get install libsndfile1
```

`devices.py`

List the available input and output devices on the system and their properties.

```
python devices.py
```

`record.py`

Records data from microphone and saves to a wav file. Supports specifying backend, device, sample rate, block size.

```
python record.py out.wav --device 0 --rate 44100
```

`play.py`

Plays a wav file through the speakers. Supports specifying backend, device, block size.

```
python play.py in.wav --device 0
```

`sine.py`

Plays a sine wave through the speakers. Supports specifying backend, device, sample rate, block size.

```
python sine.py --freq 442
```



## CHAPTER 3

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### Testing

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To run the test suite.

```
tox -r
```



## CHAPTER 4

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### Advanced

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If you wish to use your own build of libsoundio (perhaps you want Jack enabled) then build from source and install it globally and reinstall pysoundio.

Note: PySoundIo only works with libsoundio versions  $\geq 1.1.0$



If you find any bugs or other things that need improvement, please create an issue or a pull request at <https://github.com/joextodd/pysoundio/>. Contributions are always welcome!

You should get the latest version from [GitHub](#):

```
git clone https://github.com/joextodd/pysoundio.git
cd pysoundio
```

To install the package for development, first build the library

```
python3 pysoundio/builder/soundio.py
```

and then install with pip.

```
pip3 install .
```

Before submitting a pull request, make sure all tests are passing, and all of the example scripts run as they should.

If you make changes to the documentation, you can locally re-create the HTML pages using [Sphinx](#). You can install it and the read the docs theme with:

```
pip3 install -r docs/requirements.txt
```

To create the HTML pages, use:

```
python3 setup.py build_sphinx
```

The generated files will be available in the directory `docs/_build/html`.



## CHAPTER 6

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### Backends

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| Value                              | Backend Description |
|------------------------------------|---------------------|
| pysoundio.SoundIoBackendJack       | JACK Audio          |
| pysoundio.SoundIoBackendPulseAudio | Pulse Audio         |
| pysoundio.SoundIoBackendAlsa       | ALSA Audio          |
| pysoundio.SoundIoBackendCoreAudio  | Core Audio          |
| pysoundio.SoundIoBackendWasapi     | WASAPI Audio        |
| pysoundio.SoundIoBackendDummy      | Dummy backend       |



# CHAPTER 7

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## Formats

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| Value                            | Format Description   |
|----------------------------------|--|
| pysoundio.SoundIoFormatS8        | Signed 8 bit   |
| pysoundio.SoundIoFormatU8        | Unsigned 8 bit   |
| pysoundio.SoundIoFormatS16LE     | Signed 16 bit Little Endian  |
| pysoundio.SoundIoFormatS16BE     | Signed 16 bit Big Endian   |
| pysoundio.SoundIoFormatU16LE     | Unsigned 16 bit Little Endian                                      |
| pysoundio.SoundIoFormatU16BE     | Unsigned 16 bit Little Endian                                      |
| pysoundio.SoundIoFormatS24LE     | Signed 24 bit Little Endian using low three bytes in 32-bit word   |
| pysoundio.SoundIoFormatS24BE     | Signed 24 bit Big Endian using low three bytes in 32-bit word      |
| pysoundio.SoundIoFormatU24LE     | Unsigned 24 bit Little Endian using low three bytes in 32-bit word |
| pysoundio.SoundIoFormatU24BE     | Unsigned 24 bit Big Endian using low three bytes in 32-bit word    |
| pysoundio.SoundIoFormatS32LE     | Signed 32 bit Little Endian  |
| pysoundio.SoundIoFormatS32BE     | Signed 32 bit Big Endian   |
| pysoundio.SoundIoFormatU32LE     | Unsigned 32 bit Little Endian                                      |
| pysoundio.SoundIoFormatU32BE     | Unsigned 32 bit Big Endian   |
| pysoundio.SoundIoFormatFloat32LE | Float 32 bit Little Endian, Range -1.0 to 1.0                      |
| pysoundio.SoundIoFormatFloat32BE | Float 32 bit Big Endian, Range -1.0 to 1.0                         |
| pysoundio.SoundIoFormatFloat64LE | Float 64 bit Little Endian, Range -1.0 to 1.0                      |
| pysoundio.SoundIoFormatFloat64BE | Float 64 bit Big Endian, Range -1.0 to 1.0                         |



## CHAPTER 8

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API Reference

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### **v2.0.0**

- Updated to use CFFI
- Improved performance
- Bundled in libraries for macOS, Linux, Windows and Raspbian
- Fixes issue where multiple instances cause a crash
- Added command line scripts for examples

### **v1.1.0**

- Added support for libsoundio v2.0.0
- Added support for Windows (thanks @cameronmaske)
- Fixes for malloc errors

### **v1.0.0**

- Initial release



## CHAPTER 10

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