

:mod:`ossaudiodev` --- Access to OSS-compatible audio devices

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library)ossaudiodev.rst, line 1); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library)ossaudiodev.rst, line 4)

Unknown directive type "module".

```
.. module:: ossaudiodev
   :platform: Linux, FreeBSD
   :synopsis: Access to OSS-compatible audio devices.
   :deprecated:
```

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Unknown directive type "deprecated".

```
.. deprecated:: 3.11
   The :mod:`ossaudiodev` module is deprecated (see :pep:`594` for details).
```

This module allows you to access the OSS (Open Sound System) audio interface. OSS is available for a wide range of open-source and commercial Unices, and is the standard audio interface for Linux and recent versions of FreeBSD.

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Unknown directive type "versionchanged".

```
.. versionchanged:: 3.3
   Operations in this module now raise :exc:`OSError` where :exc:`IOError`
   was raised.
```

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Unknown directive type "seealso".

```
.. seealso::

   `Open Sound System Programmer's Guide <http://www.opensound.com/pguide/oss.pdf>`_
   the official documentation for the OSS C API

   The module defines a large number of constants supplied by the OSS device
   driver; see ``<sys/soundcard.h>`` on either Linux or FreeBSD for a listing.
```

:mod:`ossaudiodev` defines the following variables and functions:

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Unknown interpreted text role "mod".

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Unknown directive type "exception".

```
.. exception:: OSSAudioError
```

This exception is raised on certain errors. The argument is a string describing what went wrong.

(If `:mod:`ossaudiodev`` receives an error from a system call such as `:c:func:`open``, `:c:func:`write``, or `:c:func:`ioctl``, it raises `:exc:`OSError``. Errors detected directly by `:mod:`ossaudiodev`` result in `:exc:`OSSAudioError``.)

(For backwards compatibility, the exception class is also available as ``ossaudiodev.error``.)

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Unknown directive type "function".

```
.. function:: open(mode)
               open(device, mode)
```

Open an audio device and return an OSS audio device object. This object supports many file-like methods, such as `:meth:`read``, `:meth:`write``, and `:meth:`fileno`` (although there are subtle differences between conventional Unix read/write semantics and those of OSS audio devices). It also supports a number of audio-specific methods; see below for the complete list of methods.

device is the audio device filename to use. If it is not specified, this module first looks in the environment variable `:envvar:`AUDIODEV`` for a device to use. If not found, it falls back to `:file:`/dev/dsp``.

mode is one of ```r``` for read-only (record) access, ```w``` for write-only (playback) access and ```rw``` for both. Since many sound cards only allow one process to have the recorder or player open at a time, it is a good idea to open the device only for the activity needed. Further, some sound cards are half-duplex: they can be opened for reading or writing, but not both at once.

Note the unusual calling syntax: the **first** argument is optional, and the second is required. This is a historical artifact for compatibility with the older `:mod:`linuxaudiodev`` module which `:mod:`ossaudiodev`` supersedes.

```
.. XXX it might also be motivated
   by my unfounded-but-still-possibly-true belief that the default
   audio device varies unpredictably across operating systems. -GW
```

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Unknown directive type "function".

```
.. function:: openmixer([device])
```

Open a mixer device and return an OSS mixer device object. **device** is the mixer device filename to use. If it is not specified, this module first looks in the environment variable `:envvar:`MIXERDEV`` for a device to use. If not found, it falls back to `:file:`/dev/mixer``.

Audio Device Objects

Before you can write to or read from an audio device, you must call three methods in the correct order:

1. `:meth:`setfmt`` to set the output format

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Unknown interpreted text role "meth".

2. `:meth:`channels`` to set the number of channels

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Unknown interpreted text role "meth".

3. `.meth:'speed'` to set the sample rate

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Unknown interpreted text role "meth".

Alternately, you can use the `.meth:'setparameters'` method to set all three audio parameters at once. This is more convenient, but may not be as flexible in all cases.

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Unknown interpreted text role "meth".

The audio device objects returned by `.func:'open'` define the following methods and (read-only) attributes:

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Unknown interpreted text role "func".

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Unknown directive type "method".

```
.. method:: oss_audio_device.close()
```

Explicitly close the audio device. When you are done writing to or reading from an audio device, you should explicitly close it. A closed device cannot be used again.

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Unknown directive type "method".

```
.. method:: oss_audio_device.fileno()
```

Return the file descriptor associated with the device.

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Unknown directive type "method".

```
.. method:: oss_audio_device.read(size)
```

Read **size** bytes from the audio input and return them as a Python string. Unlike most Unix device drivers, OSS audio devices in blocking mode (the default) will block `:func:'read'` until the entire requested amount of data is available.

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Unknown directive type "method".

```
.. method:: oss_audio_device.write(data)
```

Write a `:term:`bytes-like object`` `*data*` to the audio device and return the number of bytes written. If the audio device is in blocking mode (the default), the entire data is always written (again, this is different from usual Unix device semantics). If the device is in non-blocking mode, some data may not be written---see `:meth:`writeall``.

```
.. versionchanged:: 3.5
   Writable :term:`bytes-like object` is now accepted.
```

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Unknown directive type "method".

```
.. method:: oss_audio_device.writeall(data)
```

Write a `:term:`bytes-like object`` `*data*` to the audio device: waits until the audio device is able to accept data, writes as much data as it will accept, and repeats until `*data*` has been completely written. If the device is in blocking mode (the default), this has the same effect as `:meth:`write``; `:meth:`writeall`` is only useful in non-blocking mode. Has no return value, since the amount of data written is always equal to the amount of data supplied.

```
.. versionchanged:: 3.5
   Writable :term:`bytes-like object` is now accepted.
```

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Unknown directive type "versionchanged".

```
.. versionchanged:: 3.2
   Audio device objects also support the context management protocol, i.e. they can be used in a :keyword:`with` statement.
```

The following methods each map to exactly one `:cfunc:`ioctl`` system call. The correspondence is obvious: for example, `:meth:`setfmt`` corresponds to the `SNDCTL_DSP_SETFMT` `ioctl`, and `:meth:`sync`` to `SNDCTL_DSP_SYNC` (this can be useful when consulting the OSS documentation). If the underlying `:cfunc:`ioctl`` fails, they all raise `:exc:`OSError``.

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Unknown interpreted text role "c:func".

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Unknown interpreted text role "meth".

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Unknown interpreted text role "meth".

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Unknown interpreted text role "c:func".

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Unknown interpreted text role "exc".

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Unknown directive type "method".

```
.. method:: oss_audio_device.nonblock()
```

Put the device into non-blocking mode. Once in non-blocking mode, there is no way to return it to blocking mode.

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Unknown directive type "method".

```
.. method:: oss_audio_device.getfmts()
```

Return a bitmask of the audio output formats supported by the soundcard. Some of the formats supported by OSS are:

Format	Description
:const:`AFMT_MU_LAW`	a logarithmic encoding (used by Sun ``.au`` files and :file:`/dev/audio`)
:const:`AFMT_A_LAW`	a logarithmic encoding
:const:`AFMT_IMA_ADPCM`	a 4:1 compressed format defined by the Interactive Multimedia Association
:const:`AFMT_U8`	Unsigned, 8-bit audio
:const:`AFMT_S16_LE`	Signed, 16-bit audio, little-endian byte order (as used by Intel processors)
:const:`AFMT_S16_BE`	Signed, 16-bit audio, big-endian byte order (as used by 68k, PowerPC, Sparc)
:const:`AFMT_S8`	Signed, 8 bit audio
:const:`AFMT_U16_LE`	Unsigned, 16-bit little-endian audio
:const:`AFMT_U16_BE`	Unsigned, 16-bit big-endian audio

Consult the OSS documentation for a full list of audio formats, and note that most devices support only a subset of these formats. Some older devices only support :const:`AFMT_U8`; the most common format used today is :const:`AFMT_S16_LE`.

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Unknown directive type "method".

```
.. method:: oss_audio_device.setfmt(format)
```

Try to set the current audio format to *format*---see :meth:`getfmts` for a list. Returns the audio format that the device was set to, which may not be the requested format. May also be used to return the current audio format---do this by passing an "audio format" of :const:`AFMT_QUERY`.

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Unknown directive type "method".

```
.. method:: oss_audio_device.channels(nchannels)
```

Set the number of output channels to `*nchannels*`. A value of 1 indicates monophonic sound, 2 stereophonic. Some devices may have more than 2 channels, and some high-end devices may not support mono. Returns the number of channels the device was set to.

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Unknown directive type "method".

```
.. method:: oss_audio_device.speed(samplerate)
```

Try to set the audio sampling rate to `*samplerate*` samples per second. Returns the rate actually set. Most sound devices don't support arbitrary sampling rates. Common rates are:

Rate	Description
8000	default rate for <code>:file:`/dev/audio`</code>
11025	speech recording
22050	
44100	CD quality audio (at 16 bits/sample and 2 channels)
96000	DVD quality audio (at 24 bits/sample)

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Unknown directive type "method".

```
.. method:: oss_audio_device.sync()
```

Wait until the sound device has played every byte in its buffer. (This happens implicitly when the device is closed.) The OSS documentation recommends closing and re-opening the device rather than using `:meth:`sync``.

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Unknown directive type "method".

```
.. method:: oss_audio_device.reset()
```

Immediately stop playing or recording and return the device to a state where it can accept commands. The OSS documentation recommends closing and re-opening the device after calling `:meth:`reset``.

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Unknown directive type "method".

```
.. method:: oss_audio_device.post()
```

Tell the driver that there is likely to be a pause in the output, making it possible for the device to handle the pause more intelligently. You might use this after playing a spot sound effect, before waiting for user input, or before doing disk I/O.

The following convenience methods combine several ioctl, or one ioctl and some simple calculations.

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Unknown directive type "method".

```
.. method:: oss_audio_device.setparameters(format, nchannels, samplerate[, strict=False])
```

Set the key audio sampling parameters---sample format, number of channels, and sampling rate---in one method call. *format*, *nchannels*, and *samplerate* should be as specified in the :meth:`setfmt`, :meth:`channels`, and :meth:`speed` methods. If *strict* is true, :meth:`setparameters` checks to see if each parameter was actually set to the requested value, and raises :exc:`OSSAudioError` if not. Returns a tuple (*format*, *nchannels*, *samplerate*) indicating the parameter values that were actually set by the device driver (i.e., the same as the return values of :meth:`setfmt`, :meth:`channels`, and :meth:`speed`).

For example, ::

```
(fmt, channels, rate) = dsp.setparameters(fmt, channels, rate)
```

is equivalent to ::

```
fmt = dsp.setfmt(fmt)
channels = dsp.channels(channels)
rate = dsp.rate(rate)
```

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Unknown directive type "method".

```
.. method:: oss_audio_device.bufsize()
```

Returns the size of the hardware buffer, in samples.

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Unknown directive type "method".

```
.. method:: oss_audio_device.obufcount()
```

Returns the number of samples that are in the hardware buffer yet to be played.

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Unknown directive type "method".

```
.. method:: oss_audio_device.obuffree()
```

Returns the number of samples that could be queued into the hardware buffer to be played without blocking.

Audio device objects also support several read-only attributes:

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Unknown directive type "attribute".

```
.. attribute:: oss_audio_device.closed
```

Boolean indicating whether the device has been closed.

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Unknown directive type "attribute".

```
.. attribute:: oss_audio_device.name
```

String containing the name of the device file.

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Unknown directive type "attribute".

```
.. attribute:: oss_audio_device.mode
```

The I/O mode for the file, either ``"r"`` , ``"rw"`` , or ``"w"`` .

Mixer Device Objects

The mixer object provides two file-like methods:

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Unknown directive type "method".

```
.. method:: oss_mixer_device.close()
```

This method closes the open mixer device file. Any further attempts to use the mixer after this file is closed will raise an :exc:`OSError` .

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Unknown directive type "method".

```
.. method:: oss_mixer_device.fileno()
```

Returns the file handle number of the open mixer device file.

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Unknown directive type "versionchanged".

```
.. versionchanged:: 3.2
```

Mixer objects also support the context management protocol.

The remaining methods are specific to audio mixing:

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Unknown directive type "method".

```
.. method:: oss_mixer_device.controls()
```

This method returns a bitmask specifying the available mixer controls ("Control" being a specific mixable "channel", such as :const:`SOUND_MIXER_PCM` or :const:`SOUND_MIXER_SYNTH`). This bitmask indicates a subset of all available mixer controls---the :const:`SOUND_MIXER_*` constants defined at module level. To determine if, for example, the current mixer object supports a PCM mixer, use the following Python code::


```
mixer=ossaudiodev.openmixer()
if mixer.controls() & (1 << ossaudiodev.SOUND_MIXER_PCM):
    # PCM is supported
    ... code ...
```

For most purposes, the `:const:`SOUND_MIXER_VOLUME`` (master volume) and `:const:`SOUND_MIXER_PCM`` controls should suffice--but code that uses the mixer should be flexible when it comes to choosing mixer controls. On the Gravis Ultrasound, for example, `:const:`SOUND_MIXER_VOLUME`` does not exist.

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Unknown directive type "method".

```
.. method:: oss_mixer_device.stereocontrols()
```

Returns a bitmask indicating stereo mixer controls. If a bit is set, the corresponding control is stereo; if it is unset, the control is either monophonic or not supported by the mixer (use in combination with `:meth:`controls`` to determine which).

See the code example for the `:meth:`controls`` function for an example of getting data from a bitmask.

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Unknown directive type "method".

```
.. method:: oss_mixer_device.recontrols()
```

Returns a bitmask specifying the mixer controls that may be used to record. See the code example for `:meth:`controls`` for an example of reading from a bitmask.

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Unknown directive type "method".

```
.. method:: oss_mixer_device.get(control)
```

Returns the volume of a given mixer control. The returned volume is a 2-tuple `((left_volume, right_volume))`. Volumes are specified as numbers from 0 (silent) to 100 (full volume). If the control is monophonic, a 2-tuple is still returned, but both volumes are the same.

Raises `:exc:`OSSAudioError`` if an invalid control is specified, or `:exc:`OSError`` if an unsupported control is specified.

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Unknown directive type "method".

```
.. method:: oss_mixer_device.set(control, (left, right))
```

Sets the volume for a given mixer control to `((left, right))`. ``left`` and ``right`` must be ints and between 0 (silent) and 100 (full volume). On success, the new volume is returned as a 2-tuple. Note that this may not be exactly the same as the volume specified, because of the limited resolution of some soundcard's mixers.

Raises `:exc:`OSSAudioError`` if an invalid mixer control was specified, or if the specified volumes were out-of-range.

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Unknown directive type "method".

```
.. method:: oss_mixer_device.get_recsrc()
```

This method returns a bitmask indicating which control(s) are currently being used as a recording source.

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Unknown directive type "method".

```
.. method:: oss_mixer_device.set_recsrc(bitmask)
```

Call this function to specify a recording source. Returns a bitmask indicating the new recording source (or sources) if successful; raises :exc:`OSError` if an invalid source was specified. To set the current recording source to the microphone input::

```
mixer.setrecsrc (1 << ossaudiodev.SOUND_MIXER_MIC)
```