

# I2S Linux driver

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## 1 Article purpose

This article introduces the I2S Linux<sup>®</sup> driver for the [SPI/I2S internal peripheral](#).

## 2 Short Description

The I2S Linux driver is an ASoC CPU DAI driver implemented in the Linux [ALSA framework](#).

## 3 Configuration

### 3.1 Kernel Configuration

Activate the I2S Linux driver in the kernel configuration using the Linux Menuconfig tool: [Menuconfig or how to configure kernel](#).

```
[*] Device Drivers
  [*] Sound card support
    [*] Advanced Linux Sound Architecture
      [*] ALSA for SoC audio support
        STMicroelectronics STM32 SOC audio support
          [*] STM32 I2S interface (SPI/I2S block) support
```

### 3.2 Device tree

Refer to the I2S device tree configuration article when configuring the I2S Linux kernel driver.

## 4 How to use

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The I2S Linux driver can be accessed from userland through an ALSA device. Refer to [ALSA overview](#) for information on how to list and use ALSA devices.

## 5 How to trace and debug

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The [debugfs](#) and [procfs](#) file system can be checked to get information on the I2S driver and the resources it uses. A non-exhaustive list of these file system entries is provided below. Refer to [ALSA overview](#) for more details on debugging tools.

- debugfs entries:
  - **asoc**: refer to [ALSA\\_overview#How\\_to\\_monitor](#)
  - **clk**: refer to [Clock\\_overview#How\\_to\\_monitor\\_with\\_debugfs](#) to get information on clocks.
  - **pinctrl**: refer to [Pinctrl\\_overview#How\\_to\\_monitor](#) to get information on pins.
  - **regmap**: allow to monitor SPI/I2S peripheral registers.

```
$ cat /sys/kernel/debug/regmap/xxx.audio-controller/registers
```

- procfs entries:
  - **asound**: refer to [ALSA\\_overview#How\\_to\\_debug](#)
  - **interrupts**: allow to check interrupts.

```
$ cat /proc/interrupts
```

## 6 Source code location

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[sound/soc/stm/stm32\\_i2s.c](#) : implements the I2S Linux driver.

## 7 References

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Integrated Interchip Sound

ALSA System on Chip

Central processing unit

Digital Audio Interface

Advanced Linux sound architecture

Serial Peripheral Interface

Process File System (See <https://en.wikipedia.org/wiki/Procfs> for more details)

Debug File System (See <https://en.wikipedia.org/wiki/Debugfs> for more details)

