

Pro Audio Spectrum 16 for 2.3.99 and later

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This documentation is relevant for the PAS16 driver (pas2_card.c and friends) under kernel version 2.3.99 and later. If you are unfamiliar with configuring sound under Linux, please read the Sound-HOWTO, Documentation/sound/oss/Introduction and other relevant docs first.

The following information is relevant information from README.OSS and legacy docs for the Pro Audio Spectrum 16 (PAS16):

The pas2_card.c driver supports the following cards --
Pro Audio Spectrum 16 (PAS16) and compatibles:

Pro Audio Spectrum 16

Pro Audio Studio 16

Logitech Sound Man 16

NOTE! The original Pro Audio Spectrum as well as the PAS+ are not
and will not be supported by the driver.

The sound driver configuration dialog

Sound configuration starts by making some yes/no questions. Be careful when answering to these questions since answering y to a question may prevent some later ones from being asked. For example don't answer y to the question about (PAS16) if you don't really have a PAS16. Sound configuration may also be made modular by answering m to configuration options presented.

Note also that all questions may not be asked. The configuration program may disable some questions depending on the earlier choices. It may also select some options automatically as well.

"ProAudioSpectrum 16 support",

- Answer 'y' ONLY if you have a Pro Audio Spectrum 16, Pro Audio Studio 16 or Logitech SoundMan 16 (be sure that you read the above list correctly). Don't answer 'y' if you have some other card made by Media Vision or Logitech since they are not PAS16 compatible.

NOTE! Since 3.5-beta10 you need to enable SB support (next question) if you want to use the SB emulation of PAS16. It's also possible to the emulation if you want to use a true SB card together with PAS16 (there is another question about this that is asked later).

"Generic OPL2/OPL3 FM synthesizer support",

- Answer 'y' if your card has a FM chip made by Yamaha (OPL2/OPL3/OPL4). The PAS16 has an OPL3-compatible FM chip.

With PAS16 you can use two audio device files at the same time. /dev/dsp (and

PAS16..txt

/dev/audio) is connected to the 8/16 bit native codec and the /dev/dsp1 (and /dev/audiol) is connected to the SB emulation (8 bit mono only).

The new stuff for 2.3.99 and later

The following configuration options from Documentation/Configure.help are relevant to configuring the PAS16:

Sound card support

CONFIG_SOUND

If you have a sound card in your computer, i.e. if it can say more than an occasional beep, say Y. Be sure to have all the information about your sound card and its configuration down (I/O port, interrupt and DMA channel), because you will be asked for it.

You want to read the Sound-HOWTO, available from <http://www.tldp.org/docs.html#howto> . General information about the modular sound system is contained in the files Documentation/sound/oss/Introduction. The file Documentation/sound/oss/README.OSS contains some slightly outdated but still useful information as well.

OSS sound modules

CONFIG_SOUND_OSS

OSS is the Open Sound System suite of sound card drivers. They make sound programming easier since they provide a common API. Say Y or M here (the module will be called sound.o) if you haven't found a driver for your sound card above, then pick your driver from the list below.

Persistent DMA buffers

CONFIG_SOUND_DMAP

Linux can often have problems allocating DMA buffers for ISA sound cards on machines with more than 16MB of RAM. This is because ISA DMA buffers must exist below the 16MB boundary and it is quite possible that a large enough free block in this region cannot be found after the machine has been running for a while. If you say Y here the DMA buffers (64Kb) will be allocated at boot time and kept until the shutdown. This option is only useful if you said Y to "OSS sound modules", above. If you said M to "OSS sound modules" then you can get the persistent DMA buffer functionality by passing the command-line argument "dmabuf=1" to the sound.o module.

Say y here for PAS16.

ProAudioSpectrum 16 support

CONFIG_SOUND_PAS

Answer Y only if you have a Pro Audio Spectrum 16, ProAudio Studio 16 or Logitech SoundMan 16 sound card. Don't answer Y if you have some other card made by Media Vision or Logitech since they are not PAS16 compatible. It is not necessary to enable the separate Sound Blaster support; it is included in the PAS driver.

If you compile the driver into the kernel, you have to add
"pas2=<io>,<irq>,<dma>,<dma2>,<sbio>,<sbirq>,<sbdma>,<sbdma2>"

to the kernel command line.

FM Synthesizer (YM3812/OPL-3) support

CONFIG_SOUND_YM3812

Answer Y if your card has a FM chip made by Yamaha (OPL2/OPL3/OPL4). Answering Y is usually a safe and recommended choice, however some cards may have software (TSR) FM emulation. Enabling FM support with these cards may cause trouble (I don't currently know of any such cards, however).

Please read the file Documentation/sound/oss/OPL3 if your card has an OPL3 chip.

If you compile the driver into the kernel, you have to add "opl3=<io>" to the kernel command line.

If you compile your drivers into the kernel, you MUST configure OPL3 support as a module for PAS16 support to work properly.

You can then get OPL3 functionality by issuing the command:

```
insmod opl3
```

In addition, you must either add the following line to

/etc/modprobe.conf:

```
options opl3 io=0x388
```

or else add the following line to /etc/lilo.conf:

```
opl3=0x388
```

EXAMPLES

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To use the PAS16 in my computer I have enabled the following sound configuration options:

```
CONFIG_SOUND=y
CONFIG_SOUND_OSS=y
CONFIG_SOUND_TRACEINIT=y
CONFIG_SOUND_DMAP=y
CONFIG_SOUND_PAS=y
CONFIG_SOUND_SB=n
CONFIG_SOUND_YM3812=m
```

I have also included the following append line in /etc/lilo.conf:

```
append="pas2=0x388,10,3,-1,0x220,5,1,-1 sb=0x220,5,1,-1 opl3=0x388"
```

The io address of 0x388 is default configuration on the PAS16. The irq of 10 and dma of 3 may not match your installation. The above configuration enables PAS16, 8-bit Soundblaster and OPL3 functionality. If Soundblaster functionality is not desired, the following line would be appropriate:

```
append="pas2=0x388,10,3,-1,0,-1,-1,-1 opl3=0x388"
```

If sound is built totally modular, the above options may be specified in /etc/modprobe.conf for pas2, sb and opl3 respectively.