Documentation for the SoundPro CMI8330 extensions in the WSS driver (ad1848.o)

(Be sure to read Documentation/sound/oss/CMI8330 too)

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(derived from the OPL3-SA2 documentation by Scott Murray)

The SoundPro CMI8330 (ISA) is a chip usually found on some Taiwanese motherboards. The official name in the documentation is CMI8330, SoundPro is the nickname and the big inscription on the chip itself.

The chip emulates a WSS as well as a SB16, but it has certain differences in the mixer section which require separate support. It also emulates an MPU401 and an OPL3 synthesizer, so you probably want to enable support for these, too.

The chip identifies itself as an AD1848, but its mixer is significantly more advanced than the original AD1848 one. If your system works with either WSS or SB16 and you are having problems with some mixer controls (no CD audio, no line-in, etc), you might want to give this driver a try. Detection should work, but it hasn't been widely tested, so it might still mis-identify the chip. You can still force soundpro=1 in the modprobe parameters for ad1848. Please let me know if it happens to you, so I can adjust the detection routine.

The chip is capable of doing full-duplex, but since the driver sees it as an AD1848, it cannot take advantage of this. Moreover, the full-duplex mode is not achievable through the WSS interface, b/c it needs a dma16 line which is assigned only to the SB16 subdevice (with isapnp). Windows documentation says the user must use WSS Playback and SB16 Recording for full-duplex, so it might be possible to do the same thing under Linux. You can try loading up both ad1848 and sb then use one for playback and the other for recording. I don't know if this works, b/c I haven't tested it. Anyway, if you try it, be very careful: the SB16 mixer *mostly* works, but certain settings can have unexpected effects. Use the WSS mixer for best results.

There is also a PCI SoundPro chip. I have not seen this chip, so I have no idea if the driver will work with it. I suspect it won't.

As with PnP cards, some configuration is required. There are two ways of doing this. The most common is to use the isapnptools package to initialize the card, and use the kernel module form of the sound subsystem and sound drivers. Alternatively, some BIOS's allow manual configuration of installed PnP devices in a BIOS menu, which should allow using the non-modular sound drivers, i.e. built into the kernel. Since in this latter case you cannot use module parameters, you will have to enable support for the SoundPro at compile time.

The IRQ and DMA values can be any that are considered acceptable for a WSS. Assuming you've got isapnp all happy, then you should be able to do something like the following (which *must* match the isapnp/BIOS configuration):

```
modprobe ad1848 io=0x530 irq=11 dma=0 soundpro=1
-and maybe-
modprobe sb io=0x220 irq=5 dma=1 dma16=5

-then-
modprobe mpu401 io=0x330 irq=9
modprobe opl3 io=0x388
```

If all goes well and you see no error messages, you should be able to start using the sound capabilities of your system. If you get an error message while trying to insert the module(s), then make sure that the values of the various arguments match what you specified in your isapnp configuration file, and that there is no conflict with another device for an I/O port or interrupt. Checking the contents of /proc/ioports and /proc/interrupts can be useful to see if you're butting heads with another device.

If you do not see the chipset version message, and none of the other messages present in the system log are helpful, try adding 'debug=1' to the ad1848 parameters, email me the syslog results and I'll do my best to help.

Lastly, if you're using modules and want to set up automatic module loading with kmod, the kernel module loader, here is the section I currently use in my conf.modules file:

```
# Sound
post-install sound modprobe -k ad1848; modprobe -k mpu401; modprobe -k opl3
options ad1848 io=0x530 irq=11 dma=0
options sb io=0x220 irq=5 dma=1 dma16=5
options mpu401 io=0x330 irq=9
options opl3 io=0x388
```

The above ensures that ad1848 will be loaded whenever the sound system is being used.

Good luck.

Ion

NOT REALLY TESTED:
- recording
- recording device selection
- full-duplex

TODO:
- implement mixer support for surround, loud, digital CD switches.
- come up with a scheme which allows recording volumes for each subdevice. This is a major OSS API change.