

Libretto 50CT DOS notes

I have set up my Toshiba Libretto 50CT to run DOS. Here are some notes on getting it all working comfortably. Presumes some experience with DOS.

BIOS

- Launch BIOS settings by pressing escape (repeatedly?) while booting.

Sound

- Works as SB Pro out of the box.
- FM is a really nice (and official!) OPL3 implementation.
- Interrupt and DMA channel can be set up via BIOS.
- `SET BLASTER=A220 I5 D1 T4` for the default BIOS configuration, used by some software to configure sound.
- [OPL3SAX](#) driver lets you control volume settings via the SETUPSA utility.
- Higher SB master volume just limits dynamic range. Set it to 1 to be able to control volume from games and other software. Higher volume levels counterintuitively just makes some of the volume steps for PCM/FM/Line etc. ineffective. Look up Yamaha's YMF715x datasheet for a table that describes exactly how this works.
- My volume settings for max volume and minimal noise are:
 - FM VOL L/R: 7
 - WAVE VOL L/R: 7
 - SB VOL L/R: 1
 - SB VOL L/R: 1
 - WSS MASTER VOL L/R: 15
 - All others: 0
- Output is either a 2.5mm TRS or the built in speaker. You will need an adapter to connect 3.5mm or 6.35mm TRS gear.
- On-board speaker distorts very easily. Use lower volumes if you intend to use it.
- Chip has built in (UART only) MPU-401, but obviously no port to make use of it. You could solder the MIDI interface to the chip itself, have not tried, but others have (see [FrankenKorg 800](#)).
- SOFTMPU is a TSR software that emulates a full MPU-401. It can output to a serial port, but AFAIK there is no hardware manufactured that supports this to provide plain MIDI out, just schematics for passive serial adapters for common sound modules (MT-32, SC-55) that have an RS-232-like input in addition to their MIDI input.

CONFIG.SYS

Configure HIMEM and EMM386:

```
DEVICE=C:\HIMEM.SYS
DEVICEHIGH=C:\EMM386.EXE
```

Put DOS in high memory:

For PCMCIA software, add the `X=D000-DFFF` option to EMM386.EXE:

```
DEVICEHIGH=C:\EMM386.EXE X=D000-DFFF
```

To disable EMS, add the `NOEMS` flag:

```
DEVICEHIGH=C:\EMM386.EXE NOEMS X=D000-DFFF
```

AUTOEXEC.BAT

Nothing strictly necessary

- Add "SET BLASTER..."
- I use CAP2CTL to make caps lock another control key. Works for software that use the simple BIOS/DOS routines for keyboard input.
- [CTMOUSE](#) is the mouse driver used in FreeDOS. Very good.
- For the sound driver, load the settings on boot: `C:\OPL3SAX\SETUPSA.EXE /S`.

Shell

[4DOS](#) is nice with auto completion and configuration TUI. [Norton Commander](#) is *the* classic two-pane file manager.

Internal compact flash

Works well with no-name 44 pin IDE adapter.

- IDE header has a blocked key pin (pin 20). This is to make sure that you don't get the orientation of a disk wrong, but some CF still adapters have a pin there. Clip that pin off, making sure it's on the correct side.
- Boot from floppy and format CF card with FDISK. It also needs to be set to be bootable with `FDISK /MBR` (AFAIR). Then install the system, my DOS is from Windows 98 and the bare essentials for that are COMMAND.COM, IO.SYS and MSDOS.SYS. You can copy other tools over as necessary.
- I put all DOS utilities in a sub directory not to clutter the root. Make sure you modify the PATH environment variable when you do this, e.g. `SET PATH=%PATH%;C:\DOS`.
- It is much easier to insert the CF adapter if you remove the bottom of the computer first.

PCMCIA

- For bare socket services, [CARDSOFT](#) seems to work fine. The ATA driver does not recognize my PCMCIA to SD adapter, however.
- CARDSOFT seemingly has to be installed from floppy if using the installer. It also installs a bunch of different device drivers that are unlikely to be useful to you. Remove these from CONFIG.SYS after install.
- [ATAENAB](#) from APSoft works very well for the PCMCIA to SD adapter and needs no

additional configuration, but is commercial software that has to be ordered via fax or snail mail. The demo version works for 14 days, hopefully enough for you to set your machine up. Does not support hot swapping, but supposedly there is other software from APSoft that does. I have not tried this as ATAENAB is already very good and their cheapest software for this purpose.

- Networking depends on the card and the software. It seems like a lot of software only needs a packet driver, implementing higher level protocols themselves. In my case, I have a 3C589D PCMCIA network card, quite common. 3C589PD.COM is a packet driver for that card with a built-in point enabler so you don't even need Cardsoft. Just run it after boot, and the packet driver will be installed.
- PCMCIA floppy drive works out of the box. If you install another PCMCIA driver, it won't. ATAENAB can be unloaded once loaded, but the floppy drive card isn't plug & play/hot swappable, so it is better just to reboot.

Other connectivity

- There is an IR port on the back of the computer. This is like any other serial port as far as software is concerned. I am not sure what it can be used for, but maybe remote controlled software, or as an IR remote in itself? Wireless ROTT comm-bat?
- There exists a "port replicator", a small docking station that adds 9-pin RS232 serial, VGA and a parallel port. In addition to the standard port replicator, there is an extended port replicator, more of a traditional docking station, that has PS/2 connectors and an additional PCMCIA slot.
- A [modification](#) exists for adding PS/2 connectivity to the standard replicator.
- The port replicators for 50CT and 70CT are identical.
- Mouse can be configured in BIOS to be either the built-in pointing stick, PS/2 or both simultaneously. I don't see any reason not to set it to use both.