# Programming The Config PROM The First Time

The first time a Saturn board is powered up its config PROM will have no data. It will need to be programmed using a Xilinx download cable. The same would be true if it was written with rubbish data.

The Xilinx Vivado Hardware manager has a way to program the serial prom. It loads its own program into the FPGA, programs the PROM then erases its own program.

# Connecting Hardware

Connect your JTAG download tool to the PC USB port. Mine is called “JTAG Programming Cable USB” and it is a 3rd party version.

Plug the 14 way ribbon cable into the 14 pin header on Saturn (near the USB connectors).

Power up the board.

# Detecting Hardware

Open the hardware manager.

Graphical user interface, application

Description automatically generated

Click “open target” near the top of the screen and select Auto Detect”

The tool will identify the FPGA soldered on the board.

Graphical user interface, application

Description automatically generated

You will see that it has detected the FPGA and an attached memory device.

If the memory device is not listed:

Right click on the FPGA (xc7a200t\_0) line. There is a way to add the memory device.

# Programming

Right click the memory device (s25fl256sxxxxxx0-spi-x1\_x2\_x4) and select “program configuration memory device”

Graphical user interface, text, application, email

Description automatically generated

Point to your saturnprom.bin file in the “configuration file” text box

Leave the other settings as shown here and click “OK”

(occasionally it throws an error to do with a pullnone.bit file; ignore and retry)

It will load its program to the FPGA then configure the serial PROM showing progress, eg

Waterfall chart

Description automatically generated with medium confidence

Graphical user interface, application, Teams

Description automatically generated

Next time you will be able to use the linux tool.