Digi Connect ME 9210
Linux: 2nd serial over FIM

Document History

Date	Version	Change Description
09/04/2009	V1.0	Initial entry/outline

Table of Contents

1 Problem Description

- The Digi Connect ME 9210 module without JTAG has only one serial line (port A of the NS9210 processer) connected.
- If you need a second serial line you can use the NS9210 internal FIM to drive some of the free GPIOs as serial line.
- Unfortunately the handshake lines of serial port A and the FIM pins overlap, such you can only drive two serial lines if you disable hardware handshake (TX/RX only). Click here for source files

2 Requirements

To try the example in this document you need:

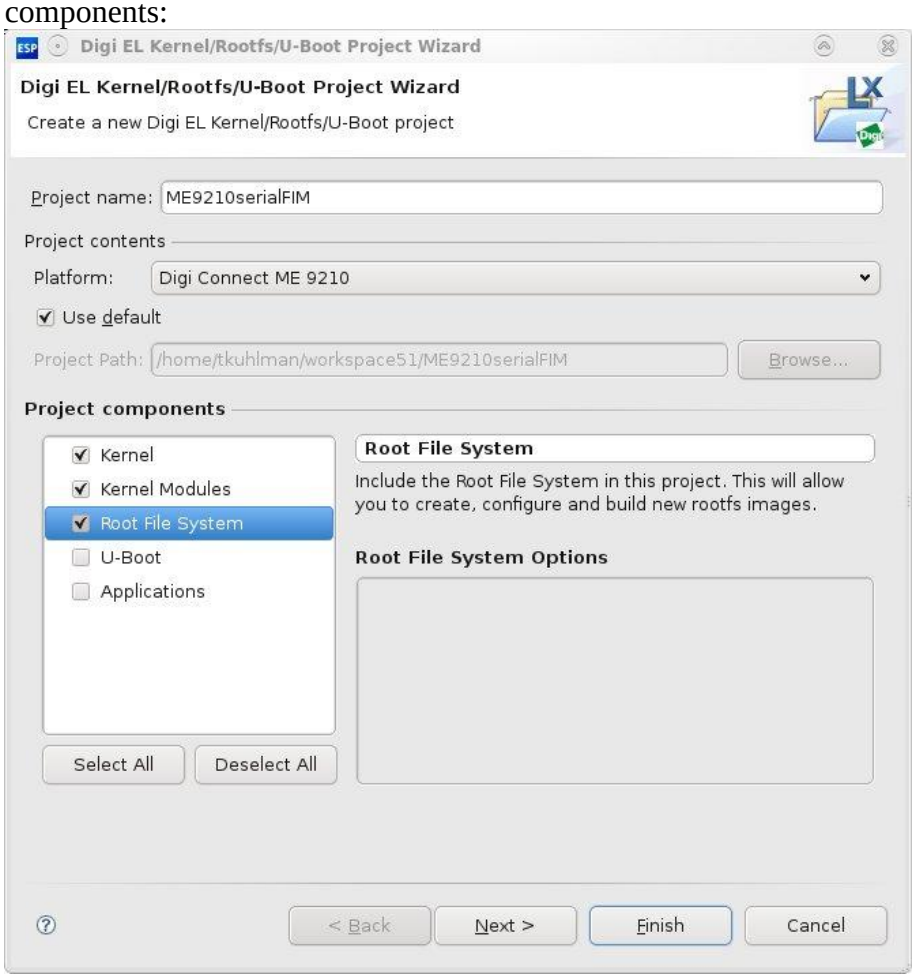
- Digi Connect ME 9210 module with Linux (DC-ME-Y402-LX).
- Digi Embedded Linux (DEL) 5.0 or above development environment.
  For DEL 5.0 you need to have installed the latest patches via the package manager.
  With DEL 5.1 it should work out of the box.
- Either the Digi Connect ME development board with additional TTL232 adapter (e.g. Digi FS-276), or your custom board.

  You can get everything together in a Digi Connect ME 9210 Linux JumpStart Kit: DC-ME-9210-LX

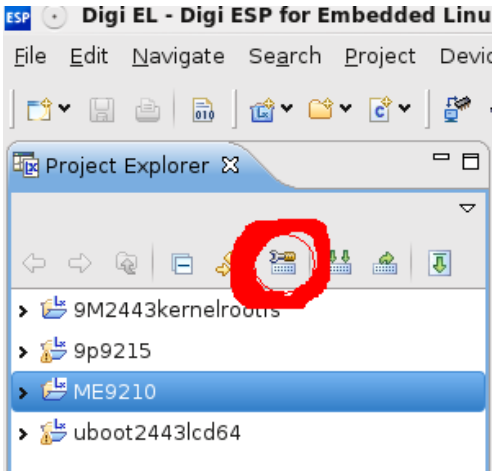
3 Software Setup

- Install Digi Embedded Linux (DEL) 5.0 or higher, apply latest patches with the Package Manager.
- Create a new Digi EL Kernel/Rootfs/U-Boot Project for Platform Digi Connect ME 9210, but select only Kernel, Kernel Modules, Root File System as project

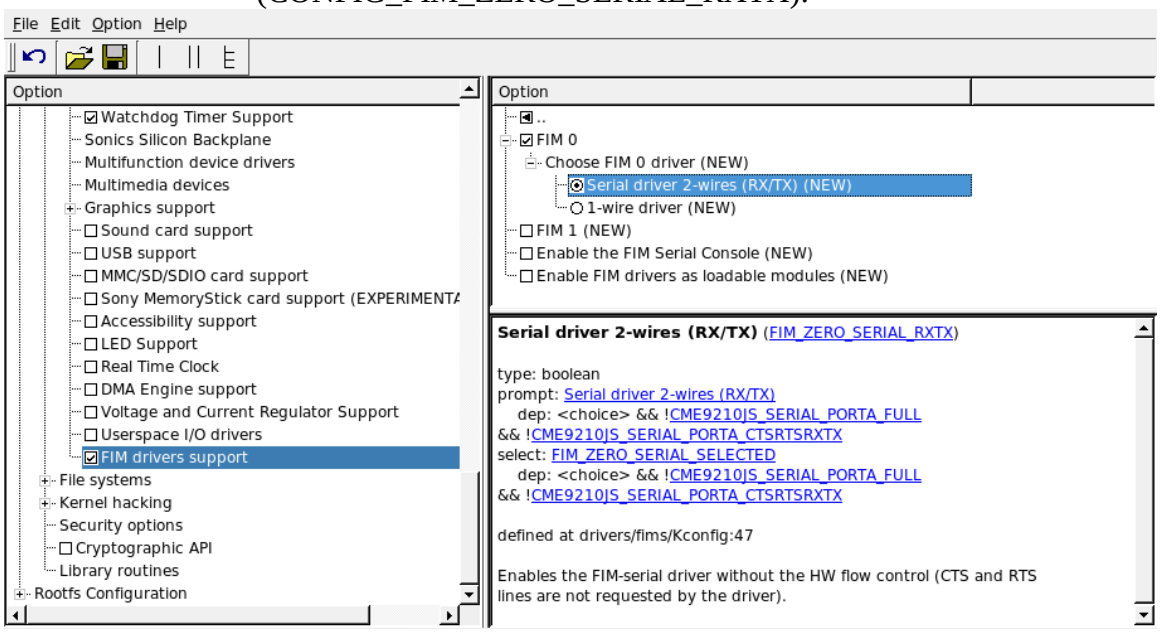
components:



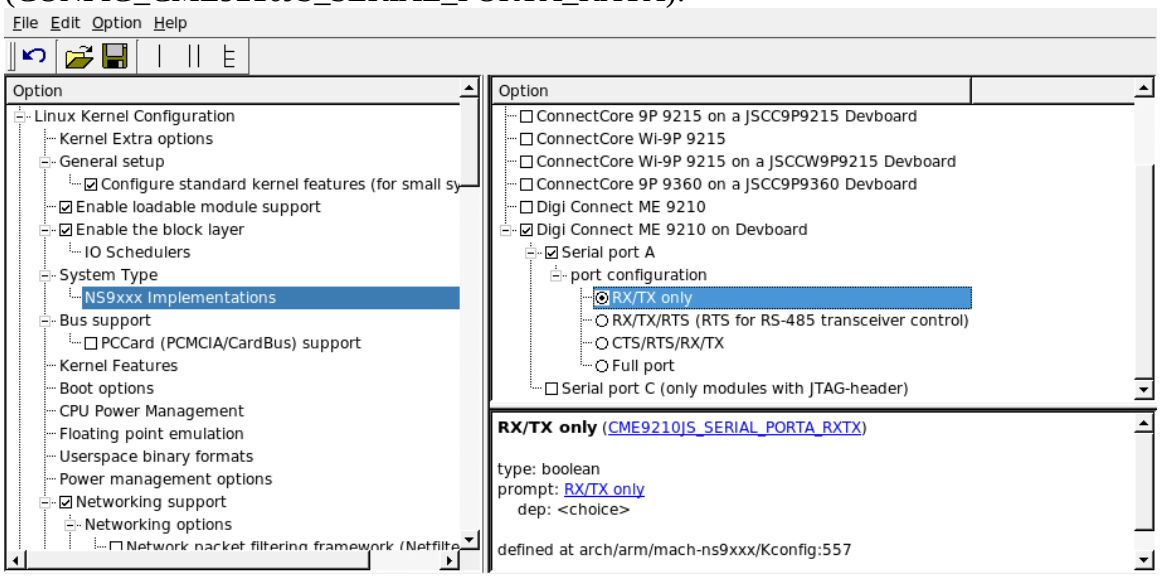
- Configure the project (right click on the project an select configure)



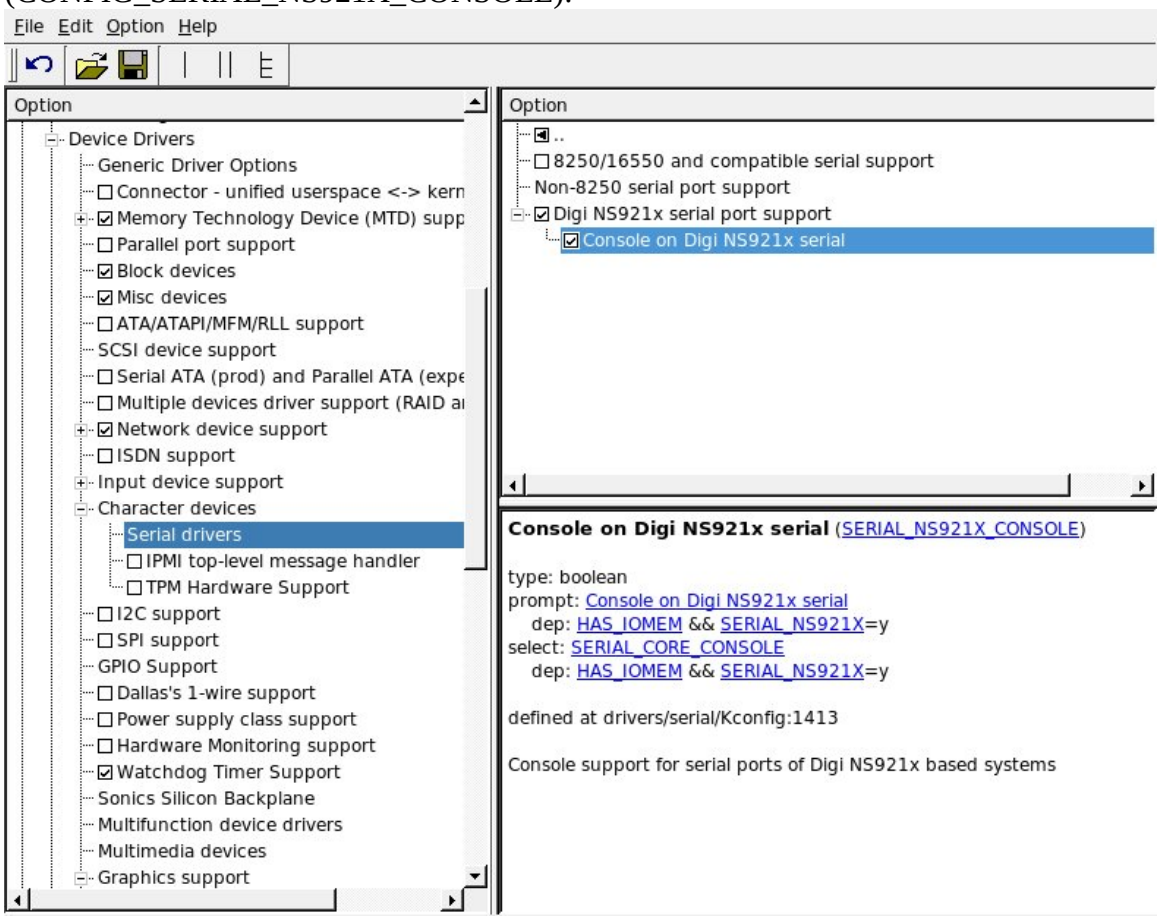
- Select Linux Kernel Configuration, Device Drivers, FIM drivers support, FIM0, Serial driver 2-wire (CONFIG_FIM_ZERO_SERIAL_RXTX):



- Select Digi Connect ME 9210 on Devboard in the Linux Kernel Configuration System Type. Enable Serial port A with RX/TX only (CONFIG_CME9210JS_SERIAL_PORTA_RXTX):



- Select Device Drivers, Character devices, Serial drivers, Digi NS921x serial port support, Console on Digi NS921x serial (CONFIG_SERIAL_NS921X_CONSOLE):



- Build and install the project

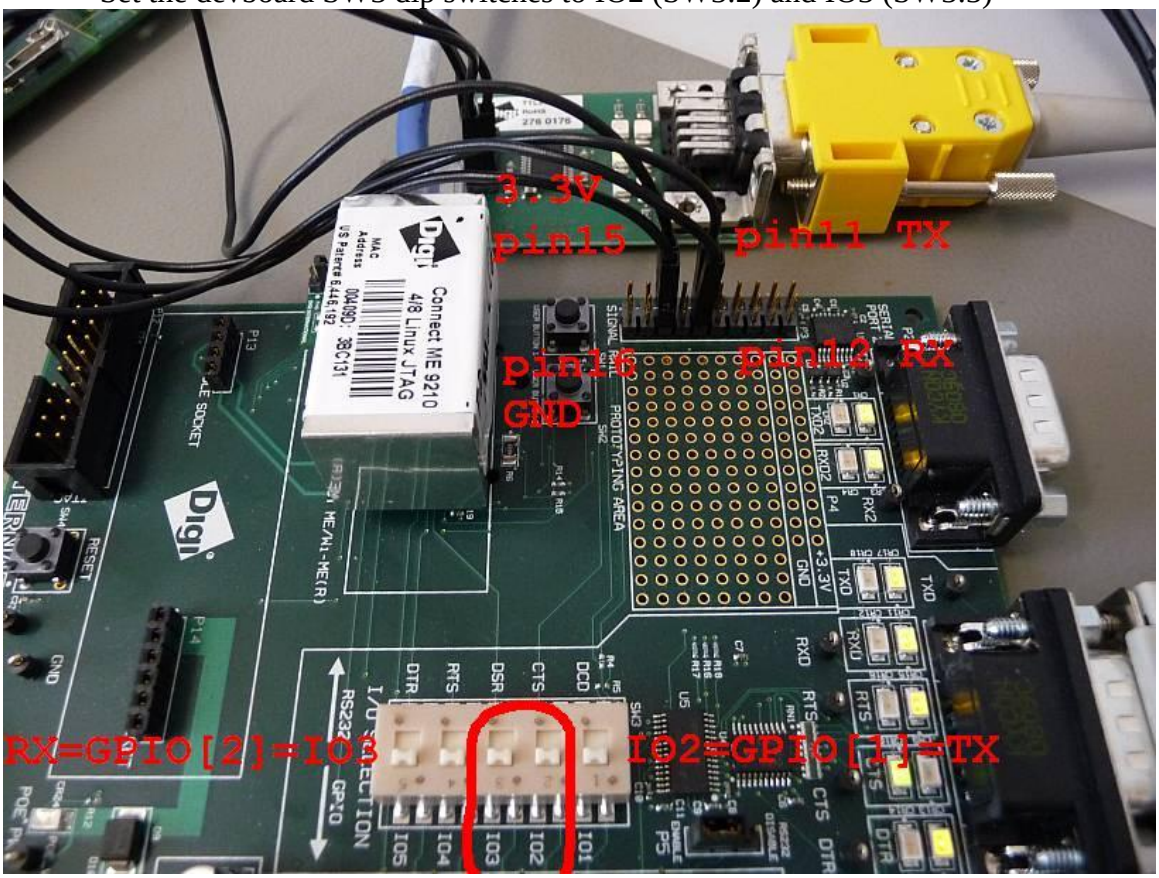
4 Hardware Setup

- Turn off the development board.
- Connect the power cable.
- Plug Connect ME 9210 module to the development board.
- Connect Ethernet cable to Connect ME 9210 to your development PC (for updating firmware).
- Connect a serial null modem cable (pins 2 and 3 crossed) to your host computer (e.g. COMA is the CONSOLE). Plug the cable into Serial Port A of the Digi development board.

- Connect a serial null modem cable (pins 2 and 3 crossed) to your host computer (e.g. COMB is the FIM_SERIAL). Plug the cable into a serial TTL converter like Digi FS-0276. Connect the serial TTL converter as following to the P3 (signal rail) of the Digi Connect ME development board:

TTL converter pin 9 –	GND –	dev board P3 pin 16
TTL converter pin 10 –	VCC (+3.3V) –	dev board P3 pin 15
TTL converter pin 3 -	RX -	dev board P3 pin 12
TTL converter pin 5 -	TX -	dev board P3 pin 11

- Set the devboard SW3 dip switches to IO2 (SW3:2) and IO3 (SW3:3)



5 Testing

Run the new build kernel and rootfs on the Digi Connect ME 9210 module (e.g. update the images in flash build in section 3).

Start a terminal program with 38400 8N1 on your development host on COM1 (console) and COM2 (serial FIM). Boot Linux on the Digi Connect ME 9210 module. On the serial console (COM1), configure the serial interface:

```
# stty -F /dev/ttyFIM0 38400
```

Send some test string from the ConnectME 9210 serial FIM to the development host (COM2 serial FIM):


```
# echo "Hello World" >/dev/ttyFIM0
```

Check if the test string is received by your terminal program on COM2.

Send some test string from the development host via the serial FIM to the Digi Connect ME 9210. First start a program on the Connect ME 9210 which is able to receive the chars, e.g.:

```
# cat /dev/ttyFIM0
```

Enter some string on the COM2 serial FIM terminal program of your development host (press Enter, if everything is configured in line mode which is the default) and check if it is received on the Connect ME 9210 console.