DK7NT 20.08.2001
CRO_SYSPROG-E_2.DOC

CPU In System (ISP) Programming:

1. **Tools Required:**

   In order to program the CRO system software an appropriate programming tool is needed. This tool (FLIP.EXE) is provided by ATMEL/TEMIC and is available on the internet. The CRO homepage http://www.qsl.net/dk7nt/cro/croindex.htm includes a link to the download page.

   The programming tool must be installed on the PC. An icon on the desktop referring to this tool is helpful.

2. **Preparations:**

   It is not necessary to remove the microprocessor from its socket. It stays in the socket during programming.

   The new system software must be available on the PC as a hexadecimal file (<filename>.HEX). The CRO is linked to the PC with a RS232 (V24) serial interface cable (this is the same cable as the one needed for the on-line analysis).

   The microprocesser contains an additional software providing the communication to the PC and the programming of the flash ROM. At first the power supply of the CRO is disconnected. Then a connection between the pins 1 and 2 of the plug **SV2** is made. Connect the power supply again. The LCD display shows no text (if the display is already connected).

3. **Communication Set Up (PC to CRO-Board):**

   Any program using the serial (COM) interface needed must be terminated now. Then start the the PC programming software (e.g. by clicking on the icon on the desktop). Wait for the ISP tool coming up.

   The first step is then to select the processor type used. On the top bar click **Device -> Select -> Device Selection** and choose the type **T89C51RD2**. Push the OK button to accept the selection.
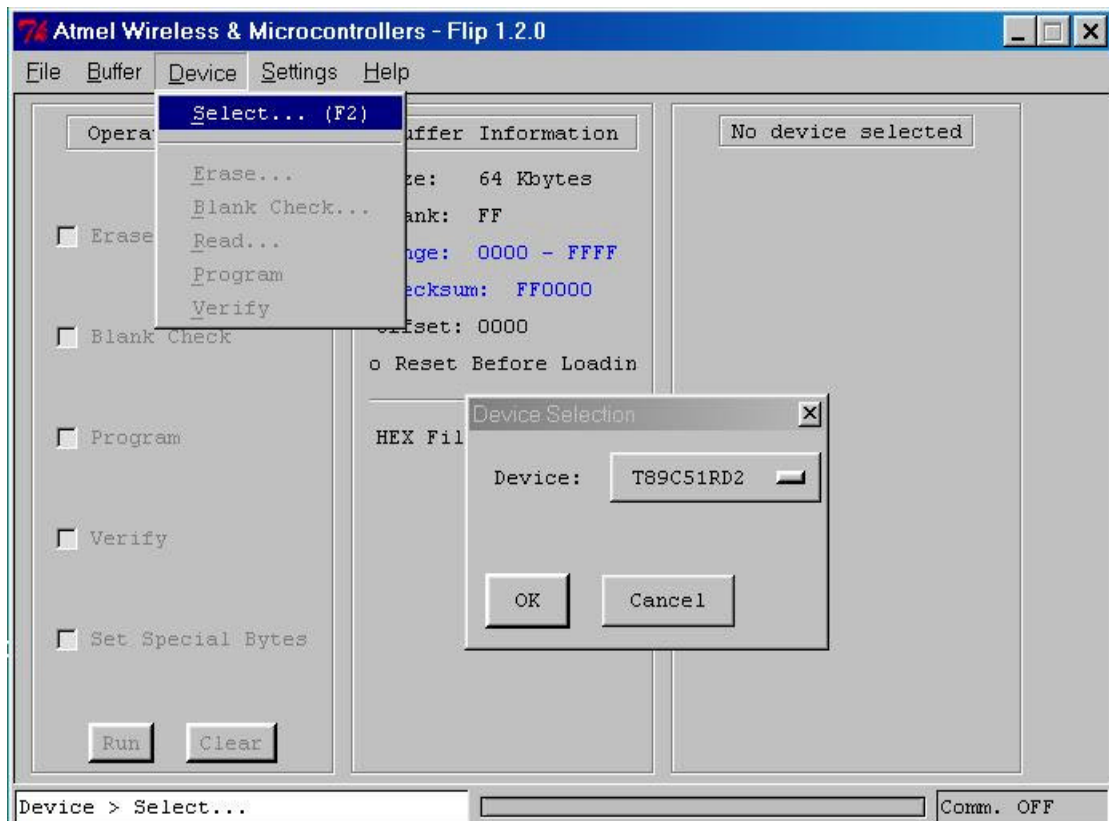
Now establish the COM port for the serial (RS232, V24) communication. On the top bar select **Settings -> Communication (F3) -> Port**. Set the **Baud** rate and the port used to communicate with the CRO. As far as the Baud rate is concerned, **19200** or **38600** Baud usually are safe choices.
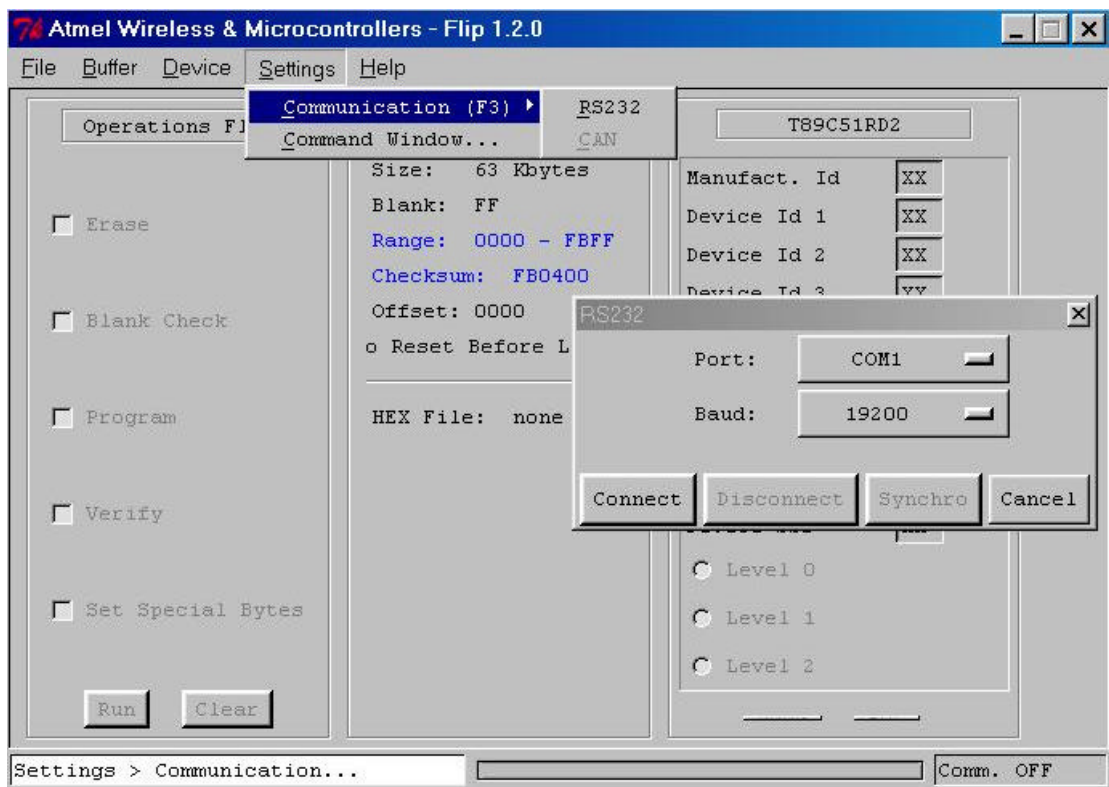
The connection to the CRO board should now establish itself provided the settings are made properly. Should the communication fail an error message appears. In this case check the interface cable and the short at plug SV2, reset the power supply and repeat the settings in the ISP tool.

4. Lading of the new program for the T89C51RD2:

Now provide the necessary programming settings. At first load the file that is to be programmed into the controller. On the top bar click **File** -> **Load HEX** ... and select the appropriate file.
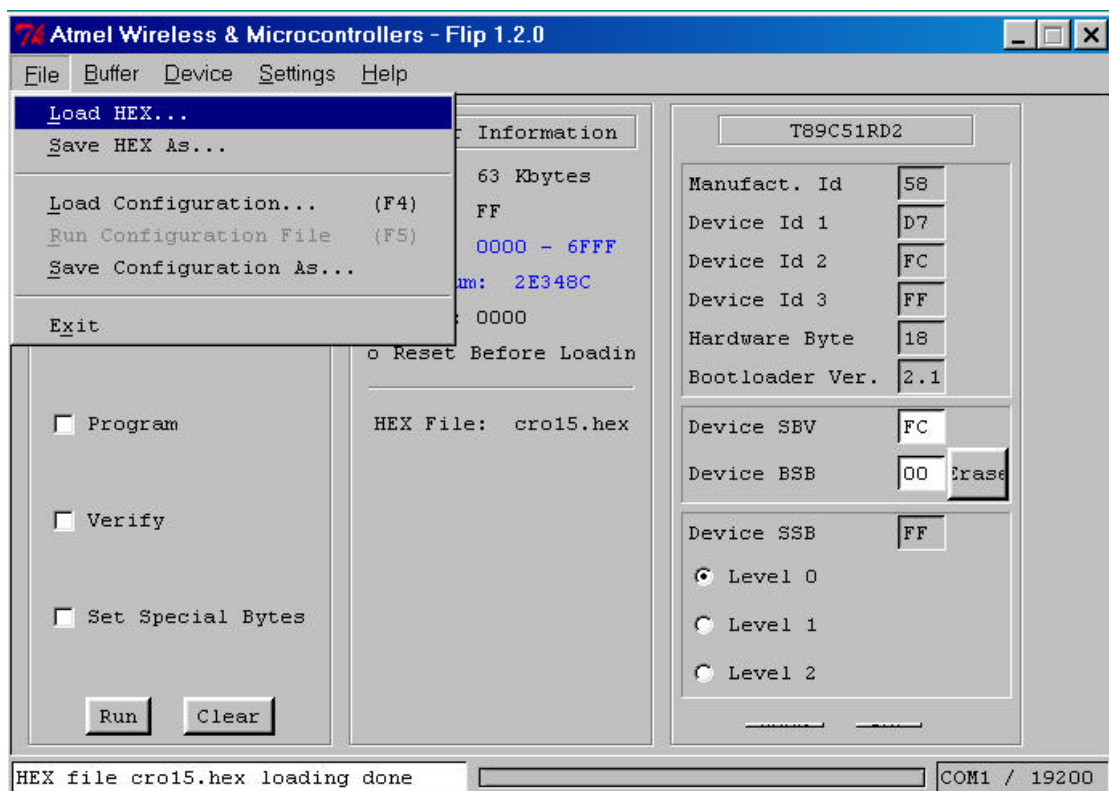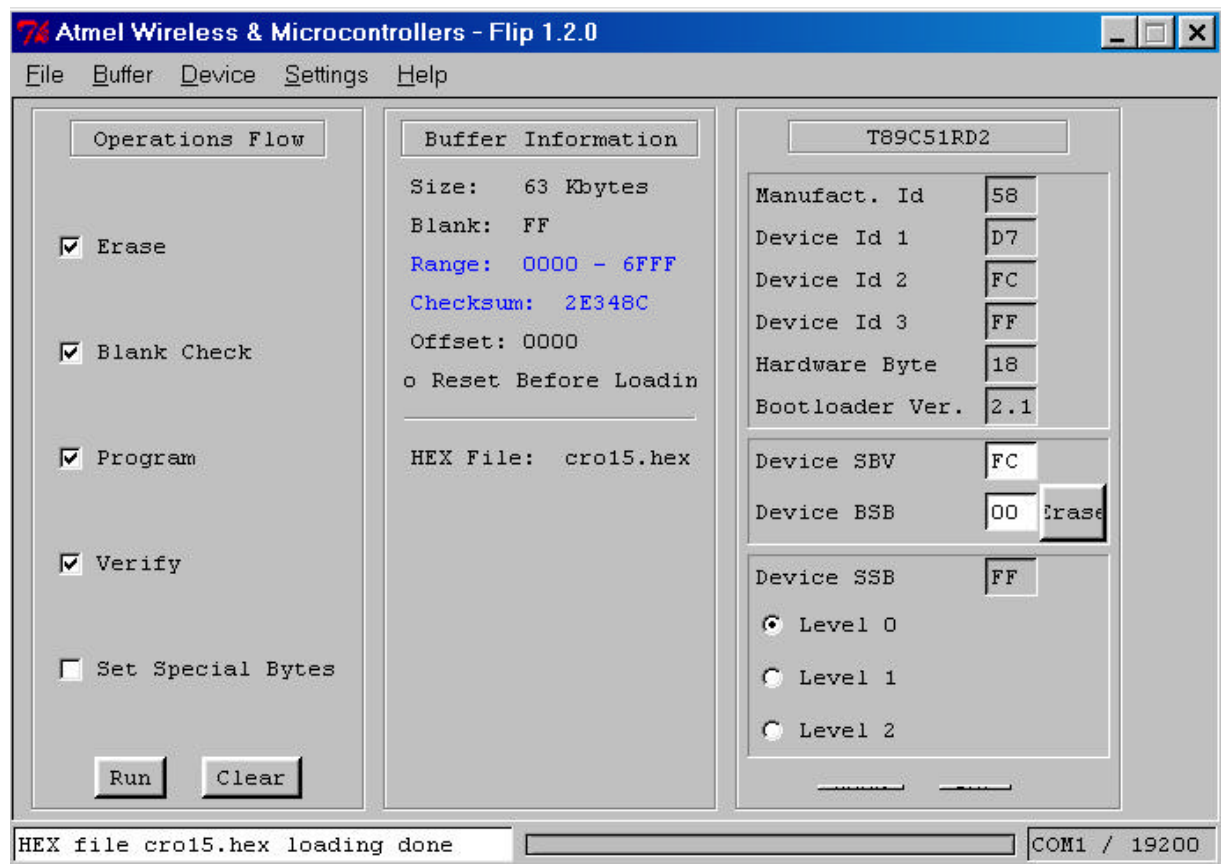

5. Selection of Programming Functions

The next step is to specify the options required for programming. Check the corresponding boxes accordingly.

IMPORTANT NOTICE:

Please use only the following functions, since under certain circumstances reprogramming is no longer possible! These necessary functions are:

Erase
Blank Check
Program
Verify

6. **Programming of the System Software:**

   Push the RUN button (lower left corner) and wait until programming is done.

7. **Terminating the Programming Software and Exit:**

   Click **File -> Exit** in the top bar to terminate the programming tool. Disconnect the power supply from the CRO board and open the short of pins 1 and 2 at **SV2**. The CRO runs with the new software when the power supply is reconnected.