

MTP Programmer ICP I



1. Introduction

The ICP I from E-LAB is the programmer for Atmel's MARC 4 MTPs M48C893, M48C510 and the U9380. This programmer works together with the PC or stand alone. In the stand alone mode the programmer writes the last stored MARC 4 program to the target chip. The memory inside the programmer is buffered by an accumulator. Two buttons and two LED's on top control the operation of the programmer. It allows single chip as well as in system programming.

2. System Requirements:

Operating system: Windows 9x or Windows NT 4.0

One free COM port

3. Hardware:

Connect the programmer to a free COM port with the serial cable delivered with the programmer. The programmer is powered by an integrated accumulator.

The COM port handles the data transfer and charges the accumulator if the COM port is strong enough. If the COM port could drive more the 10 mA it charges the accumulator with nearly 3 mA. This is high enough to keep the state of charge from the accumulator. The charging is only done if the COM port is open. This is automatically done by the software. After the software has recognized the programmer the COM port charges the accumulator till the software is closed.

A faster charge of the integrated accumulator can be done with the delivered power supply. With this power supply the accumulator is charged with 15 mA. Therefore it takes 10 hours to load a empty accumulator. This charging current is not regulated and therefore the power supply should be connected only for charging. If the power supply is connected every time to the programmer the lifetime of the accumulator is degraded. The power supply is connected to the programmer by a 3.5 mm jack plug. The front contact of the jack plug is + 7.5 V, the outer contact is ground.

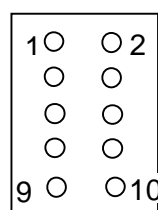
The connection to the programmer adapter board or the application board is done by a 10 -wire ribbon cable. The pins of the connector on the programmer adapter board or application board are connected as follows:

T48C893 programmer interface:

Pin 1	BP 43	Pin 2	NC
Pin 3	BP 40	Pin 4	BP 42
Pin 5	OSC 1	Pin 6	GND
Pin 7	VDD	Pin 8	BP 20
Pin 9	NC	Pin 10	NC

T48C510 programmer interface:

Pin 1	PM	Pin 2	VDD
Pin 3	BP 02	Pin 4	BP 01
Pin 5	BP 00	Pin 6	GND
Pin 7	NC	Pin 8	NC
Pin 9	NC	Pin 10	NC

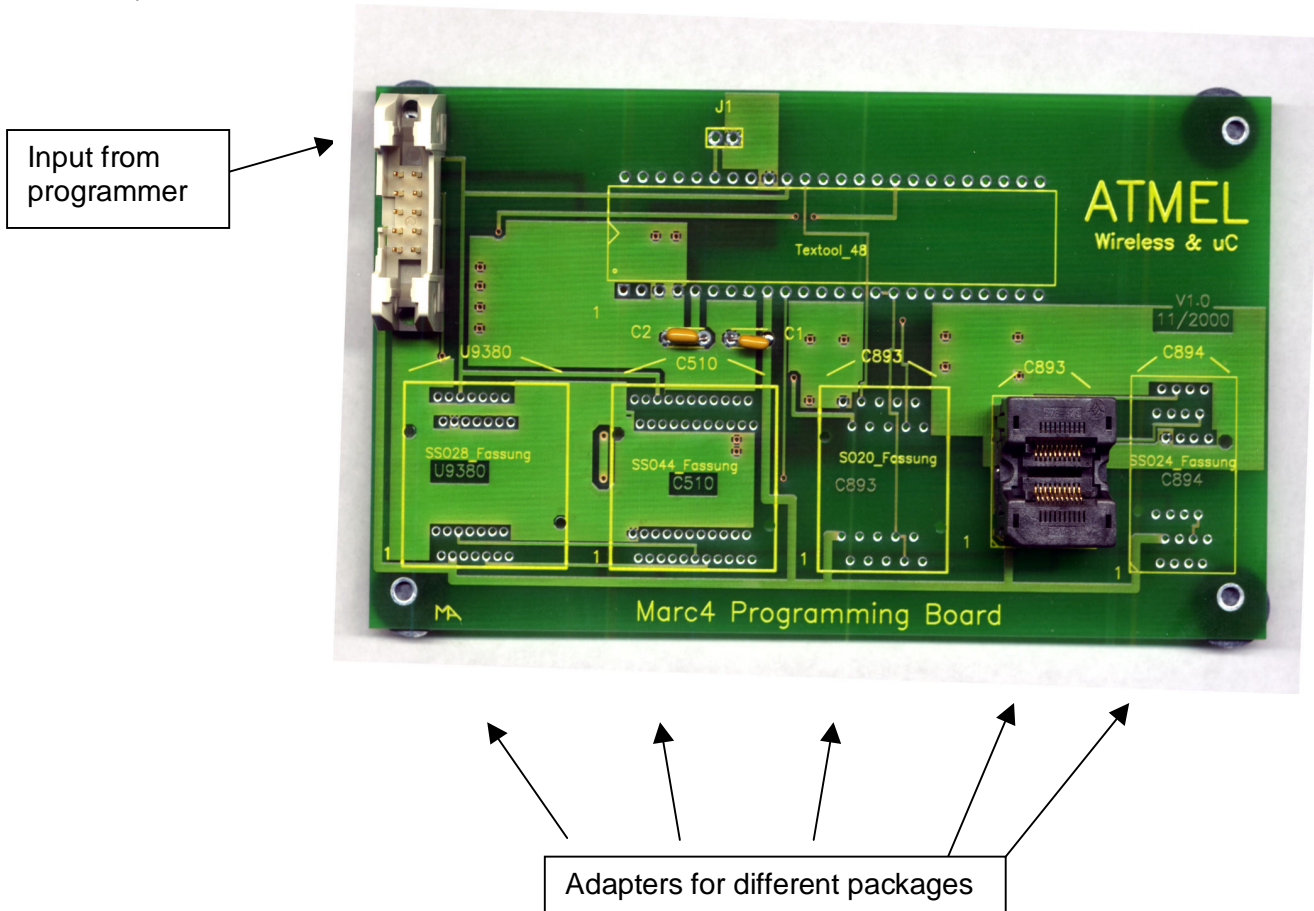


Top View

VDD = regulated power for the target.

For in system programming the load on these pins must be low enough. Otherwise correct communication between the programmer and the target will not be possible. Guideline: 200 nF at VDD and 10k at the other pins.

Please ensure that the connection is in the right position. If the connection is wrong the programmer may be destroyed.

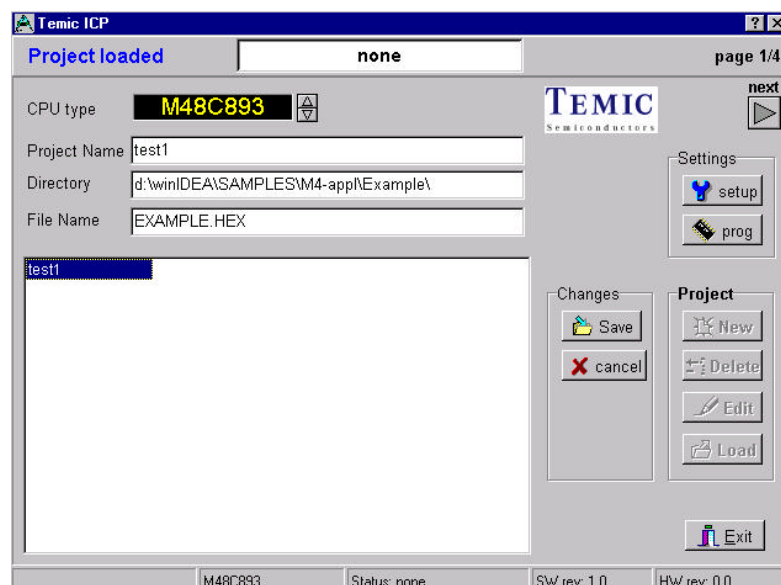


4. Software description:

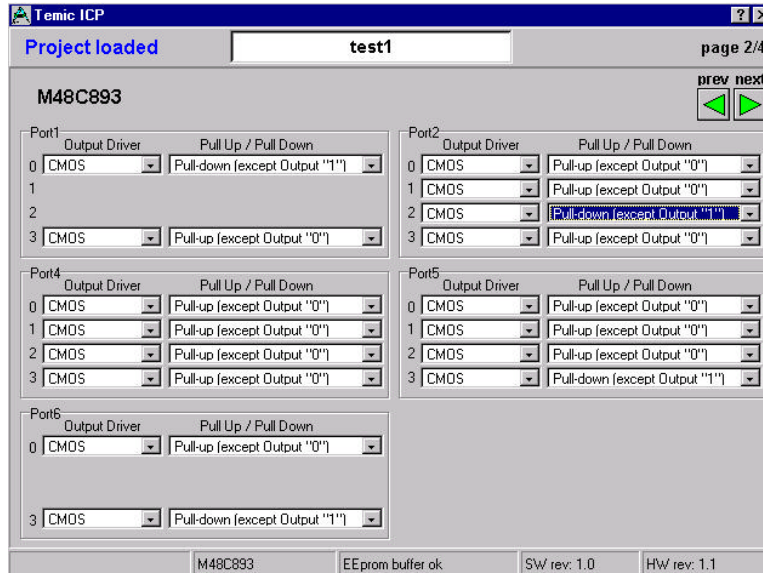
Copy the files from the disk to the hard disk and start the software "ICPTMATIC.exe".

At first a project has to be defined. For a new project type the name of the project in the field "Project Name". The software than asks you for the subdirectory and the filename. The file "TEMIC.INI" keeps the settings after pressing the **Save** button.

With the **Load** button or a double-click on a project name the settings for this project and the program data for the MTP are loaded into the PC.



The button **next** switches to the next windows were the settings for the port options and some special functions, depending on the selected target chip, can be done. All these settings are saved to the project.tpc file. For a detailed



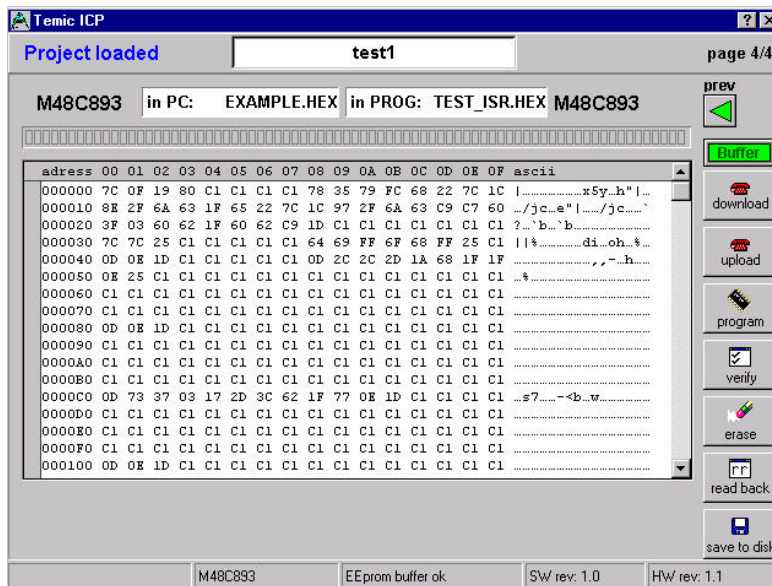
description of the special functions please see the data sheets from the target chip.

Note for M48C893: If BP42 is configured as open-drain-NMOS output, for verifying or reading the ROM contents a low pull-up resistor (~10k) is necessary.

If OSC2 has been configured to be external clock input, OSC2 has to be used to enter transparent mode: For programming OSC1 and OSC2 can be shortened.

If the read access to the ROM data is disabled the programmer writes this configuration and the program to the target and verifies it. After verifying the read access is disabled and therefor no further read and verify accesses are possible.

The last window shows the contents of the memory. The field called "in PC" shows the name of the source code file which is stored in the PC. The field "in Prog" shows the name of the source code file which is actually stored in the programmer.



The next step is to download the program to the programmer. Selecting the **prog** button starts programming it into the MTP. Programming the MTP takes 3 steps. First the programmer erases the EEPROM, second writes the program to the EEPROM and third verifies the contents. The software shows the success of the programming in a separate window.

5. Stand alone mode

If the programmer is in the power down mode, no LED is blinking, the user can wake up the programmer by pressing the **prog** button one time. The last downloaded program and port settings are programmed to the target by pressing the **prog** button. To erase the target chip press the **era** button. The two LED's above the buttons shows the programmer status.

Normal mode: both LED's are blinking alternate - no error

Programming: the right LED lights during programming

After the programming and verifying the LED's show an error code or if the programming was successful they return to the normal mode and blink alternate.

Error codes :

1 x blink = power down

2 x blink = no response

3 x blink = not empty

4 x blink = verify error

Both LED's are blinking together = no data in the internal RAM