



Emulator for EM68xx 8-bit MCU

1. Introduction

Description

The EME68xx tool is a high performance Development System for the 8-bit EM6812 Microcontroller.

This development tool is suitable for software development and hardware emulation.

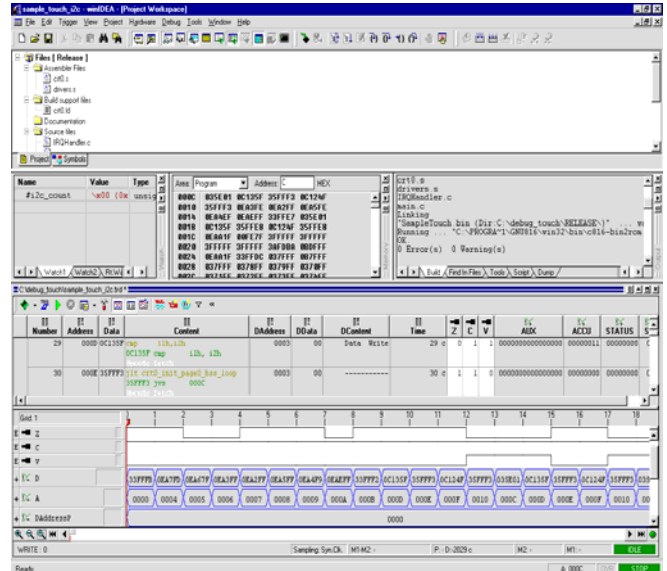
It ensures a successful development and provides some high-level debugging features in order to reduce time-to-market.

This Development tool integrates a powerful Integrated Development Environment and high performance hardware emulation pod.



Deliverables

- Software EM CoolRISC Environment 2 (CD-ROM)
- Hardware Emulation Pod
- Peripheral Board
- Cables and connectors
- Documentation
- Courses and trainings



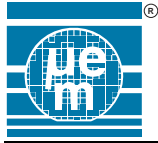
Main Features

- Windows-based development tools
- Easy-to-use graphic user interface
- Driven with Integrated Development Environment
- Full real-time In-Circuit-Emulation
- Integrated Assembler and C Compiler
- Source level debugging for C and ASM
- High level debugging
- Several Communication interfaces
- Small compact size

System Requirement

- Windows 95/98 / NT 4.0 / 2000 / XP
- Required free disk space : 120MB
- 128MB Ram
- Serial COM, USB, Ethernet





2. EM CoolRISC Environment 2

Description

The EM CoolRISC Environment 2 is based on WinIDEA™ IDE Software from Isystem GmbH.

EM CoolRISC Environment 2 consists of a project manager, multi-file source editor C / Assembler source editor, build manager and high level source debugger. The user can write his code, run the compiler, assemble, link and debug his software and hardware within one same tool.

The Assembler, C compiler, Linker are based on GNU tools for CoolRISC.

EM CoolRISC Environment 2 is easy-to-learn, it increases the productivity and speeds-up the development cycle.

Multi-File source editor

It enables the user to open and modify as many source files as wanted.

It includes all basic editing functions (copy, cut and paste, drag & drop, find, replace, etc) as more advanced editing functions like auto-indent, color syntax, debug watch tips

Project Manager

It allows to organize in a tree-structure all the project files like sources, headers, links, etc

Windows Management

WinIDEA™ is a multiple Document Interface (MDI) application. It enables the possibility to open and process several windows at the same time.

In order to manipulate them in a suitable way the windows can also be dockable or mini frame.

Build manager

It allows to set easily the compiler toolset options.

Source Window

The code is displayed in this window. The user can place his debug command (run, run until, step, step-over...) and put some breakpoints, view the values of his variables ...

Watch Window

This Watch window is suited for watching and modifying the variable with associated type. Then the user can easily add all the needed variables.

SFR Window

This window allows all Specific Function Registers (peripheral registers from CPU) to be displayed. Each register is named and divided into bit fields which relates the bit mapping registers. The user can change and access as wanted the needed field during debug mode.

Variable Window

All local variables are displayed automatically as soon as the program has entered a certain function. Call stack functions are also displayed in this window.

Browser Window

This Window allows to load and view all symbols from the project (variables, functions, types, constants). For each, the user can find the corresponding address and jump to the source line code.

Analyzer Window

This multi-window allows to run in real-time several analyzing modes : trace, profiler, access coverage, execution coverage and logic analyzer.

- Trace mode allows the user to record CPU buses (program, data, accumulator, flags, etc). Some special and advanced triggering feature can be defined
- Execution coverage mode allow the user to examine all address accessed and detect what are the unused areas (code or memory).
- Access coverage mode allows to examine what are accessed fields.
- Profiler mode provides a statistical analyze of functions uses and then give what are the functions which consumes a lot of times and should be optimized.

Logic Analyzer mode allows the user to record asynchronously up to 16 external signals (user can define his own boolean trigger mode). This mode is running parallel to trace mode.

Disassembly Window

The disassembly code is displayed in this window. The user can easily get the corresponding disassembly code from the source window. All labels from the source code are displayed in this window. All CoolRISC CPU registers are also displayed in this window and can be accessed for write / read operation in debug mode.

3. Hardware Emulation Pod

Description

The EM Hardware Emulation Pod is based on advanced and flexible hardware architecture :

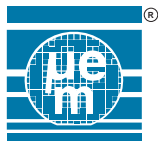
- Powerful communication POD
- Active CoolRISC core emulation POD
- Additional Peripheral board

This architecture ensures a high adaptability and a friendly use for developers.

Communication with Target System

The communication offers :

- RS232C Serial Com at 115Kbps
- Universal Serial Bus at 12Mbps
- Ethernet IEEE 802.3 interface TCP/IP (RJ45) at 10 Mbps supporting TCP/IP protocol



4. Hardware Emulation Features

High-level technology

- Utilizing SMDs and highly integrated PC downloadable SRAM-FPGA based.
- FLASH, ZBTRAM, SRAM memories

Clock and reset possibilities

- Xtal Clock is available through on-board quartz oscillators (32768Hz)
- RC Clock is available through a programmable PLL clock generator. It allows a precise frequency definition. The frequency is automatically driven by fpga calculation
- External clocks input can be easily applied (connector)
- An additional PLL driven by software allow to switch from chip's clocks to software PLL. This clock can be programmed from 1Mhz up to 10Mkz (1kHz step)
- Target reset can be easily disabled by software

I/O possibilities

I/O port electrical characteristic can be easily set :

- Default output voltage (VO) is 3.3V. By choosing the settable voltage level (jumper configuration on board) the output level can be set by software from 0 to 4.5V (10mV step).
- Input voltage threshold VIH is 0.7*VO, VIL is 0.3*VO. Typical input threshold is VO/2.

Power

8V to 24V DC power or 90 to 240V AC

Breakpoints

- Unlimited number of breakpoints can be easily set and cleared. All breakpoints can become a conditional breakpoint by adding some additional conditions (loops, events, etc).
- The user also has the possibility to easily place some matches breakpoint.
- By using trace mode, some new trigger possibilities can be used to place some hardware breakpoints. All step debug functions are available (step-by-step, step over, etc)

Real-Time In-Circuit-Emulation

- CoolRISC core integrated into high-performance SRAM based Fpga (soft upgradeable)
- CPU Peripherals integrated into high-performance SRAM based Fpga (soft upgradeable)

Emulation up to 20Mhz

Other features

- An I²C EEPROM handled by software can be available for user in order to store important data (identification, etc).
- All needed signals are available through connectors for customer application specific.
- Flexibility for additional extension via open CPU address / data bus and connectors, etc

5. Ordering Information

Emulator Ordering number	for microcontroller
EME6812	EM6812
EME68xx	EM68xx

EM Microelectronic-Marin SA reserves the right to change the emulator specifications without notice at any time. You are strongly urged to ensure that the information given has not been superseded by a more up-to-date version.