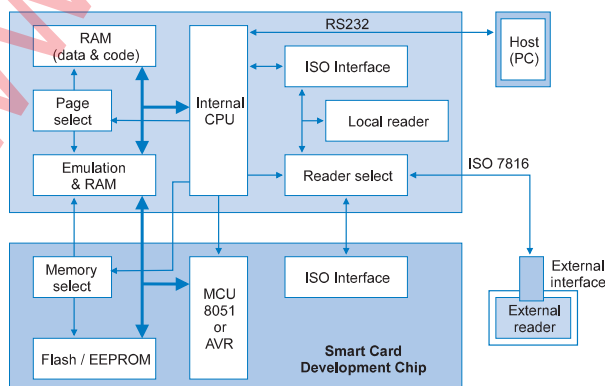




# DEVELOPMENT KIT FOR SECURE MICROCONTROLLERS

ATMEL  
KIT FOR

- Available for AT89SC and AT90SCC series micro-controllers for smart cards.
  - Based on Keil™ development chain (AT89SC) or IAR™ development chain (AT90SCC).
  - Same interface for the simulator and the emulator.
  - Final phase of the development can be done using a smart card sample exactly like the production devices. Thanks to the Flash-based microcontroller, production can start immediately.
  - Supported on PC (Windows).
- Includes:
    - simulation software, with an RS232 to ISO7816 interface allowing a test with the final application
    - emulation software and hardware
    - a development chip similar to the production devices to ensure exact same behavior and performances between the development and the production
    - built-in card reader to program card samples for the development phases, production cards for field trial or during the ramp up phase



AT89SC/AT90SCC Development Kit for Secure Microcontrollers



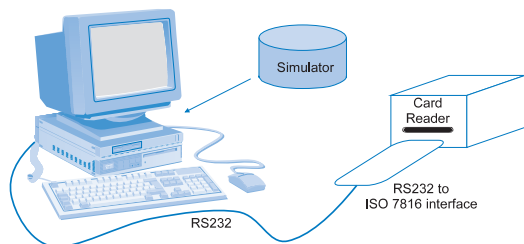


The Atmel Smart Card Development Kit (SDK), is a complete high-performance, user-friendly tool allowing easy development, simulation and emulation of the code for Atmel's secure smart card microcontrollers.

All Atmel secure microcontrollers use Flash for both program and data memory. When the development phase is completed, the programmer has a product which corresponds exactly to the production devices. There is no need to wait for a ROM mask for a field trial. It can be done immediately.

The Atmel SDK is based on the KEIL™ development chain for the AT89SC (8051™ architecture) family, and on the IAR™ development chain for the AT90SCC (AVR™ architecture) family.

**Simulation**



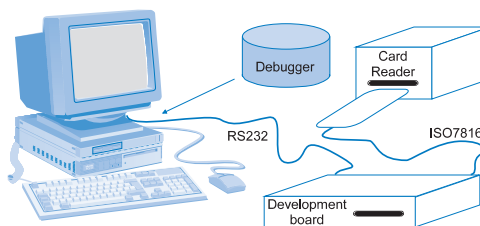
Simulation on the Smart Card Development Kit

Simulation runs on a host computer using Atmel ATXXSC DLL libraries. An RS232 to ISO7816 interface is provided, to simulate the code using an external card reader, interfacing with the end application.

**Simulator features:**

- Cycle-based running performance analyzer
- Code coverage facility
- High-level assembly and mixed-source display
- Watch window for C-variable display and manipulation
- C-like macro language

**Emulation**



Emulation on the Smart Card Development Kit

The SDK includes a development chip, similar in terms of functionality to the production one, but with a direct access to internal buses and possibility to disable security features. During the emulation phase, the code runs on the development chip CPU.

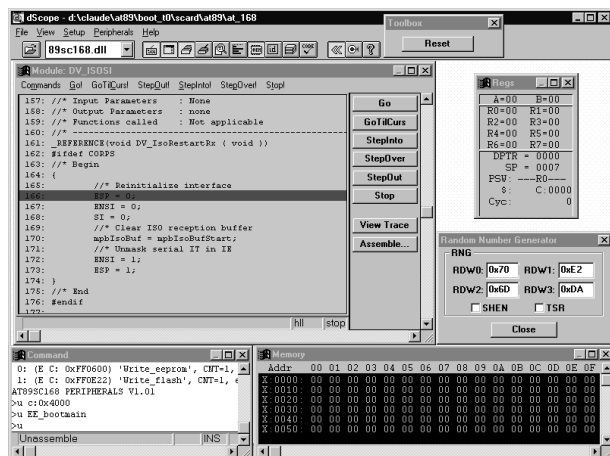
The SDK replaces the Flash and EEPROM memory of the development chip with a larger RAM. This allows the developer to add debugging routines.

The developer can, progressively remove the debugging routines to reach the final code. The program is then transferred from the RAM to the nonvolatile memory of the development chip.

**Emulator features:**

- Software breakpoint
- Step to step
- Step over
- Register and memory display/ modification
- On-line assembly
- High level of debugging for C

A built-in card reader is available to allow the developer to program a limited number of cards for field trial and/or the ramp-up phase of volume production.



Windows interface of the AT89SC and AT90SCC Software Development Kit

**Secure Microcontroller Product Group**

**Atmel Rousset**

Zone Industrielle  
13106 Rousset Cedex  
France  
Tel : (+33)(0)4 42 53 60 00  
Fax : (+33)(0)4 42 53 60 01

**Headquarters**

**Corporate Headquarters**

2325 Orchard Parkway  
San Jose, CA 95131  
USA  
Tel : (+1)(408) 441 0311  
Fax : (+1)(408) 436 4300

**Europe**

Atmel U.K. Ltd  
Coliseum Business Centre  
Riverside Way, Camberley  
Surrey GU15 3YL, England  
Tel : (+44)(0)(1276) 68 66 77  
Fax : (+44)(0)(1276) 68 66 97

**Asia**

Atmel Asia Ltd  
Room 1219  
Chinachem Golden Plaza  
77 Mody Road  
Tsimshatsui East, Kowloon  
Hong Kong  
Tel : (+852) 272 19 778  
Fax : (+852) 272 21 369

**Japan**

Atmel Japan KK  
Tonetsu Shinkawa Bldg, 9F  
1-24-8 Shinkawa  
Chuo-Ku, Tokyo 104-0033  
Japan  
Tel : (+81) 3 3523 3551  
Fax : (+81) 3 3523 7581

**E-mail**

literature@atmel.com

**Web Site**

http://www.atmel.com

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