

AX/MX51

hitex 
DEVELOPMENT TOOLS



In-Circuit AX51
MX51 Emulators

Support For All Chip Vendors



Proven Solutions For Your Requirements

More than 10 years ago we introduced our first in-circuit emulator for Intel's MCS[®]51 family. Since then, more than 3000 systems have been installed worldwide. They have helped many developers in creating successful products.

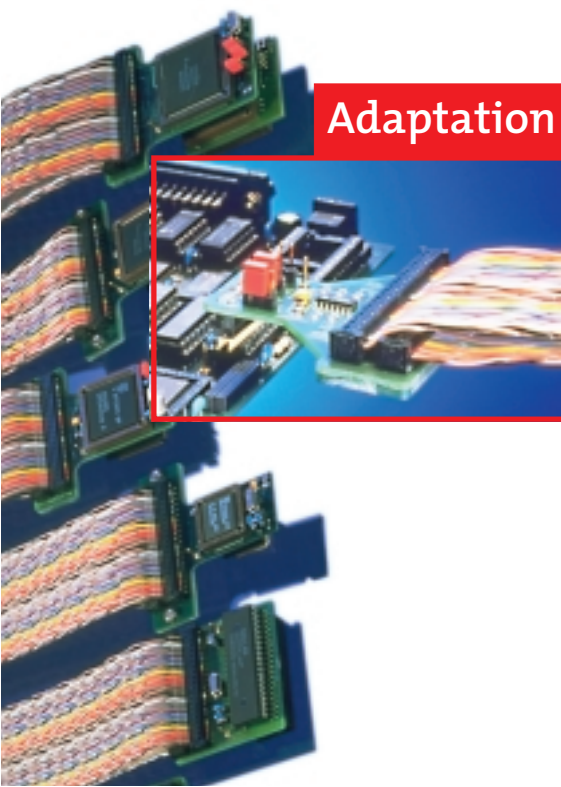
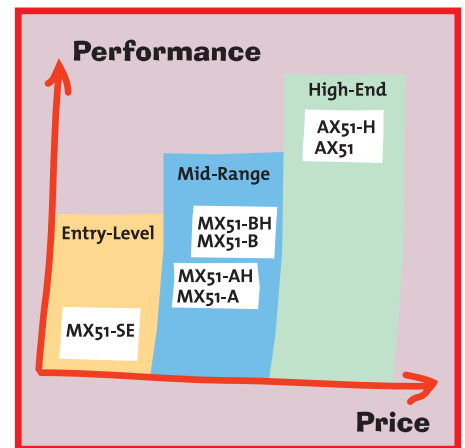
Our system concept, consisting of a base unit and a derivative specific adaptation cable, has proven to be very useful and flexible. Even today the first base unit can be used for new derivatives simply by changing the adaptation cable. This saves money on investment and allows for the development of professional applications using the appropriate controller of your choice.

1

The New Generation

The large number of existing and new controllers in the 8051-family confirmed our strategy to offer a universal basic unit. Thus we kept this principle for the new generation: new derivatives will always be supported by the introduction of a specific adaptation cable while still using the basic unit. In order to achieve better flexibility in terms of functionality, we now offer different models of the basic unit: MX51 and AX51. This reflects the varying requirements of members in a development team within different stages of a project.

MX51-SE offers emulation memory and hardware breakpoints – sufficient enough to cover all functionalities of an entry-level emulator. Our AX51 has increased functionality with all emulator features thus fulfilling the highest requirements. An interesting strategy is presented with the new MX51 class, its features range between the entry-level system MX51-SE and the top-model MX51-BH. Although the emulator hardware of the MX51 series is already fully equipped, additional functionality may be ordered in pieces via an authorization disk. This allows for fast on-site upgrades as soon as more functionality is really needed. Special tuned H-models support the highest frequencies.



Adaptation



Adaptation Cables For Every Purpose

Generally we distinguish between two classes of applications:

- ROM-application: ports Po/P2 are used as I/O-lines. Program as well as data memory reside in the on-chip memory, therefore no address-/data bus is externally visible. In order to emulate this kind of application, a special chip or method has to be used. This technique is available with our PX-type adaptation cable.
- ROMless-application: program and/or data memory is outside the controller and will be accessed through the address-/data bus via ports Po/P2. All necessary information for emulation is visible and therefore, the regular chip is sufficient for emulation. PV-type adaptation cable is used. As a special kind of adaptation cable we also offer the ICE/connect adaptation. A universal and simple interface equipped only with the necessary signals makes this adaptation appropriate for all derivatives. ICE/connect is useful especially for soldered-on controllers.

For each specific controller, HiTOP, the user interface for all our emulators, is automatically tailored to show plain text for each individual SFR-bit in the controllers peripherals area.

Ask us for the list of supported derivatives or simply discuss your application with us. Benefit from our experience in a wide range of different applications.

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Outstanding Performance

Sufficient emulation memory, a large number of hardware breakpoints, deep trace buffer, and sophisticated event triggers all belong to our emulators. Extraordinary filtering of gathered trace buffer information reduces the need to seek and point out critical program sections. Only relevant functions or interrupt calls need to be selected and gathered. The logic trace view shows signals of the application in correlation with the program flow. Of special interest for the C-developer is the HLL-recording and display mode.



Logic trace

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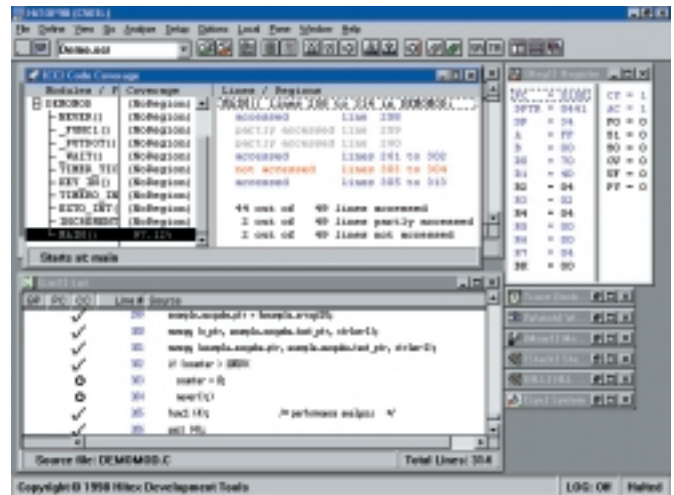
RIAS Catches Internal Hidden Bugs

Almost everyone has had the experience of the existence of some internal accesses, for example the reading of SBUF-control register, which are not mirrored on the external address-data bus. Usually no emulator is able to track this event. Equipped with RIAS (Realtime Internal Access Supervisor) our MX51 and AX51 emulators can do so. A special logic detects operations that affect internal resources and can be used as a trigger event. This is done without realtime violation and does not depend on the use of a special chip for emulation.

5

Quality Assurance With The Use Of An In-circuit Emulator

Usually the trace and trigger functionality comes into effect when the system has already shown its malfunction. Now the developer uses trace and trigger to detect the reason for this unexpected behaviour. Unfortunately, some of these errors remain undiscovered because these bugs didn't get the chance to bite. Code coverage is ideally suited to discover such unexecuted code, that has not been tested yet. Another method to ensure application quality is provided through performance analysis capabilities. The statistical evaluation of execution times of critical program sections shows runaways from expected execution times, even when this hasn't yet had a visible impact on the behaviour of the system.



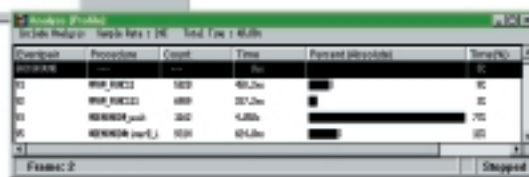
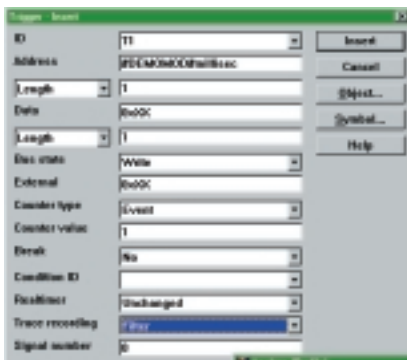
6

The Ultimate User Interface

HiTOP is the universal user interface for all our development tools. It provides complete HLL debugging and rapid access to all emulator resources. An extensive command language makes possible powerful test scripts and harnesses, plus end-of-production-line testing.

The emulator can communicate with HiTOP in a variety of ways. The serial interface supports up to 115 kBaud. Yet greater speeds are possible with a special parallel interface. Optionally, an ethernet connection is also available so that the emulator can operate as a "shared resource" on your network.

HiTOP uses our proprietary symbol format with pre-processors for tools from Keil, Tasking and IAR already available. However, it still permits the direct use of binary-compatible applications from the MCS⁵¹ world. HiTOP offers good compatibility with all programming tools ranging from assembler to high level languages.



HiTOP User Interface

Emulator Versions

FEATURE	MX51-SE	MX51-A	MX51-AH	MX51-B	MX51-BH	AX51	AX51-H
Max. Frequency*	16 MHz	16 MHz	24 MHz	30 MHz	42 MHz	30 MHz	42 MHz
Low Voltage					**		**
Emulation Memory:	256 KByte	128 KByte		256 KByte		256 KByte	
access on the fly							
protection							
code banking	no	no					
Breakpoints:	256 K	64 K		256 K		256 K	
Profiler:							
Trace:	no	2 K		8 K		32 K	
access on the fly	-						
time stamp	-						
HLL/Linetrace	-						
filter by region	-						
external events	-						
logic trace display	-						
Trigger:	no	2		4		4	
changeable on the fly	-						
event sequencer	-						
counter/timer	-						
filter for trace	-						
RIAS powered	-						
Performance Analyzer:	no	no		no			
Code Coverage:	no	no		no			
On-site Upgrade:						no	
Power Supply:	external	external		external		internal	
Host Interface:	serial 115 Kbaud, Highspeed-PARA, Ethernet-Option						

* depends on type of processor ** Low Voltage up to 30 MHz



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Embedding Software Quality