

DProbeHS

**hitex**   
DEVELOPMENT TOOLS



**In-Circuit  
Emulator DProbeHS**  
for high speed  
8051 derivatives  
up to 70 MHz

*Embedding Software Quality*

## DProbeHS



### Get Real ... with Real-Time Software

Don't venture out into the world of serious 8051 software development alone. Arming yourself with the DProbeHS and its add-on modules will help you complete your project on time while ensuring a high standard of quality. The DProbeHS is a low priced entry-level in-circuit emulator to which greater levels of debugging and development functionality can be added in the form of extension modules. Adding DTrace16 introduces real-time trace capability to the system. Alternatively, adding one of the DBox16 options will result in a powerful full-featured in-circuit emulator. These moderately priced modules can dramatically decrease the time to market of real-time software while ensuring a fail-safe quality of the highest standard. Furthermore, the extensions can be

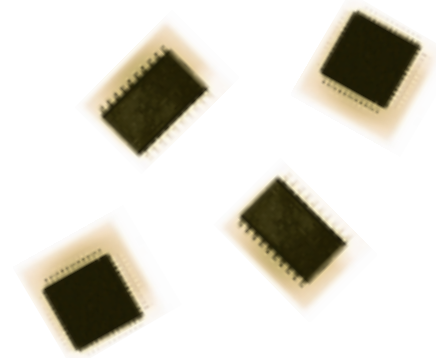
used not only with the DProbeHS, but also with other DProbe types and therefore other processor architectures.

To arm your entire development team with emulator capability, you won't have to buy extension modules for each member. A team will typically have some full-featured in-circuit emulators (i.e. DProbe with a DBox16) for the testing and debugging of quality or mission critical software. In addition they could have a few DProbe units at their disposal, so that several developers are free to perform their own emulations.

- > Non-intrusive so it won't affect real-time performance
- > Fast, efficient and easy to use
- > Great value for money
- > Supports all popular compilers
- > Modular – Use the same emulator with add on modules to meet your more complex development challenges

### Advantage DProbeHS!

- > Fast bug detection
- > Comfortable development of real-time software
- > Your time to market - fast
- > Your products - reliable
- > Your customers - happy



### Enter ... the World of Real-Time In-Circuit Emulation with DProbeHS

Buying a DProbeHS will provide you with a palm-sized real-time in-circuit emulator that focuses on high-speed 8051 variations. Complete HLL debugging and rapid access to all in-circuit emulator resources is achieved with the easy to use HiTOP debug interface. You'll find that microcontroller on-board peripherals are fully supported.

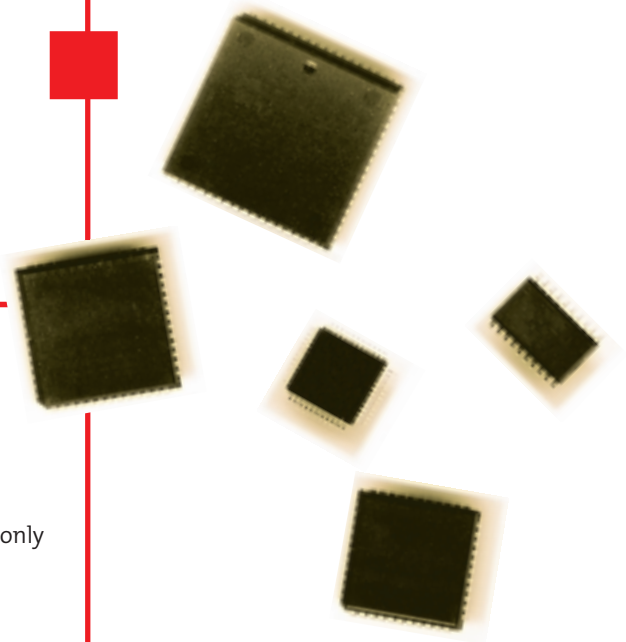
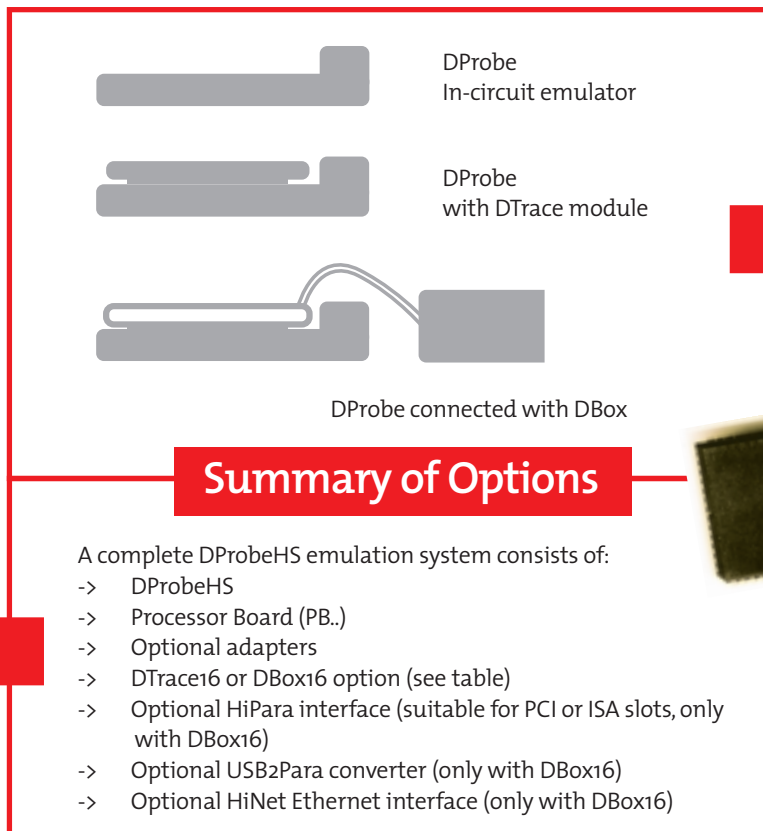
Should you want to watch and modify values during a running emulation without influencing real-time operation, the dual-ported emulation memory allows for this. Other features include the support of interrupts during a halted emulation, hardware breakpoints for code and data, code banking and the support of watchdog timers. Due to its compact size, the DProbeHS can be placed in close proximity to the target hardware, allowing emulation at high clock frequencies. In addition, setting up the emulation processor is easy and straightforward.

Despite being packed with features, the DProbeHS is lightweight when it comes to price.



# Efficient Tools

## Modularity of DProbe Systems



### Add DTrace16 ... to Get Tracing: DProbeHS + DTrace16

You can add real-time trace capability to the DProbeHS with the DTrace16. It is an extremely small add-on module that snaps into the DProbeHS's top cover. All external bus activities of the emulated microcontroller can then be recorded without having any effect on the real-time performance of the target system. The trace buffer will record addresses, data and status signals. This allows events leading up to an application error to be easily reconstructed, revealing why the error occurred in the first place.



RIAS™ (Real-time Internal Access Supervisor) can be used to detect bugs linked to events inside the microcontroller. Emulators are normally unable to track 8051 internal events, however RIAS™ uses special logic to detect operations that affect internal resources. This logic is used as a trigger event, giving an emulator the ability to track internal events without any violation of real-time operation. There's no need to use a special chip for emulation.



## DBox is The Box for Full-Featured In-Circuit Emulation: DProbeHS + DBox16

If you're looking for an in-circuit emulator with more than real-time trace capability, you can add one of the three powerful DBox16 options to the DProbeHS (see table). This will provide you with a power-packed professional in-circuit emulator that is still reasonably priced. Features include:

- > An intelligent trace with filtering functions and real-time facility
- > Up to 4 complex triggers with sequence, time trigger feature
- > Code coverage
- > Protection
- > Read-before-written detection
- > Performance analysis
- > Fast connectivity options to the host PC



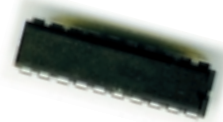
Have you ever felt that reading a trace is like looking for a needle in a haystack? Not the case with the DBox16. The trace filter prevents all parts you don't want to see from being recorded in the first place, so you only record what's interesting to you. Not only does this improve trace clarity, it also saves on memory and your time. And if there's a certain section of code that you would like to observe under real-time conditions (i.e. without affecting the real-time operation of your target), you can do so. If you need to make precise timing measurements within your application, DBox16 has got you covered since its trace hardware timestamps all recorded frames. You can link the four complex triggers together so that they function in a specified sequence or you can use them as a time trigger to detect timeouts.

Code Coverage lets you analyze code usage by the application. This reveals code that is not used at all (i.e. redundant code) and you'll also be able to identify code that has not yet been tested.

If certain sections of code and data that are not to interact with the CPU, the Protection feature will tell you if this is really the case or not by keeping an eye on these particular areas.

It's probably your intention to have all your variables in a known state. However, your code may still contain uninitialized variables. The Read-Before-Written feature prevents a variable from ever being read before it has been written to, which could save you a lot of headache.

To be able to identify problematic areas of your application or »bottlenecks«, Performance Analysis takes care of this using event profiling. In addition, a nesting analysis shows which function calls which function. A count feature can reveal how many times a function or area of code is entered and left or it can count, for example, the number of timer interrupts that occurred within an area of code.





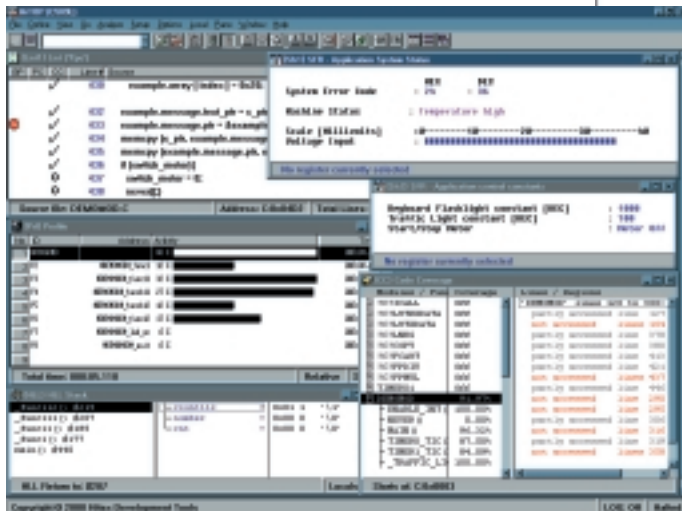
## HiTOP – The Ultimate User Interface for Embedded Developers

HiTOP is the Windows based universal user interface for all Hitex development tools. It provides complete HLL debugging and rapid access to all in-circuit emulator resources such as Trace, Trigger, Sequencer, Performance Analysis, Coverage, Memory mapping and Setup of the target system.

As well as being packed with useful features, HiTOP can read object files in almost any format and it makes efficient use of any debug information included.

A powerful command language included can be used to record and replay user actions. This language facilitates automatic testing of applications and remote control of the user-interface.

Kernel awareness for most RTOSs can be added to HiTOP and it's possible to integrate it with a great deal of our partner products, including visual design and test tools, analyzers, editors, etc.



### DProbeHS Technical Data

Supported controllers:	High-speed 8051 derivatives like the 60 MHz TS8xC52X2 from Atmel Wireless & Microcontrollers (former Temic Semiconductors)
Real-time emulation:	Up to 70 MHz
Target voltages:	From 2.7 to 5.5 V
Peripheral support:	Full support of microcontroller on board peripherals
Memory:	Up to 1 MB dual-port overlay memory enables non-intrusive performance. On the fly access to variables is supported. Shadow RAM included
Banking:	Code banking up to 16 MB. Various banking models supported
Breakpoints:	1 M hardware breakpoints for code, 64 K hardware breakpoints for data read / write
Trace possibility:	Using DTrace16 or DBox16
HLL-debugger:	HiTOP. Supports compilers from Keil, Tasking and IAR. Uses HiSCRIPT, the powerful macro language
Adaptation to target:	Various options available
Communication:	Serial communication up to 115 kBaud
Power supply:	Universal input voltage for worldwide application
Dimensions:	32 x 150 x 82 mm

## DTrace16 Technical Data

Recorder:	32 K frames for recording of addresses, data and status with no violation of real-time operation. 48-bit trace, no timestamp
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## DBox16 Technical Data and Options

	DBox16-1	DBox16-2	DBox16-3
Trace:	HLL / Line-trace, instruction-trace, signal-trace		
depth (frames):	32 K	64 K	256 K
details:	Records addresses, data, status, externals and timestamps, no violation of real-time operation		
width:	96-bit trace		
timestamps:	Resolution 50 ns		
externals:	8-bit logic probe input		
filter:	Set via trigger and trace-region settings		
Complex triggers:	2	4	4
details:	Settings for address, data, status, externals and trace controlling, setting is possible on the fly		
time trigger:	For the detection of timeouts between several trigger events		
trigger output:	A trigger output is provided		
Sequence:	2 level sequence	2 level sequence	4 level sequence
PC profile:	yes	yes	yes
Code coverage:	no	256 KB	1 MB
Protection, Read-before-written detection:	no	256 KB	1 MB
RIAS™:	Real time Internal Access Supervisor		
Communication:	Serial communication up to 115 kBaud (parallel HiPara interface, USB or Ethernet options available)		



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