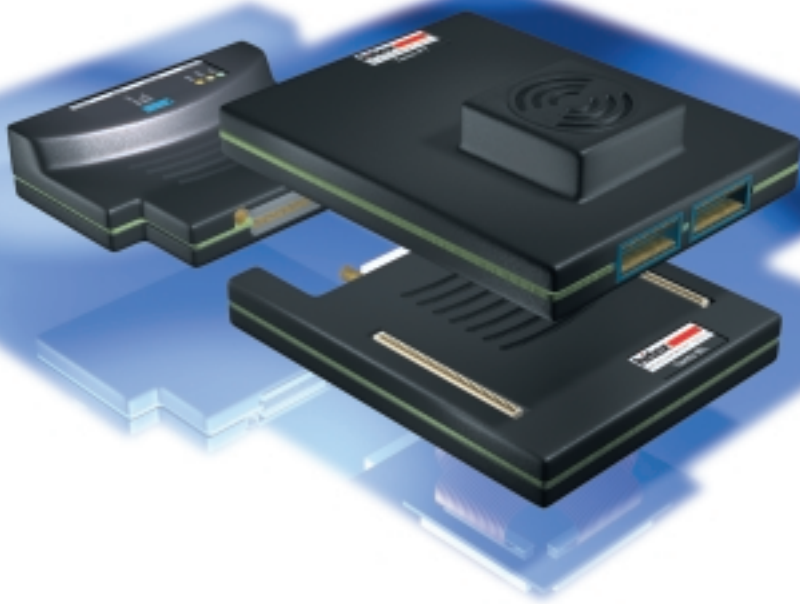


Tanto

**hitex**   
DEVELOPMENT TOOLS

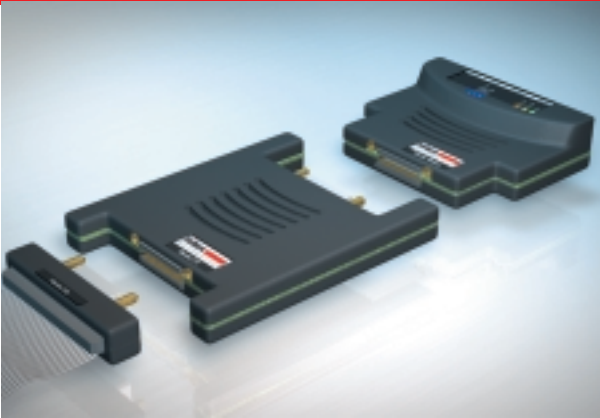


The Universal  
Highly Modular,  
Highly Configurable  
**Tanto**  
Test and  
Analysis Tool

*Embedding Software Quality*



## Tanto – highly modular!



### On Chip Debugging Support and NEXUS – What’s it all about?

Most modern microcontrollers include on-chip debugging support, where dedicated pins allow control of an application running on target hardware. NEXUS is a consortium that defines standards for such on chip debug ports, and Hitex is a member of this group.

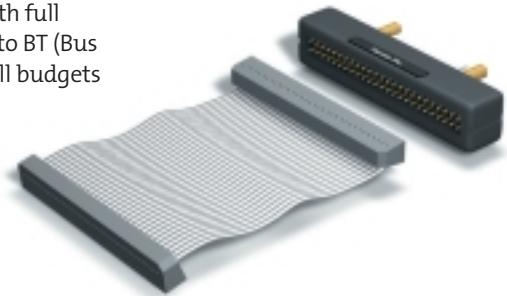
“Low cost” tools are available to connect debug pins to the LPT port of a PC. However, efficient rapid analysis and testing of an embedded application requires fast intelligent hardware, and the user interface should be well designed and capable of working in a high-level language mode.

1

### Tanto’s all you need

For microcontrollers with on chip debugging features, a highly modular and universal system like Tanto is a must. Changing over from one microcontroller to another requires nothing more than a swap of the Tanto PL (Port Link) and starting the corresponding HiTOP user interface. The same hardware can then be used throughout.

What’s outstanding about Tanto is the fact that the entry-level product, Tanto Base, which is itself a high performance debugging system, can be expanded by the Tanto PT (Port Trace) to a debugger with port trace, or it can be used as the base for an emulation system with full adaptation by adding the Tanto BL (Bus Link) and optional Tanto BT (Bus Trace). With the Tanto system, a module can be added to suit all budgets and all requirements.



2

### Tanto’s Brain is its Tanto Base

The nerve center of the entire system is the Tanto Base. Fitted with several high-speed communication interfaces (USB, Ethernet and RS232 are standard) and a high performance 32-bit microcontroller, Tanto Base can be used not only as one of the fastest JTAG- or BDM-Debuggers around, but also as the brain of a complete system. Additional programmable hardware is included for the high-speed serialization of JTAG or BDM commands.

When used together with the comfortable HiTOP user interface, Tanto Base is the right tool to examine embedded applications in high-level language mode in real-time. All parameters associated with the microcontroller, application and peripherals (e.g. functions, variables, data) are exposed, and allowing the developer to ensure the application does what it should.

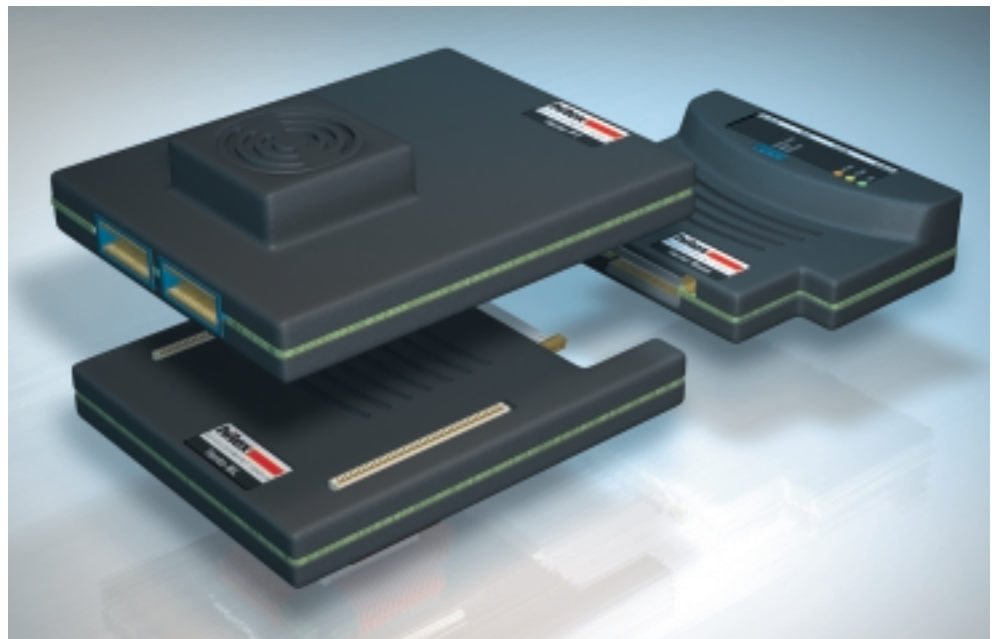
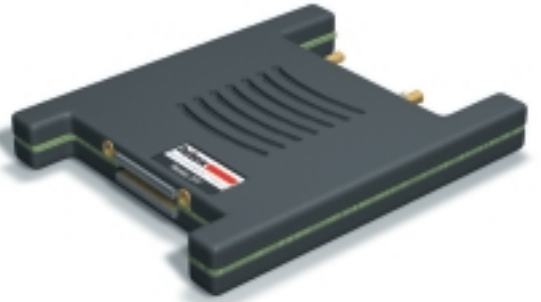
Tanto Base is universal hardware that can be used with a great deal of microcontroller types, and corresponding HiTOP versions are provided for each of them.





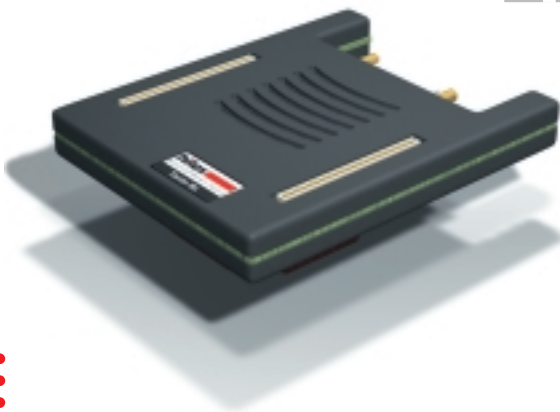
### Use Tanto Port Trace – For Traceable Insight

Stepping through code and examining data is one thing, but observing the application in real-time and tracing program flow and data accesses reveals a lot more about an application's behavior. Tanto Port Trace records all trace information transmitted by a microcontroller's On-Chip Debugging Support. This normally includes details about branches, accesses to selected variables and sometimes information on task switching in real-time operating systems. With some chips, it's possible to trigger on the occurrence of particular events in real-time. The HiTOP user interface transforms this raw information into an easily read symbolic high-level language representation. As expected, Tanto Port Trace is universal hardware that can be used with a great variety of microcontrollers.



### Tanto Bus Link - Gets Busses Talking

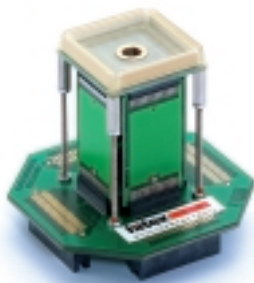
For chips that allow complete access to their address and data buses via outer pins, or for special emulation chips, a fully adapting Tanto Bus Link can be added to Tanto Base to provide additional features. Dual-ported emulation memory allows stand-alone development without any target hardware. All variables can be examined or modified "on the fly" without any loss of real-time. Additional hardware breakpoints extend the On-Chip Debugging Support features of the microcontroller. Tanto Bus Link is connected to the target hardware with a full adaptation like the patented PressOn adapter. To support the special features of the microcontroller derivative without restrictions a Tanto Bus Link is provided for each microcontroller family.





## Add Tanto Bus Trace – To Reveal the Ultimate Truth About Your Application

In addition to Tanto Bus Link, the final module required to form a high-end in-circuit emulator is Tanto Bus Trace. Features include a large trace buffer, hardware triggers that can be combined in sequence or used to detect time intervals that are too short or too long. Performance - and Coverage Analysis features are able to detect the most complex bugs around. The system also reveals sections of code that have not yet been tested and allows you to guarantee the actual performance of your application is the same as that promised to your customer. This tool exposes all parameters of the application including bugs and problematic areas – nothing remains hidden.



## Did You know?

### Hitex is »Embedding Software Quality«!

Being able to develop high quality products in short amounts of time is vital. Quality must be built-in from a project's birth and should be constantly checked right up until launch day. Hitex has declared its mission: to Embed Software Quality, meaning it will provide excellent tools to help you create and maintain quality in your embedded software. With more than 20 years of experience, Hitex is thoroughly familiar with this task. Tanto is a modular tool that accompanies a product through all stages of its development, eliminating the risks and putting you in the driver's seat when it comes to Embedding Software Quality.

*Embedding Software Quality*

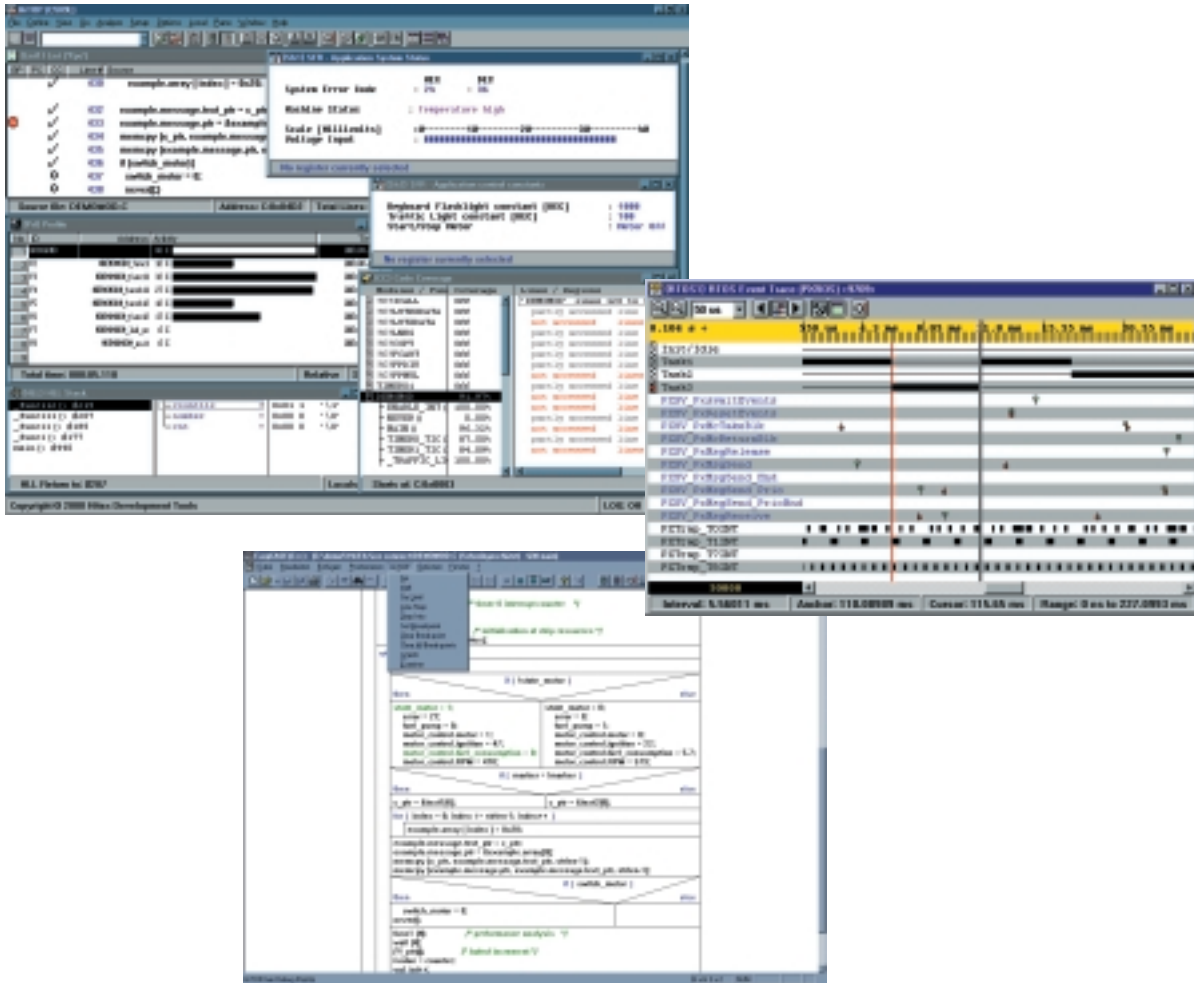




## HiTOP – The Ultimate User Interface for Embedded Developers

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.

## Tanto Technical Data

### Tanto Base

Host-Connections:	USB (V1.1), Serial (115 kBaud), Ethernet (10BaseT)
Operating Software:	HiTOP
Run Control Functions:	Run, Halt, Single Step, Line Step, Breakpoints (depending on the debug functionality of supported chip)
External Signals:	Trigger out, Trigger in
Operating Voltage:	Supports Debug Port voltages between 1.8 and 5.0 Volts
Power Supply:	Universal input voltage for worldwide application
Dimensions:	100 x 36 x 80 mm (W x H x D)
Target Adaptation:	Via microcontroller specific adaptation module

### Tanto Port Trace

Trace Depth:	1M frames
Trace Width:	32 channels
Trigger Functions:	4 triggers (each with an associated counter), 4 level sequencer, Qualified trace recording (depending on the functionality of supported chip)
Time Measurement:	Time stamps with 10 ns resolution
Supported Frequency:	Up to 133 MHz (200 MHz in Preparation)
External Signals:	8 I/O signals (configurable: 4 in + 4 out or alternatively 8 in)
Operating Voltage:	Supports Trace Port voltages between 1.8 and 5.0 Volts
Power Supply:	Power Supply via Tanto-Base module
Dimensions:	100 x 17 x 125 mm (W x H x D, Tanto-PT module alone) 100 x 36 x 179 mm (W x H x D, Tanto-PT combined with Tanto-Base)
Opt. Expansion Module:	Tanto Data Probe (8 I/O signals)
Target Adaptation:	Via microcontroller specific adaptation module

### Tanto Bus Trace

Trace Depth:	up to 16M frames
Trace Width:	192 channels
Trigger Functions:	8 triggers (each with an associated counter), 8 level sequencer, acting on trace, real-timer, time trigger
Time Measurement:	Time stamps with 10 ns resolution, real-timer, time trigger
Supported Frequency:	Up to 133 MHz (200 MHz in Preparation)
External Signals:	16 I/O signals (configurable)
Power Supply:	Power Supply via Tanto-Base module
Dimensions:	100 x 17 x 140 mm (W x H x D)



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