

General Product Information

This data sheet and price list supersedes all previous price or data sheets and is valid as of the date shown at the top of this form. In order to provide our users with a better mix of tools and capabilities, we've changed our product groupings slightly. The following are data sheets and product summaries of Franklin Software products. While there are only a few basic components, there are many considerations and operational aspects to any particular software product kit build.

We carry five fundamental software components, the Macro Assembler, the Compiler, the WINSIM Debugger/Simulator, the RTX-51 RTOS (Real Time Operating System) , and ProView our Integrated Development Environment.

To make delivery easier, we've taken the liberty of building software suites keyed to your individual needs. We used the components listed here to build (bundle) three suites of development products that we call "**kits**": The **Assembler** kit, the **Compiler** kit, and the **Professional Developers** kit. We've bundled the individual products together to provide a broad and rich range of capabilities and prices for the user. Each kit has been configured to provide a complete package with complimentary components. The basic components are briefly outlined below.

Product Descriptions:

- [A51 Macro Assembler](#)
- [C51 Compiler](#)
- [WINSIM Debugger/Simulator](#)
- [RTX-51](#)
- [ProView](#)
- [General Information](#)
- [System Requirements](#)
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Product Data Sheets:

- Advanced Development System
 - ProView Development Environment
 - C51 Compiler
 - WinSim-51 Debugger/Simulator
 - RTX-51
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Macro Assembler:

A fully Intel ASM-51 compatible Macro assembler designed to allow easy generation of symbolic assembly language mnemonics into absolute or relocatable object code. A51 is most effectively used when utmost speed, small code size, and precise hardware control are especially critical. The fully Intel compatible macro facility saves development and maintenance time, as common sequences need only be developed once.

The complete A51 delivery consists of: The A51 Macro Assembler--fully Intel source code and macro object module language compatible--with include files, L51 Linker/locator, OH51 Object to Hex converter, and the Lib51 of address space for extended 8051 programming. L51 automatically librarian. The L51 linker is a code banking linker that supports up to 8 Mbytes generates an intra-bank jump table for functions that reside in different memory banks. As with all Franklin product deliveries, L51 comes with a software tool to generate executable modules suitable for your PROM programmer.

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'C' Compiler:

A high level programming language that combines structured programming, versatile data structures, code efficiency, and a wide variety of mathematical, logical, and string operations. As a language, C is not dedicated to specific applications. However, many applications can be handled more easily and efficiently than with other more specialized languages. The availability of C for many common microcontrollers, allows the use of generic C code in many different applications with little or no modification.

C51 features: C51 is ANSI compliant; complete with all standard, string, math, and transcendental library functions, and includes library sources for the input, output, and startup routines. C51 fully supports all members of the MCS-51 family and all derivatives without regard to vendor. C51 supports chips with multiple data pointers, multiple serial ports, arithmetic co-processors, A to D converters and any other "special" peripherals. C51 easily and completely accommodates the restricted/enhanced/alterd capabilities of the Signetics 750, 751, and 752's, Siemens 517 series, and Dallas DS2500, DS5000, and 320 series of controllers among others.

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WinSim Debugger/Simulator:

A High Level Language Debugger for C51, A51, and PL/M-51 that includes a hardware simulator for the 8051 family of microcontrollers. WINSIM-51 can simulate the integrated peripherals of most 8051 derivatives through the use of device specific I/O driver .DDL's.

WINSIM-51 provides a host of powerful features designed to make it the ideal tool for the professional embedded systems developer.

WINSIM-51 features: WINSIM-51 is a configurable 8051 family Debugger/Simulator. WINSIM-51 is a High-Level-Language 8051 instruction set debugger/simulator that can be configured to exactly simulate a wide variety of chips in the 8051 family. Specifically: 8x51/31, 8x52/32, 8x51F(A/B/C), 8x5x5, 8xC5x7, 8xC551/2, 8xC320, and 8xC750/1/2 (and this list keeps growing). Most operations of many other chips can be tested, too. WINSIM-51 easily allows source text display with both C and assembly language break points, variable watch points, mouse interface, and an on-line help facility. The WINSIM-51 product includes a small but powerful target monitor (Mon51 V3.0) suitable for building into your projects.

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ProView:

Our all new ProView Integrated Production Environment provides a powerful integrated environment for the industries most capable 8051 development tools. ProView enhances your Franklin 8051 development software with a familiar Borland "Turbo C", or Microsoft's "WorkBench" like user interface with full mouse controls. You can use your mouse to access pull-down menus and pop-up dialog boxes. Mouse access gives you a simple direct way to control the development process and view the results.

At the heart of ProView is a powerful and configurable programmer's editor. This editor is coupled with Franklin's 8051 development tools to manage all aspects of target code production. ProView's configurable window environment is instantly familiar to the C programmer who already knows Borland's "Turbo C", or Microsoft's "WorkBench".

ProView's configurable editor, uses smoothly integrated windows and pull-down menus to link our 8051 C compiler (V6.00 and up) and libraries, WINSIM-51 (V6.00 and up) High Level Language debugger/simulator, A51 macro assembler (V6.00 and up), L51 linker (v4.00 and up), and the MON-51 target monitor in a fast, sophisticated, configurable, yet easy-to-use, mouse oriented, graphical Windows environment.

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RTX51:

Our RTX51 RTOS (Real Time Operating System) sub-system is a powerful dedicated multi-tasking kernel designed expressly for the 8051 family of microcontrollers. This powerful tool expands the capabilities of the embedded systems programmer. RTX51 is entirely suitable for use on even the smallest single chip systems without the need for any XDATA memory or

PROM space. Great for 80C751 control projects! The RTX51 system comes complete with special libraries that provide additional RTOS debugging capabilities, and semaphores with mail box capability.

RTX 51 is scaleable in that the same basic directives and commands can be applied to 3 different core libraries that provide an escalating range of capabilities and resource utilization. We call these steps [RTX51 “Tiny”](#), [RTX51 “Standard”](#), and [RTX51 “Professional”](#). Each iteration can have mail boxes and semaphores. Mail boxes will add about 300 bytes to the code size, and requires the availability of at least 1 page (256 bytes) of XDATA memory and 2 DATA bytes in the chips BIT area for mailbox full and empty indication. Semaphores will add about 200 bytes to your code size.

RTX51 “Tiny”:

Functions without the need for explicit XDATA memory (except if mailboxes are used—they require a maximum of 1 page (256 bytes) of XDATA memory). RTX51 Tiny can manage up to 8 tasks in on-demand or round-robin mode, with task #7 being reserved for “group” functions. It can be shoe-horned into about 800 bytes of code space. Tasks can be made to wait for time-out, wait for interval, or wait for signal from another task. In addition to the resource requirements of your own code, RTX51 requires: 1 byte of BDATA space for state, 5 bytes of DATA space for clock/timer and stack initialization, and 3 bytes of DATA memory and 3 bytes of IDATA memory per task. Task switch time is between 100 and 500 CPU cycles depending upon stack load. The system clock can be made to “tick” at any rate between 1000 and 65535 CPU cycles, and timer 0 is used as the system clock.

RTX51 “Standard”:

Can manage up to 29 tasks, and requires only 256 bytes of XDATA space (exclusive of mail boxes). RTX51 Standard can be shoe-horned into about 900 bytes of code space. Tasks can be made to wait for time-out, wait for interval, or wait for signal from another task. In addition to the resource requirements of your own code, RTX51 Standard requires 6 bytes of DATA memory, 3 bytes per task of IDATA memory, and 256 bytes of XDATA memory. Task switch time is between 100 and 500 CPU cycles depending upon stack load. The system clock can be made to “tick” at any rate between 1000 and 65535 CPU cycles, and timer 0 is used as the system clock.

RTX51 “Professional”:

For those requiring more capability in the RTOS arena than that available through either RTX51 Tiny or Standard, we are pleased to offer our full sized RTX51 Professional. All code written for RTX51 Tiny and Standard is fully upward compatible and can be used on RTX51 Professional without modification. That means you can begin your project with RTX51 Tiny, and then upgrade to RTX51 Professional as your needs increase. That makes upgrading your project a real snap! The full RTX51 implementation is functionally similar and equivalent to—but smaller—commercially available embedded operating systems such as Vertex, or other quality products available from A.T. Barrett, Byte Boss, and others.

RTX51 Professional features: RTX51 can support up to 125 concurrent tasks. It supports round-robin and pre-emptive task switching, mail boxes, and can act on any combination of these

events: Time-outs, intervals, and signals from other tasks or interrupts. RTX51 "Pro" requires about 1Kbyte of CODE memory, 1Kbyte of XDATA space, and 1 byte of DATA memory for state information and 5 bytes of IDATA memory for clock/timer and stack initialization information. Each executing task requires 4 bytes per task of XDATA memory. Task switching times are between 70 to 700 cycles. The system clock can tick between 1000 to 40000, and interrupt latency is 50 cycles. Timer 0 is used as the system clock. The size and performance variances are dependent upon the length, complexity, and implementation of the active tasks.

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General Information:

Franklin tools feature Intel OMF-51 object module compatibility. This allows the user to link directly with object modules created with Intel PL/M-51 or ASM-51, and ensures compatibility to all major emulator vendors. We can confidently recommend: Intel; iCE51FX/PC, Nohau; EMUL51, and Hitex; JUN51, RAISONANCE, and SIGNUM emulation products. Check with your emulator vendor to verify compatibility. Object modules are easily converted to Intel HEX with OH51, for easy loading into most standard PROM burners--check with your PROM burner vendor to be certain.

Franklin compilers generate code for all 8051 derivatives, including 320, 552, 80751/52, and Philips I²C family of processors. All products are delivered on CD-ROM (available on 3½" diskettes, at an additional charge). Each delivery includes working software examples.

Our software is a "single user" right-to-use license. This means that one specific person, at one designated site, on one machine at a time, may run one copy of our software. Multiple users at any one site, on one machine, running one copy of our software should get our inexpensive "add an additional user" update. This will permit them to get technical support, and entitles them to their own support, updates, and upgrades.

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System Requirements

- 486 PC or greater
- 8MB RAM (16MB Recommended)
- Windows V3.1 or later
- CD-ROM (1.44Mb floppy available)