In-Circuit Emulators for the 8051 Architecture

Package Deals

The package deals listed below are specials that ICE is offering while supplies last. Please note that the adapters for the package deals are sold separately. Please review the pod descriptions to see which adapter is needed with the system you order. Note: If you would like to substitute the USB cable for the HSP chassis, please add "-USB" to the part number when ordering.

EMUL51-PC

EMUL51, 128 low-cost package	Package includes the following: EMUL51-PC/E128-16, your choice of compatible pod, EMUL-PC/BOX-HSP or -USB, the Getting Started manual, a cable and the Seehau software.	**EMUL51-PC/ 128-LCPKG**
EMUL51, 128 package	Package includes the following: EMUL51-PC/E128-16, your choice of compatible pod, EMUL51-PC/ETR64-16, EMUL-PC/BOX-HSP or -USB, the Getting Started manual, a cable and the Seehau software.	**EMUL51-PC/ 128-PKG**
EMUL51, 256 low-cost package	Package includes the following: EMUL51-PC/EA256-BSW-50, your choice of pod, EMUL-PC/BOX-HSP or -USB, the Getting Started manual, a cable and the Seehau software.	**EMUL51-PC/ ADVANCED-256-LCPKG**
EMUL51, 768 package	Package includes the following: EMUL51-PC/EA768-BSW-50, your choice of pod, EMUL51-PC/ETR64-50, EMUL-PC/BOX-HSP or -USB, the Getting Started manual, a cable and the Seehau software.	**EMUL51-PC/ ADVANCED-768-PKG**
EMUL51, 768/256 package	Package includes the following: EMUL51-PC/EA768-BSW-50, your choice of pod, EMUL51-PC/ETR256-50, EMUL-PC/BOX-HSP or -USB, the Getting Started manual, a cable and the Seehau software.	**EMUL51-PC/ ADVANCED-768/256-PKG**

EMUL51-PC for the ST uPSD3200

EMUL51PSD 768 package	This complete system consists of the following: the emulator board (EMUL51-PC/EA768-uPSD-BSW-50), the pod board (Pod-51uPSD3000), the trace board (EMUL51-PC/ETR256-50), the manuals, the BOX-HSP or -USB, and the Seehau Debugger.	**EMUL51-PC/ EA768-uPSD3000 PKG**

EMUL51-PC Parts List

Introduction

What this document is and about pricing

This price list is designed to be used by engineers, buyers and purchasing agents. It is widely quoted and used as an information source by Nohau representatives. The latest version is available from the Nohau website or from your local Nohau representative. If this document contains no prices then it is called the parts list and is designed for distribution outside of the USA. In this case, contact your local Nohau rep for the price list for your country. Your rep may distribute this document with local prices listed. You can find the name of your rep by contacting Nohau as listed on this document. All prices shown are in US dollars and are valid in the USA only.

What an emulator is and what it does

An emulator is a tool designed to assist engineers with software debugging and verification during the hardware/software integration phase of their development project. The emulator temporarily replaces the microcontroller in the customer target system. The emulator behaves exactly like the processor with the added benefit of allowing you to view data and code inside the processor and control the operation of the CPU. You can load user code, view it in machine code or C source, set breakpoints on addresses and preset variables and registers. You can view data changes in real-time with the Shadow RAM feature. The emulator can be operated in stand-alone mode so development work can begin before the target system is available or complete.

What the trace does and why people order one

You can set triggers on specified addresses and data which will stop the emulation and/or trace memory when this action occurs. This alerts you that the specified event has occurred and you may now use the information stored by the emulator to find any hardware or software errors. The trace memory records the microcontroller cycles including data reads and writes for user specified conditions. You can view the trace memory to find out what your code was actually doing at a particular time. Most people purchase the optional trace card due to its unique ability to save many hours of engineering time looking for elusive bugs.

Seehau - the Nohau debugger for the emulator

The emulator and its software is designed to be relatively intuitive to use. The Nohau debugging software is called "Seehau" and updates are available free on Nohau's website (www.icetech.com) or directly from any Nohau office or representatives anywhere in the world. Seehau is macro-based enabling automatic operation. Seehau operates under Windows 95, 98, NT, ME, XP, XPPro and 2000Pro. For more information about the benefits of Seehau, see www.icetech.com for the latest data sheets or call your Nohau representative.

Single Chip and External Modes

Nohau supports the 8051 family for both external mode (ROMless) and internal mode (internal ROM) using pods containing a special bondout or hooks mode chip for access to the internal address and data bus while leaving all ports intact and available for use. The emulator does not use any target system resources and does not steal bondout cycles. The emulator can operate stand-alone allowing debugging before your hardware is available. Adapters are available to connect to nearly any target board.

Compiler Support

Nohau supports Altium, Archimedes, ChipTools, Hi-Tech, Keil, IAR Systems and Raisonance C compilers and assemblers. Debugging formats supported are IEEE695, Intel HEX and OMF51. Nohau and its representatives are authorized distributors of Altium, Archimedes, ChipTools, Hi-Tech, Keil, IAR Systems and Raisonance and provide technical support. It is possible to make changes to your source code in Seehau and then call your compiler. The resulting object code is then loaded into the emulator for further debugging.

RTOS Support

Nohau provides RTOS support through an ActiveX mechanism. Currently CMX is supported. It is possible to support a customer developed RTOS also. See http://www.icetech.com/pd_rtos.html for details.

More info is available

For more information on the entire embedded tool chain, get your copy of "The Embedded Software Engineer's Guide to In-Circuit Emulation" from your Nohau rep or from www.icetech.com. Nohau has other informative documents available from the same sources. Any questions can be directed to your Nohau rep or sales@icetech.com.

EMUL51-PC Parts List

General Features

Emulator Boards

The emulator parts

The basic Nohau 8051 emulator consists of an emulator board, the debugger environment Seehau, an in-circuit pod and a five foot cable. The emulator board along with a pod board can be run stand-alone without any target hardware. Add a target adapter and you can run in your target board. Add an optional trace card and you can trigger and record CPU instructions and their bus operations.

The Available Emulator Boards

Both the Standard and Advanced emulator units are available for the 8051 family.
Standard Emulator - These units come with either 32K or 128K of emulation memory, and operate to 33MHz.
Advanced Emulator - These units come with 768K of emulation memory, and operate to 50MHz. These units will also support both bankswitching and DMA applications.
Note: Some pods require the Advanced Emulator board due to timing requirements, bankswitching, or DMA support. Please refer to the description for your specific pod.

The Emulator Board Connections

The emulator board will plug into any ISA slot. This can be either inside the PC or inside our external HSP/USB chassis. The HSP chassis would then plug into the parallel port of your PC or laptop. The USB box would plug into the USB port of your PC or laptop. The 5 foot cable would then plug into the emulator board and stick out the back of the PC or HSP/USB chassis. The other end of the cable would plug into the pod board.

Pod Boards

The 8051 Family

Nohau supports a wide range of processors within the 8051 family. There are many pods available which will allow you to more accurately emulate your designs. They are divided into two general types of pods; single-chip and external mode pods. The single-chip pods are implemented using bondouts, hooks or enhanced hooks mode devices. Some basic knowledge of your hardware design will be required when selecting a pod. This will include the microprocessor you are using, the frequency, the mode you are using it in, and your memory configuration.

External Mode pods

External mode pods have several advantages. They are the least expensive type of pods. They have easily replaceable standard microcontrollers. Your program runs on the real production part, with most of the lines directly connected to your target. These pods can be used where your microcontroller has external program or external read/write memory only. The requirement to using an external mode pod is that Port 0 and Port 2 must be used exclusively as address and data lines (no bits can be configured as input/output I/O). Also Ports 3.6 and 3.7 should be used as read and write lines. If either Port 3.6 or 3.7 is needed for I/O pins a special 31S pod is available.
Any of these pods may have bankswitching capability added to them.

Bondout and Hooks mode pods

Bondout and hooks mode pods contain a special microprocessor which gives us the ability to better emulate the features within the part. These pods allow greater flexibility in how you use the ports. They allow you to use the pod in either internal or external mode of the chip. This means that Port 0 and Port 2 can be used for I/O or Address/Data.

A **bondout pod** uses a special chip with an emulation bus bonded out so the emulator can fetch program instructions without affecting user ports (allows full emulation of internal, external and mixed modes of bus or port input/output).

A **hooks mode pod** is a bondout pod equivalent and runs an emulation-ready chip in a special hooks emulation mode for single-chip or external modes. The emulator hooks into the special emulation mode to accomplish emulation. (The term does not refer to any physical hooks.) Logic circuitry on the hooks mode pod emulates some ports in single-chip mode. Unless otherwise stated, the on-board pod crystal is 12 MHz even if the frequency specification is higher. Use the external crystal for higher frequency. Each higher step frequency rating covers all lower frequency steps.

General Features (Continued)

Trace Cards

General Trace Information

Trace boards are optional for the 8051 family and they can be purchased and added at any time. Trace boards add trace memory for execution, data read and write history recording, triggers and Shadow RAM. The trace display includes address, data, timestamp, processor status, program flow, source code and labels. Shadow RAM displays data writes in real time without stealing emulation cycles. The trace board can be viewed and triggers can be configured without stealing CPU cycles for these housekeeping functions. Triggers can be set in anywhere within the code or external data memory ranges.

Trace Boards Available

There are three trace board options which are available for the 8051 systems. The Standard Trace, the Advanced Trace, and the Enhanced Trace.

Standard Trace Option: The standard trace boards are available with either a 4K or 16K deep trace buffer. This board is also available up to 50 MHz. This trace board includes all the basic trace features including two-level triggers, loop counter, filter, trigger on code or external read and write addresses or values or both.

Advanced Trace Option: The advanced trace boards are available with either a 64K or 256K deep trace buffer. This board is also available up to 33 MHz. This trace board includes all the features of the standard trace plus 16-bit time stamping, eight-level triggers, state and counter functions, filter delay, search, and up to 64 levels of trigger conditions.

Enhanced Trace Option: The enhanced trace boards are available with either a 64K or 256K deep trace buffer. This board is available up to 50 MHz. This trace board includes all the features of the Advanced trace board plus shadow RAM, 1M code coverage memory, and a 32-bit timestamp.

Target Adapters

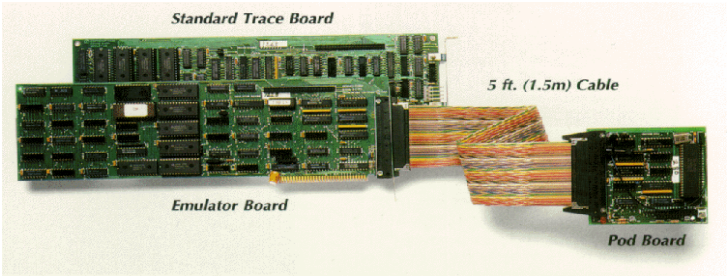
Target Adapter Basics

Target adapters are used to connect the emulator to your target system. There are many methods used to connect Nohau 8051 emulators to the target boards and each application requires a different solution. Once the pod is selected, note the number of pins and the package to which that specific pod terminates. The adapters section of this price list will then help you select the proper adapter to mate with the package you are using on your target.

What parts do I need to order?

What parts do I need to order?

An 8051 emulator system consists of the emulator board, the pod board, an optional HSP or USB box and the optional trace card. A target adapter will normally be needed to connect the emulator to the target system. There are various types of these components that you will select to configure your desired system. Your local Nohau representative or the Nohau technical support team are able to assist you with selecting the appropriate components. The Seehau debugging software, technical support, warranty, accessories and manuals are automatically included and need not be specified in your order.



General Features (Continued)

Minimum System Requirements

- Pentium 200 or higher
- 2x or better CD ROM
- 40 MB Free Hard Disk Space
- Windows 95, 98, ME, NT, 2000Pro or XP/XPPro
- RAM for Windows 95/98/Me: 64MB
- RAM for Windows NT/2000Pro/XP/XPPro: 128MB

It is possible to run Seehau on slower and smaller machines such as laptops. Nohau technical support reports that Seehau, as any large Windows based program, runs more reliably on larger and faster machines.

Application Notes on our Website

The following is a list of information that can be found on Nohau's website. Go to www.icetech.com/documents and then select either the Technical Publications link, the Technical Application Notes link or the Nohau Manual link. There are also data sheets available on our website for the emulator and the Seehau software.

Materials listed under the Technical Publications Link:

The Software Engineers Guide to In-circuit Emulation for the Philips Microcontrollers

The Software Engineers Guide to In-circuit Emulation for the Philips51XA Microcontrollers

Product Focus: Nohau gives RTOS users easy access to the Seehau Interface

Pin outs for the 51XA-SCC Emulator Direct Connect Headers

Materials listed under the Technical Application Notes Link:

SLauncher Seehau Launcher

Getting Started with your EPC interfaced Emulator system

St uPSD3200 Getting Started with the Nohau Emulator

ST uPSD3200 Preliminary Notes (Rev A pod and Rev B pod)

Pod-uPSD3200 Direct Connection Headers (Top View)

8051 Bankswitching Application notes for Nohau's EMUL51-PC Emulator

8051 Bankswitching Application notes for TR4 and TR16

Atmel/Temic 89C51CC01/AC2/Rx2 'ERAM' Operating Notes

Configuring and Connecting to the phyCORE-89C51RX2 Target System

Configuring and Connecting to the phyCORE-591 Target System

Infineon Application Notes on the C500 Family

Temic Flash Boot Loader Code Information for Nohau Emulators

Materials listed under Nohau Manuals / EMUL51-PC:

Seehau 51 Getting Started Manual

EMUL51 Users Guide

EMUL51-PC Windows User Guide

POD C515 Operating Instructions

POD C505C Operating Instructions

POD C505CA Operating Instructions

POD C505L Operating Instructions

POD C515C Operating Instructions

POD C517A Operating Instructions

POD C541U Operating Instructions

Standard Emulator Units

Plug-in board for ISA-bus PC-compatible, or Nohau HSPchassis. Includes five-foot cable (CBL-5) to connect the emulator to the pod board. Except as noted, frequency rating covers all lower frequency steps. Includes DIP isolator (DIP40-ISO) if ordered with a 40-pin pod. To operate, the emulator must be connected to a pod (order separately). The emulator includes Seehau operating software. Seehau supports 95 OSR2, 98, 98 SE, ME, NT4, 2000Pro, XPPro and XP. DOS software operates PC plug-in emulators, pods, optional trace units, and discontinued serial box options, and has high-level debug capability for supported compilers. The older Windows 3.x/95/98/NT software operates emulators, pods, Nohau HSP box and optional trace units, and has high-level debug capability for supported compilers. Our newest interface Seehau51 supports configurations using the PC plug-in, HSP box and USB box. For optional third-party user interfaces such as ChipView, and for assemblers, compilers, and simulators, see the “Software Support Packages” section.

32K Emulators

32K (kilobyte) units—If read-write (MOVX) data is mapped to the 32K emulator, it is overlaid with (not separate from) emulator code memory. Both code and data memory wrap at 8000 if mapped to emulator. The emulator can access 64K read-write target data and 64K target code, mappable in 4K segments.

32K emulator	16-MHz emulator, 32K emulation memory.	**EMUL51-PC/ E32-16**

128K Emulators

128K emulator units have a 64K code space and separate 64K read-write (MOVX) data space.

128K	16-MHz emulator, 128K emulation memory.	**EMUL51-PC/ E128-16**
128K	24-MHz emulator, 128K emulation memory.	**EMUL51-PC/ E128-24**
128K	33-MHz emulator, 128K emulation memory.	**EMUL51-PC/ E128-33**

Advanced Emulator (EA) Units with Bankswitching

Note: *Any bankswitch application must be, by definition, external. Nohau therefore recommends only external mode pods for bankswitch applications. Contact Nohau for further information.*

The emulator advanced EA emulator offers many additional features over standard emulator boards. The 768K units offer eleven bankswitch modes, and supports normal 64K code + 64K Xdata non-banked applications. The user can change among the two groups (conventional 8051 pods and the DS80C320 pods) by changing jumpers and installing the appropriate "COM" EPROM. Rated frequencies for Dallas units are different from ratings for conventional 8051 units, so the rated frequency of the unit changes. For example, changing an EA256–C530–BSW–25 into an EA256–BSW–50 changes its frequency rating. For bankswitching, a compiler with a linker that produces banked code in a single output file is recommended.

The plug-in board for the ISA-bus PC–AT, PC–AT compatible, or Nohau HSP chassis includes a five-foot cable (CBL–5) to connect the emulator to the pod board. To operate, the emulator must be connected to a pod (order separately). The emulator includes Seehau operating software. The DOS software is available on our website if needed. For optional third-party user interfaces such as ChipView, and for assemblers, compilers, and simulators, see the "Software Support Packages" section.

Advanced Emulators (EA) for Conventional 8051 Pods

These emulators work with all conventional 8051 pods. (Pods for DS80C320/323 or DS8XC520/530 require a COM PROM change.) For bankswitching applications, use a bankswitch pod or a 31A type pod. Includes an EPROM–COM1.4–EA51 personality PROM. These units can emulate the Intel 80C152 and 80C452 in DMA modes with pods for those chips.

256K EA	50-MHz advanced bankswitching emulator, 256K emulation memory.	**EMUL51-PC/ EA256-BSW-50**
768K EA	50-MHz advanced bankswitching emulator, 768K emulation memory.	**EMUL51-PC/ EA768-BSW-50**

Advanced Emulators (EA) for DS80C320

Bankswitching emulators for DS80C320 operate **only** with POD–C320–33 or POD–C323–33 (includes EPROM–COM1.46–EAC320).

768K EA for DS80C320	33-MHz advanced bankswitching emulator, 768K emulation memory.	**EMUL51-PC/ EA768-C320-BSW-33**

Advanced Emulator (EA) Units with Bankswitching (continued)

Advanced Emulators (EA) for 80C51MX Pods

Note: *The 80C51MX pods listed below are not interchangeable with the pods listed on the previous page.*

256K EA for 80C51MX	24-MHz advanced MX emulator board with 256K emulation memory. ISA card	**EMUL51-PC/ EA256-MX-24**
768K EA for 80C51MX	24-MHz advanced MX emulator board with 768K emulation memory. ISA card.	**EMUL51-PC/ EA768-MX-24**

Advanced Emulators (EA) for DS8XC520/530

Bankswitching emulators for DS8XC520/530 operate **only** with the POD–C520–PGA–33 (includes EPROM–COM1.47–EAC530).

768K EA for DS8XC520/530	33-MHz advanced bankswitching emulator, 768K emulation memory.	**EMUL51-PC/ EA768-C530-BSW-33**

Advanced Emulators (EA) for uPSD3000 Pods

768K EA for uPSD3000	A 50-MHz advanced emulator board with 768K emulation memory. ISA card.	**EMUL51-PC/ EA768-uPSD-BSW-50**

EPROMs for Converting Among EA Emulator Types

High-speed communications EPROMs to convert among EA emulator types.

Convert to EA-BSW-50	To convert to EA-BSW-50 from EA-C320-BSW-25 or from EA-C530-BSW-33, or EA-uPSD3000.	**EPROM-COM1.4-EA51**
Convert to EA-C320-BSW-33	To convert to EA-C320-BSW-33 from EA-BSW-50 or from EA-C530-BSW-33.	**EPROM-COM 1.46-EAC320**
Convert to EA-C530-BSW-33	To convert to EA-C530-BSW-33 from EA-BSW-50 or from EA-C320-BSW-33.	**EPROM-COM 1.47-EAC530**
Convert to an EA-uPSD-BSW-50	To convert to an EA-uPSD-BSW-50 from an EA-BSW-50.	**EPROM-COM 1.51-EA51-uPSD**

EMUL51-PC Parts List

Standard Trace Options

Optional second PC plug-in board. The emulator unit has no trace buffer capability. Each frequency step covers all lower steps. Features: two-level trigger, loop counter, filter, trigger on code or external read and write addresses or values or both.

4-Kiloframe Trace Options

16 MHz, 4-K trace	16-MHz 4-kiloframe trace buffer.	**EMUL51-PC/ TR4-16**

16-Kiloframe Trace Options

16 MHz, 16-K trace	16-MHz 16-kiloframe trace buffer.	**EMUL51-PC/ TR16-16**
24 MHz, 16-K trace	24-MHz 16-kiloframe trace buffer.	**EMUL51-PC/ TR16-24**
33 MHz, 16-K trace	33-MHz 16-kiloframe trace buffer	**EMUL51-PC/ TR16-33**
50 MHz, 16-K trace	50-MHz 16-kiloframe trace buffer. Compatible with Standard, EA, and C320 emulators, with HF emulators (no longer available), and with all pods for EMUL51–PC.	**EMUL51-PC/ TR16-50**

Enhanced Trace Options

Optional second PC plug-in board—The emulator unit has no trace buffer capability. Features include all features of advanced trace options, plus shadow RAM, 1 Megabit code coverage memory, and a 32-bit time stamp with a 16-bit prescaler. The ETR requires 32 contiguous I/O addresses. The default address range setting is 120 to 13F hex.

64-Kiloframe Trace Options

50 MHz, 64-K enhanced trace	50-MHz 64-kiloframe enhanced trace memory board.	**EMUL51-PC/ ETR64-50**

256-Kiloframe Trace Options

50 MHz, 256-K enhanced trace	50-MHz 256-kiloframe enhanced trace memory board.	**EMUL51-PC/ ETR256-50**

Note: *As with the ATR, the ETR does not work with the discontinued serial box. The ATR and ETR do, however, work with the High Speed Parallel box (HSP) or the Universal Serial Bus box (USB).*

EMUL51-PC Parts List

Bankswitch Pods

-BSW option	To add the -BSW option to any external mode pod.	**ADD:**

The models listed below are examples, but the -BSW option is available for any external mode pod. The -BSW option is not recommended for bondout or hooks mode pods. The -BSW option is also not available for 31A pods (POD–C32HF–42 and POD–C323–33), since they already have bankswitch input pins.

Adding -BSW Option - Examples

8031	12-MHz 8031 bankswitch pod.	**POD-31-BSW**
80C31-1	16-MHz 80C31-1 bankswitch pod.	**POD-C31-BSW-1**
80C32-S	16-MHz 80C32-S option bankswitch pod.	**POD-C32-S-BSW-16**

Generic Pods - Organized by speed ratings

40-Pin DIP External Mode Pods

Port 2 is upper address bus only. Port 0 is the address/data bus. P3.6 is WRITE, P3.7 is READ. The on-board pod crystal is 12 MHz on all pods of any frequency specification. Each step up in frequency rating covers all lower steps. A standard microcontroller is plugged into the DIP socket on top of the pod. 40-pin DIP plug comes from the bottom of the pod. To plug into a 44-pin PLCC target socket, use the optional DIP40-PLCC44 adapter.

12-MHz Pod - same circuit board

8031	12-MHz 8031 pod.	**POD-31**
80C31	12-MHz 80C31 pod.	**POD-C31**
8032	12-MHz 8032 pod.	**POD-32**
80C32	12-MHz 80C32 pod.	**POD-C32**
80C51FA	12-MHz 80C51FA pod.	**POD-C252/ C51FA**

Generic Pods - Organized by speed ratings (continued)

40-Pin External Mode Pods (continued)

16-MHz Pod -same circuit board

80C31-1	16-MHz 80C31-1 pod.	**POD-C31-1**
80C32	16-MHz 80C32 pod.	**POD-C32-16**
80C51FA-1	16-MHz 80C51FA-1 pod.	**POD-C252/ C51FA-16**

20-MHz Pod -same circuit board

8031	20-MHz 8031 pod.	**POD-31-20**
80C31	20-MHz 80C31 pod .	**POD-C31-20**
80C32	20-MHz 80C32 pod.	**POD-C32-20**

24-MHz Pod -same circuit board

80C31	24-MHz 80C31 pod.	**POD-C31-24**
80C32	24-MHz 80C32 pod.	**POD-C32-24**

30-MHz Pod -same circuit board

80C31	30-MHz 80C31 pod. Contact Nohau for availability.	**POD-C31-30**
80C32	30-MHz 80C32 pod.	**POD-C32-30**

If POD-C31-30 is backordered due to microcontroller component shortage, you might want to purchase the superset POD-C32-30.

33-MHz Pod -same circuit board

80C31	33-MHz 80C31 pod. Contact Nohau for availability.	**POD-C31-33**
80C32	33-MHz 80C32 pod.	**POD-C32-33**

If POD-C31-33 is backordered due to microcontroller component shortage, you might want to purchase the superset POD-C32-33.

40-Pin Single-Chip Mode Pods

12-MHz hooks mode pod	12-MHz hooks-mode pod for 8XC51/ 52 / 54 / 58, 8X51/ 52, 80C31/ 32, 8031/ 32. 40pin DIP.	**POD-C52**
16-MHz hooks mode pod	16-MHz version of POD-C52.	**POD-C52-16**

EMUL51-PC Parts List

Atmel Pods (formally Temic)

Device	Single-Chip Pod and Expanded Mode Pod (External Memory)	Pod Footprint	Requires EA EMUL
TS83C51X2, TS87C51X2	POD-51T-8xC52X2, POD-51T-8xC54X2, POD-51T-8xC58X2	44-pin PGA see page 33	X
TS83C51Rx2, TS87C51Rx2	POD-51T-8x51RB2 / RC2 / RD2-SP	44-pin PGA see page 33	X
TS89C51Rx2, AT89C51, AT89C52, AT89LV51, AT89LV52, AT89C55	POD-51T-89C51RB2 / RC2 / RD2-SP	44-pin PGA see page 33	X
T89C51AC2	POD51T-89C51AC2-S44	44-pin PGA see page 33	X
T89C51CC01 / CC02	POD-51T89C51CC01-S44/ CC02-S44	44-pin PGA see page 33	X
T89C51IB2 / IC2	POD-51T-89C51IB2 / IC2	44-pin PGA see page 33	X
T89C51RD2-68	POD-51T-89C51RD2-68	68-pin PGA see page 34	X
TS83C51U2, TS87C51U2	POD-51T-8xC51U2	44-pin PGA see page 33	X
80C32	POD-C32HF-42	40-pin Dip see page 33	Note[1]
TS80C31X2	POD-TS80C31X2	40-pin Dip see page 33	Note[1]
TS80C32X2	POD-TS80C32X2	40-pin Dip see page 33	Note[1]
TS80C51RA2	POD-51T-8x51RB2 / RC2 / RD2-SP	44-pin PGA see page 33	X
TS80C51RD2	POD-51T-8x51RB2 / RC2 / RD2-SP	44-pin PGA see page 33	X
TS80C51U2	POD-51T-8xC51U2	44-pin PGA see page 33	X
AT89C1051	POD-51T-8xC51RD2	See "Special Adapter Note" below	X
AT89C2051	POD-51T-8xC51RD2	See "Special Adapter Note" below	X

In the chart above the "-SP" stands for the speed of the device. Please refer to the descriptions below for more detail.

If you are emulating the '89 series microcontroller, you will need to use the EA emulator board so that you will be able to simulate the IAP system calls regardless of the crystal rate you plan to operate at.

Note: *If the external frequency in the X2 mode is greater then 23 MHz, or if the external frequency in the X1 mode is greater then 46 MHz, you need to use the 18 inch cable, part # EMUL-PC/CBL18.*

Note[1]: When using the microcontroller above 18 MHz in the X2 enabled mode or above 36 MHz in the X1 mode, you will require both the EA emulator board and the CBL-18. If you are using the microcontroller at 12 MHz in the X2 mode or 24 MHz in the X1 mode, you can use the E128-33 emulator board.

Note[2]: *Support for the following Atmel parts is provided with POD51T-8xC51RD2-44 and has certain limitations due to Atmel-specific features: AT89C1051 and AT89C2051. Requires a special adapter set using both EDI/PG44-40D-8051 & EMUL51-PC/ATMEL-2051.*

Note[3]: There are two different fab types for the Atmel pods; one is **POD-51T-44** and the other is **POD-51T-S44.** Parts that work on the 51T fab will **not** work on the 51TS fab and the same applies for the reverse.

Special Adapter Note: These pods require two adapters; the PGA44 to Dip40 and the appropriate 1051 or 2051 Atmel adapter listed on page 33.

Atmel Pods (Continued)

Pods for the X2 Family

TS52/54/58 X2-32 pod	32-MHz pod for Atmel TS83C51X2 and TS87C51X2. This pod supports a 32-MHz x1 clock or a 16-MHz x2 clock. **Note**: old part #'s were POD-51EH-TS52X2-32, POD-51EH-TS54X2-32 and POD-51EH-TS58X2-32.	**POD-51T-8xC52X2** **POD-51T-8xC54X2** **POD-51T-8xC58X2**

For the PLCC44 pin package, order the PGA to PLCC44 adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP44 pin package, order adapter part # EDI/44PG/QFS31-SD. For the PDIL40 (DIP) package order part # EDI/44PG/40D-S-8051.

Note*: The 89 series is not supported.*

Pods for the Rx Family

T51RB/C/D2-32 pod	32-MHz pod for Atmel TS83C51Rx2 and TS87C51Rx2. This pod supports a 32-MHz x1 clock or a 16-MHz x2 clock. **Note:** old part #'s were POD-51EH-TS51RB2-32, POD-51EH-TS51RC2-32 and POD-51EH-TS51RD2-32.	**POD-51T-8xC51RB2** **POD-51T-8xC51RC2** **POD-51T-8xC51RD2-44**
T51RD2-32	Same description as above but with a 68-pin version.	**POD-51T-8xC51RD2-68**

For the PLCC44 pin package, order the PGA to PLCC44 adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP44 pin package, order adapter part # EDI/44PG/QFS31-SD. For the PDIL40 (DIP) package order part # EDI/44PG/40D-S-8051.

Note: The FLASH memory is simulated on the 89 series parts. For more information, visit www.icetech.com/bootloaders.html. The (EE) memory has limited support you can read this memory, the users code and write to this memory, but you can not change this memory through the Seehau users interface.

T51RB/C/D2-32 pod	32-MHz pod for Atmel TS89C51Rx2, AT89C51, AT89C52, AT89LV51, AT89LV52 and AT89C55. This pod supports a 32-MHz x1 clock or a 16-MHz x2 clock. There is a flash PAL for the emulator to enable flash programming emulation. Uses POD-51T-44 pin.	**POD-51T-89C51RB2** **POD-51T-89C51RC2** **POD-51T-89C51RD2-44**
T51RD2-32	Same description as above but with a 68-pin version.	**POD-51T-89C51RD2-68**

Atmel Pods (Continued)

Pods for the Rx Family (Continued)

* T51ED2-32	32-MHz pod for Atmel AT89C51ED2.	**POD-51T-89C51ED2**
* T51ED2-32	Same description as above but with a 68-pin version.	**POD-51T-89C51ED2-68**

Pod for the ACx Family

TS89C51AC2	32-MHz pod for Atmel T89C5AC2. This pod supports a 32-MHz x1 clock or a 16-MHz x2 clock. There is a flash PAL for the emulator to enable flash programming emulation. Uses POD-51T-S44 pin.	**POD-51T-89C51AC2-S44**

Pods for the CC0x Family

TS89C51CC02	32-MHz pod for Atmel T89C51CC01 and T89C51CC02. This pod supports a 32-MHz x1 clock or a 16-MHz x2 clock. There is a flash PAL for the emulator to enable flash programming emulation. Uses POD-51T-S44 pin.	**POD-51T-89C51CC01-S44** **POD-51T-89C51CC02-S44**

Pods for the 89C51Ix2 Family

T89C51IB2, T89C51IC2 & T89C51ID2	32-MHz pod for Atmel T89C51IB2, T89C51IC2, and T89C51ID2. This pod supports a 32-MHz x1 clock or a 16-MHz x2 clock. There is a flash PAL for the emulator to enable flash programming emulation. Uses POD-51T-44 pin.	**POD-51T-89C51IB2** **POD-51T-89C51IC2** **POD-51T-89C51ID2**

Pods for the 89C5110x Family

T89C51RD2-68	32-MHz pod for Atmel 89C5110x-68. This pod supports a 32-MHz x1 clock or a 16-MHz x2 clock. Uses POD-51T-68 pin.	**POD-51T-89C51101** **POD-51T-89C51102**

Pods for the U2 Family

TS51U2-32	32-MHz pod for Atmel TS83C51U2 and TS87C51U2. This pod supports a 32-MHz x1 clock or a 16-MHz x2 clock. **Note**: old part # was originally POD-51EH-TS51U2-32 and then POD-TS80C51U2 .	**POD-51T-8xC51U2**

For the PLCC44 pin package, order the PGA to PLCC44 adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP44 pin package, order adapter part # EDI/44PG/QFS31-SD. For the PDIL40 (DIP) package order part # EDI/44PG/40D-S-8051.

Atmel Pods (Continued)

31A Pods

Note: *If the external frequency in the X2 mode is greater then 23 MHz, or if the external frequency in the X1 mode is greater then 46 MHz you need to use the 18 inch cable, part # EMUL-PC/CBL18.*

The pod crystal is 16 MHz. The emulator must be at least 16 MHz to run with the on-board pod crystal, but a 12-MHz emulator can run with a 12-MHz or slower external crystal or oscillator. No -BSW option is available nor is it required for this pod, since bankswitching support is built into the pod.

A 31A pod is a superset of the Generic pods. The pod can operate down to 3-V with a user-installed 3-V 40-pin DIP microcontroller.

The following pods have the same circuit board:

80C32	42-MHz 80C32 high frequency pod. Requires EA or (discontinued) HF emulator for 42 MHz. This pod is capable of bankswitching up to the emulator frequency with EA256/768-BSW-50 and E128/256-BSW emulators.	**POD-C32HF-42**
TS80C31X2	50-MHz pod for Atmel TS80C31X2. The pod needs an EMUL51-PC EA256-BSW-50 or EMUL51-PC EA768-BSW-50 emulator board. This pod is a 31A pod and may require a DIP to PLCC44 adapter.	**POD-TS80C31X2**
TS80C32X2	50-MHz pod for Atmel TS80C32X2. The pod needs an EMUL51-PC EA256-BSW-50 or EMUL51-PC EA768-BSW-50 emulator board. This pod is a 31A pod and may require a DIP to PLCC44 adapter.	**POD-TS80C32X2**

Dallas Semiconductor Pods

Device	Single-Chip Pod	Expanded Mode Pod (External Memory)	Pod Footprint	Requires EA EMUL
DS80C310	POD-C520-PGA-33	POD-C520-PGA-33	52-pin PGA see page 34	X
DS80C320	POD-C520-PGA-33	POD-C320-33	40-pin DIP see page 33	X
DS80C323		POD-C323-33	40-pin DIP see page 33	X
DS8xC520	POD-C520-PGA-33	POD-C520-PGA-33	52-pin PGA see page 34	X
DS8xC530	POD-C520-PGA-33	POD-C520-PGA-33	52-pin PGA see page 34	X

33-MHz bondout pod for DS8XC520, DS8XC530, and DS80C320

33-MHz bondout pod for DS80C310, DS8XC520, DS8XC530, and DS80C320, single-chip or external mode. Pod operates only with EA256-C530-BSW-33 or EA768-C530-BSW-33 emulator. 52-pin PGA from pod. To plug into a 40-pin DIP 'C520 or 'C320-target socket, use optional EDI/52PG/40D-530/520-S adapter. To plug into a 44-pin PLCC 'C520 socket, use optional EDI/52PG/44PL-530/520. To plug into a 52-pin LCC 'C530 socket, use optional PGA52-PLCC52. Optional trace board must be EMUL51-C/TR16-50, EMUL51-PC/ETR64-50 or EMUL51-PC/ETR256-50. When using the POD-C520-PGA-33 to emulate a DS80C310, special software precautions must be observed in the user's application software (call Nohau for details).

POD-C520-PGA-33

DS80C320 Pod: 31A Type Pod

33-MHz DS80C320

33-MHz special pod for Dallas DS80C320. Works only with EA256-C320-BSW-33, EA768-C320-BSW-33, E128-DS320-33 (discontinued), or E128-DS320-BSW-33 (discontinued). A 16-MHz crystal is on the pod. Uses special Dallas emulation microcontroller. This pod is capable of bankswitching without modification with the 320-BSW boards (not with E128-DS320-33). No -BSW option is available nor is it required for this pod, since bankswitching support is built into the pod. (**Note:** Does not support DS310; use POD-C520-PGA with adapter.) Special Trace Frequency Requirement: Due to the 80C320 chip timing, if an optional trace is used, trace frequency rating must be at least 1.5x target frequency. Examples: An 8-MHz operation requires a 12-MHz trace; a 20-MHz operation requires a 30-MHz trace; a 25-MHz operation requires a 37.5-MHz trace, so select the 50-MHz trace (next higher available step). Advanced Trace (ATR) is not supported. The Enhanced Trace (ETR), which is an enhancement over the advanced trace board, is supported.

POD-C320-33

DS80C323 Pod:31A Type Pod

3 V to 5 V DS80C323

Call Nohau for availability. 3 V to 5 V version of POD-C320-33, but for DS80C323.

POD-C323-33

Infineon Pods

Device	Single-Chip Pod	Expanded Mode Pod (External Memory)	Pod Footprint	Requires EA EMUL
8031		POD-31	40-pin DIP see page 33	
8051	POD-C52	POD-C52	40-pin DIP see page 33	
8xC52	POD-C52	POD-C52	40-pin DIP see page 33	
C513AO / -R / -2R / -2E	POD-51EH-C513AO-16	POD-51EH-C513AO-16	44-Pin PGA see page 33	X
C504 / -2R / -2E / -L	POD-51EH-C504-40	POD-51EH-C504-40	44-Pin PGA see page 33	X
C505 / -2R / -LM	POD-51EH-C505C-20	POD-51EH-C505C-20	44-Pin PGA see page 33	X
C505A / -4E / -L	POD-51EH-C505CA-20	POD-51EH-C505CA-20	44-Pin PGA see page 33	X
C505C / -2R	POD-51EH-C505C-20	POD-51EH-C505C-20	44-Pin PGA see page 33	X
C505CA / -4E / -L	POD-51EH-C505CA-20	POD-51EH-C505CA-20	44-Pin PGA see page 33	X
C505L / -4EM	POD-51EH-C505L-20	POD-51EH-C505L-20	See page 34	X
C508 / -4E / -4RM	POD-51EH-C508-10	POD-51EH-C508-10	See page 34	X
C515 / -1R / -L	POD-51EH-C515-24	POD-51EH-C515-24	See page 35	X
C515A		POD-C515A-PGA-18	See page 35	
C515A / -4R / -L	POD-C515A-24	POD-C515A-24	See page 35	
C515C / -8RM / -LM / -8EM	POD-51EH-C515C-10	POD-51EH-C515C-10	See page 35	X (recommended)
C517A /-4RM / -4RN / -LM / -LN	POD-51EH-C517A-24	POD-51EH-C517A-24	See page 35	X

18-MHz expanded mode C515A

18-MHz 80C515A (ROM-less) pod. For enhanced 80C515A. 80C515A chip might have to be supplied by user. Expanded on-chip RAM is not supported. Use a 20-MHz or faster emulator for 18-MHz operation. 68-pin PGA from pod. Use optional EMUL51-PC/PGA68-PLCC68 adapter for PLCC target. Port 2 is upper address bus only. Port 0 is address/data bus. P3.6 is WRITE, P3.7 is READ. Unless noted, on-board pod crystal is 12 MHz on all pods of any frequency specification. Frequency rating covers all lower frequency steps.

POD-C515A-PGA-18

40-MHz single-chip C504

40-MHz enhanced hooks mode pod for the Infineon C504 (call Nohau for availability). Consists of an add-on processor module for C504 (PM51-EH-SAB-C504) and an enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks port replacement unit. Requires 50-MHz trace and emulator boards. This pod is designed to plug into a 44-pin PGA to 44-pin QFP solder-down adapter, such as the EDI/44PG/QFS31-SD. This requires the SAMTEC/MPAT-044-A-G-80; a 44-pin male-to-male PGA adapter for use with the POD-C51EH series. (See the “Miscellaneous Options: Adapters, Cables, and Extenders” section.) Supports both external and internal modes.

This pod supports the following sub-derivatives of the C504 sub-family:

C504-2R (16K mask-ROM version) C504-2E (16K OTP version) C504-L (ROM-less version)

POD-51EH-C504-40

Infineon Pods (Continued)

EMUL51-PC Parts List

20-MHz single-chip C505C	20-MHz enhanced hooks mode pod for the Infineon C505C (call Nohau for availability). Requires 50-MHz trace and emulator boards for 20-MHz operation. (**Note**: The 20 MHz for this derivative corresponds to 40 MHz for a regular 8031.) Consists of an add-on processor module for C505C (PM51-EH-SAB-C505C) and enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks port replacement unit. This pod is designed to plug into a 44-pin PGA to 44-pin QFP solder-down adapter, such as the EDI/44PG/QFS31-SD (see the “Miscellaneous Options: Adapters, Cables, and Extenders” section). Supports both external and internal modes. **This pod supports the following four sub-derivatives of the C505C sub-family:** C505C-2R (16K mask-ROM version of the C505C), C505-2R (16K mask-ROM version of the C505) and C505-LM (ROM-less version of the C505). This pod does not support other C505C sub family members.	**POD-51EH-C505C-20**
20-MHz single-chip C505CA	20-MHz enhanced hooks mode pod for the Infineon C505CA (call Nohau for availability). Requires 50-MHz trace and emulator boards for 20-MHz operation. (**Note**: The 20 MHz for this derivative corresponds to 40 MHz for a regular 8031.) Consists of an add-on processor module for C505CA (PM51-EH-SAB-C505CA) and an enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks port replacement unit. This pod is designed to plug into a 44-pin PGA to 44-pin QFP solder-down adapter, such as the EDI/44PG/QFS31-SD (see the “Miscellaneous Options: Adapters, Cables, and Extenders” section). Supports both external and internal modes. **This pod supports the following four sub-derivatives of the C505A sub-family:** C505CA-4E (32K OTP version of the C505CA), C505CA-L (ROM-less version of the C505CA), C505A-4E (32K OTP version of the C505A) and C505A-L (ROM-less version of the C505A). This pod does not support other C505 sub family members.	**POD-51EH-C505CA-20**
10-MHz single-chip C508	10-MHz enhanced hooks mode pod for the Infineon C508 (Note: The 10 MHz for this derivative corresponds to 40 MHz for a regular 8031.) Consists of an add-on processor module for C508 (PM51-EH-C508) and the enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks port replacement unit. Requires 50-MHz trace and emulator boards. Adapters for the PMQFP package are available (see ES/180-5545-00 under the "Miscellaneous Options: Adapters, Cables, and Extenders" section). Supports both external and internal modes. **This pod supports the following derivatives of C508:** C508-4EM (MQFP 32K OTP version of the C508) and C508-4RM (MQFP 32K mask-ROM version of the C508)	**POD-51EH-C508-10**

Infineon Pods (Continued)

24-MHz single-chip C515	24-MHz enhanced hooks mode pod for the Infineon C515. Consists of an add-on processor module for C515 (PM51-EH-SAB-C515) and an enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks port replacement unit (call Nohau for availability). Requires 24-MHz trace and emulator boards. Adapters for the PMQFP package are available (see ES/180-5550-40 and ES/180-5550-45 under the "Miscellaneous Options: Adapters, Cables, and Extenders" section). Supports both external and internal modes. **This pod supports the following sub-derivatives of the C515 sub-family:** C515-1R (8K Mask-ROM version) and C515-L (ROM-less version)	**POD-51EH-C515-24**
24-MHz expanded mode C515A	24-MHz enhanced hooks mode pod for the Infineon C515A (call Nohau for availability). Consists of an add-on processor module for C515A (PM51-EH-SAB-C515A) and an enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks port replacement unit. Requires 24-MHz trace and emulator boards. Call for information about adapter availability. Supports both external and internal modes. **This pod supports the following sub-derivatives of the C515A sub-family:** C515A-4R (32K Mask-ROM version) and C515A-L (ROM-less version)	**POD-51EH-C515A-24**
10-MHz single-chip C515C	10-MHz enhanced hooks mode pod for the Infineon C515C (call Nohau for availability). (**Note**: The 10 MHz for this derivative corresponds to 20 MHz for a regular 8031.) Consists of an add-on processor module for C515C (PM51-EH-SAB-C515C) and the enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks port replacement unit. Requires 24-MHz trace and emulator boards. Adapters for the PMQFP package are available (see ES/180-5550-50 and ES/180-5550-55 under the "Miscellaneous Options: Adapters, Cables, and Extenders" section). Supports both external and internal modes. **This pod supports only the following sub-derivatives of the C515C:** C515C-8RM (64K mask-ROM version of the C515C), C515C-LM (ROM-less version of the C515C), C515C-8EM (64K OTP version of the C515C). This pod does not support other C515 sub-family members such as the C515A.	**POD-51EH-C515C-10**

Infineon Pods (Continued)

24-MHz single-chip C517A	24-MHz enhanced hooks mode pod for the Infineon C517A consists of an add-on processor module for C517A (PM51-EH-C517A) and an enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks port replacement unit. (Contact Nohau for availability.) Requires 24-MHz trace and emulator boards. Adapters for the P-MQFP and P-LCC packages are available. (Refer to ES/180-5690-10, ES/180-5690-20, and ES/180-3975-10 in the "Miscellaneous Options: Adapters, Cables, and Extenders" section.) Supports both external and internal modes. **This pod supports the following four sub-derivatives of the C517A sub-family:** C517A-4RM (32K Mask-ROM version with P-MQFP-100 package), C517A-4RN (32K Mask-ROM version with P-LCC-84 package), C517A-LM (ROMless version with P-MQFP-100 package), C517A-LN (ROM-less version with P-LCC-84 package)	**POD-51EH-C517A-24**
20-MHz single-chip C505L	20-MHz enhanced hooks mode pod for the Infineon C505L consists of an add-on processor module for C505L (PM51-EH-C505L) and an enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks port replacement unit. (Contact Nohau for availability.) Requires 50-MHz trace and emulator boards for 20-MHz operation. Adapters for the P-MQFP package are available. (Refer to ES/180-5550-65 in the "Miscellaneous Options: Adapters, Cables, and Extenders" section.) Supports both external and internal modes. **This pod supports the following sub-derivatives of the C505L sub-family:** C505L-4EM (32K OTP version with P-MQFP-80 package)	**POD-51EH-C505L-20**
16-MHz single-chip C513AO	16-MHz enhanced hooks mode pod for the Infineon C513AO consists of an add-on processor module for C513AO (PM51-EH-C513AO) and an enhanced hooks port replacement unit (EMUL51-PC/PRU-EH). Interchangeable add-on processor modules for other derivatives can be used with the enhanced hooks PRU. Requires 50-MHz trace and emulator boards For the P-MQFP package order adapter Part # EDI44PG44QFS31S2. For the PLCC44 package order adapter Part # EMUL51-PC/PGA44-PLCC44. Call Nohau for availability. Supports both external and internal modes. **This pod supports the following derivatives of C513AO:** C513AO-R (12K mask-ROM version of the C513), C513AO-2R (16K mask-ROM version of the C513), C513AO-2E (32K OTP version of the C513)	**POD-51EH-C513AO-16**

EMUL51-PC Parts List

Processor Modules (PM) for Infineon

Note: *Processor Modules for Infineon C500 Derivatives. An emulator pod for a C500 derivative consists of two sub-assemblies: a generic port replacement unit (PRU), and a processor-specific module (or processor module [PM]).* **If you already have a pod for one of the C500 derivatives, you can modify it to target a different derivative just by replacing the PM on your pod.**

Hooks	Enhanced hooks port replacement unit for use with add-on processor modules.	**EMUL51-PC/PRU-EH**
C504	Add-on processor module for Infineon C504. Call Nohau for availability.	**PM51-EH-C504**
C505C	Add-on processor module for Infineon C505C. Call Nohau for availability.	**PM51-EH-C505C**
C505CA	Add-on processor module for Infineon C505CA. Call Nohau for availability.	**PM51-EH-C505CA**
C505L	Add-on processor module for Infineon C505L.	**PM51-EH-C505L**
C508	Add-on processor module for Infineon C508.	**PM51-EH-C508**
C513AO	Add-on processor module for Infineon C513AO.	**PM51-EH-C513AO**
C515	Add-on processor module for Infineon C515.	**PM51-EH-C515**
C515A	Add-on processor module for Infineon C515A. Call Nohau for availability.	**PM51-EH-C515A**
C151C	Add-on processor module for Infineon C515C. Call Nohau for availability.	**PM51-EH-C515C**
C517A	Add-on processor module for Infineon C517A. Call Nohau for availability.	**PM51-EH-C517A**

Development Starter Kits for Infineon

Infineon Development Starter Kit for the 515C. Recommended adapter to use: ES/180-5550-50.	**Infineon/SABC515CSTART**
Infineon Development Starter Kit for the 504C. Recommended adapter to use: ES/180-5550-65.	**Infineon/SABC504CSTART**

EMUL51-PC Parts List

Intel Pods

Device	Single-Chip Pod	Expanded Mode Pod (External Memory)	Pod Footprint	Requires EA EMUL (If speeds above 33 MHz)
8031		POD-31-20	40-pin DIP see page 33	X
80C31		POD-C31-SP	40-pin DIP see page 33	X
8032		POD-32-SP	40-pin DIP see page 33	X
8XC32		POD-C32-SP	40-pin DIP see page 33	X
8051	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
80C51	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
8X51/52	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
8XC51/52/54/58	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
8xC51FA/FB/FC	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
8xC51RA/RB/RC	POD-C51RX-SP	POD-C51RX-SP	40-pin DIP see page 33	X
87C51	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
8752	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
8052	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
8xC54	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
8xC58	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X
8751	POD-C51FX-SP	POD-C51FX-SP	40-pin DIP see page 33	X

In the chart above the "-SP" stands for the speed of the device. Please refer to the descriptions below for more detail.

12-MHz	12-MHz hooks-mode pod for 8XC51FA/ FB/ FC, 8XC51/ 52/ 54/ 58, 8X51/ 52, 80C31/ 32, 8031/ 32. 40-pin DIP. Uses Intel special emulation technology chip.	**POD-C51FX**
16-MHz	16-MHz version of POD-C51FX. Uses Intel special emulation technology chip.	**POD-C51FX-16**
20-MHz	20-MHz version of POD-C51FX. Use of EMUL51-PC/EA256-BSW-24 is strongly recommended. Uses Intel special emulation technology chip.	**POD-C51FX-20**
24-MHz	24-MHz version of POD-C51FX. Requires at least an EMUL51-PC/EA256-BSW-24 emulator board and optional 16-kiloframe, 50-MHz standard trace or at least a 33-MHz enhanced trace board. Uses Intel special emulation technology chip.	**POD-C51FX-24**
12-MHz hooks mode pod for 8XC51RA/ RB/ RC	12-MHz hooks-mode pod for 8XC51RA/ RB/ RC. Emulation of the watchdog function is limited and requires an optional trace board. 40-pin DIP. Uses Intel special emulation technology chip.	**POD-C51RX**
16-MHz	16-MHz version of POD-C51RX. Uses Intel special emulation technology chip. Contact Nohau for availability.	**POD-C51RX-16**
20-MHz	20-MHz version of POD-C51RX. Uses Intel special emulation technology chip. Contact Nohau for availability.	**POD-C51RX-20**

Bondout and Special Emulation Chip Replacement Charges for Pod Repair

For POD-C51FX/-16/-20/-24
For POD-C51RX/-16/-20

Bondout and special emulation chip replacement charges are only as part of repairs performed by Nohau Corp. No bondout or special emulation chip is available to be separately shipped, but must always be shipped as part of a pod. Additional repair charges might apply for labor and other parts.

Philips Semiconductor Pods

Device	Single-Chip Pod	Expanded Mode Pod (External Memory)	Pod Footprint	Requires EA EMUL
80C51MX, 89C669	POD-51MX-MC2		44-pin PGA see page 33	X
8031 / 32	POD-51HB-C52-SP& POD-51HB-C51FX-33	POD-51HB-C52-SP& POD-51HB-C51FX-33	44-pin PGA see page 33	X
80C31 / C32	POD-51HB-C52-SP & POD-51HB-C51FX-33	POD-51HB-C52-SP & POD-51HB-C51FX-33	44-pin PGA see page 33	X
8xC51 / 52 / 54 / 58	POD-51HB-C52-SP& POD-51HB-C51FX-33	POD-51HB-C52-SP & POD-51HB-C51FX-33	44-pin PGA see page 33	X
8xC51RA / RB / RC / RD+	POD-51HB-C51RX-SP		44-pin PGA see page 33	
80C51Rx2	POD-51HB-C51RX2-20		44-pin PGA see page 33	X
80CL31 / 51	POD-51HB-L51FX-16	POD-51HB-L51FX-16	44-pin PGA see page 33	
80CL32 / 52	POD-51HB-L51FX-16	POD-51HB-L51FX-16	44-pin PGA see page 33	
80C32 / 8xC52	POD-51HB-C52-SP & POD-51HB-C51FX-33	POD-51HB-C52-SP & POD-51HB-C51FX-33	44-pin PGA see page 33	X
C591	POD-51HB-C591-16		44-pin PGA see page 33	
C660, 662, 664, 668	POD-51HB-C66x-20		44-pin PGA see page 33	X
8051, 8X52	POD-51HB-C52-SP & POD-51HB-C51FX-33	POD-51HB-C52-SP& POD-51HB-C51FX-33	44-pin PGA see page 33	X
8xC51FA / FB / FC	POD-51HB-C51FX-33	POD-51HB-C51FX-33	44-pin PGA see page 33	X
8xL51FA / FB / FC	POD-51HB-L51FX-16	POD-51HB-L51FX-16	44-pin PGA see page 33	
8xL51RA / RB / RC	POD-51HB-L51RX-16	POD-51HB-L51RX-16	44-pin PGA see page 33	
8xC524	POD-51HB-C52-SP& POD-C528	POD-51HB-C52-SP & POD-C528	44-pin PGA see page 33	X
8xC528	POD-51HB-C52-SP & POD-C528	POD-51HB-C52-SP & POD-C528	44-pin PGA see page 33	X
8xC550	POD-C550-PGA	POD-C550-PGA	44-pin PGA see page 33	
8xC552		POD-C552-PGA	68-pin PGA see page 34	
8xC554	POD-C554-PGA-33	POD-C554-PGA-33	68-pin PGA see page 34	X
8xC652	POD-51HB-C652-SP	POD-51HB-C652-SP	44-pin PGA see page 33	
8xC654	POD-51HB-C654-SP	POD-51HB-C654-SP	44-pin PGA see page 33	
89V51RD2	POD-89LV51RD2		44-pin PGA see page 33	X
89LV51RD2	POD-89V51RD2		44-pin PGA see page 33	X

In the chart above the "-SP" stands for the speed of the device. Please refer to the descriptions below for more detail.
When using the microcontroller above 18 MHz in the 6-clock mode or above 36 MHz in the 12-clock mode, you will require both the EA emulator board and the CBL-18. If you are using the microcontroller at 12 MHz in 6-clock mode or 24 MHz in 12-clock mode, you can use the E128-33 emulator board.

Philips Semiconductor Pods (continued)

Enhanced Hooks Mode Pod for 80C51MX

80C51MX Pod	24 MHz pod for the 6-clock Philips 80C51MX architecture.	**POD-51MX-MC2**
Pod MX C669	24 MHz pod for the 6-clock Philips 89C669 based on the MX architecture.	**POD-51MX-C669**

All Other 8051 Philips Pods

33-MHz 8XC51/52, 8X51/52, 80C31/32, 8031/32	33-MHz hooks mode pod for 8XC51/52, 8X51/52, 80C31/32, 8031/32, and Philips 8XC51FB and 8XC51FC, 40-pin DIP. You must use the EMUL51-PC/EA256-BSW-50 emulator board and optional 16-kiloframe, 50-MHz standard trace or at least a 33-MHz enhanced trace board. **Note:** old part # was POD-C51FC-P-33.	**POD-51HB-C51FX-33**
33-MHz 8XC51RA/ RB/ RC/ RD+	33-MHz hooks-mode pod for the Philips 8XC51RA/ RB/ RC/ RD+. Requires the EMUL51-PC/EA256-BSW-50 emulator board and optional 16K, 50-MHz standard trace or at least a 33-MHz enhanced trace board. This pod terminates to a 44-pin PGA. For the 44-pin PLCC package order part #EMUL51-PC/PGA44-PLCC44. For the QFP package order part # EDI/44PG/QFS31-SD. For a 40-pin DIP package order adapter EDI/44PG/40D-S-8051. **Note:** old part # was POD-C51RX-P-33.	**POD-51HB-C51RX-33**
16-MHz 80CRx2	16-MHz hooks-mode pod for the 6-clock Philips 80CRx2. This pod requires 50-MHz trace and emulator boards. For the 44-pin PLCC package order adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP package order adapter part # EDI/44PG/QFS31-SD. (Note: To support 40-pin DIP, contact Nohau for adapter availability.) This pod supports the following Philips derivatives; 8xC51RB2, 8xC51RC2 and 8xC51RC2RD2. **Note:** old part # was POD-C51RX2-P-PGA-16.	**POD-51HB-C51RX2-20**
16-MHz 8XL51FA/ FB/ FC	16-MHz low voltage hooks-mode pod for the Philips 8XL51FA/ FB/ FC. 3.0 to 3.3 volts. The pod contains a 16-MHz crystal. The emulator must be at least 16 MHz to run with an on-board pod crystal, but a 12-MHz emulator can be used with a 12 MHz or slower external crystal or oscillator. Pod terminates to a 44-pin PGA. **Note:** old part # was POD-	**POD-51HB-L51FX-16**
16-MHz 8XL51RA/RB/ RC	16-MHz low voltage hooks-mode pod for the Philips 8XL51RA/ RB/ RC. 3.0 to 5 volts. The pod contains a 16-MHz crystal. The emulator must be at least 16 MHz to run with an on-board pod crystal, but a 12-MHz emulator can be used with a 12 MHz or slower external crystal or oscillator. This pod terminates to a 44-pin PGA. Requires at least a 24-MHz EA emulator board.	**POD-51HB-L51RX-16**
24-MHz 8XC51/ 52/54/ 58, 8X51/ 52, 80C31/ 32, 8031/ 32	24-MHz hooks-mode pod for 8XC51/ 52/54 /58, 8X51/ 52, 80C31/ 32, 8031/ 32. Requires at least a 24-MHz EA emulator board. This pod terminates to a 44-pin PGA. **Note:** old part # was POD-C52-24.	**POD-51HB-C52-24**
33-MHz 8XC51/ 52 / 54 / 58, 8X51/ 52, 80C31/ 32, 8031/ 32	33-MHz hooks-mode pod for 8XC51/ 52 / 54 / 58, 8X51/ 52, 80C31/ 32, 8031/ 32. Requires an EMUL51-PC/EA256-BSW-50 and an optional 16-kiloframe, 50-MHz standard trace or at least a 33-MHz advanced trace board or a 50-MHz enhanced trace board. This pod terminates to a 44-pin PGA. **Note:** old part # was POD-C52-33.	**POD-51HB-C52-33**

Philips Semiconductor Pods (continued)

33-MHz 8xC554, 2.7 V to 5.5 V	33-MHz hooks mode pod for the Philips 8xC554, 2.7 V to 5.5 V (maximum 16 MHz at 5 V) Contact Nohau for availability. Requires the EMUL51-PC/EA256-BSW-50 emulator board and optional 16K 50-MHz standard or enhanced trace or at least a 33-MHz advanced trace board. The EMUL51-PC/PGA68-PLCC68 adapter is required to mate to target.	**POD-C554-PGA-33**
16-MHz C591	16-MHz hooks-mode pod for the 6-clock Philips C591. This pod requires 50-MHz trace and emulator boards. For the 44-pin PLCC package order adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP package order adapter part # EDI/44PG/QFS31-SD. **Note:** old part # was POD-C591-PGA-16.	**POD-51HB-C591-16**
16-MHz C652	16-MHz hooks-mode pod for the 12-clock Philips C652. This pod requires 50-MHz trace and emulator boards. For the 44-pin PLCC package order adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP package order adapter part # EDI/44PG/QFS31-SD.	**POD-51HB-C652-16**
20-MHz C652	20-MHz hooks-mode pod for the 12-clock Philips C652. This pod requires 50-MHz trace and emulator boards. For the 44-pin PLCC package order adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP package order adapter part # EDI/44PG/QFS31-SD.	**POD-51HB-C652-20**
24-MHz C652	24-MHz hooks-mode pod for the 12-clock Philips C652. This pod requires 50-MHz trace and emulator boards. For the 44-pin PLCC package order adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP package order adapter part # EDI/44PG/QFS31-SD.	**POD-51HB-C652-24**
16-MHz C654	16-MHz hooks-mode pod for the 12-clock Philips C654. This pod requires 50-MHz trace and emulator boards. For the 44-pin PLCC package order adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP package order adapter part # EDI/44PG/QFS31-SD.	**POD-51HB-C654-16**
20-MHz C654	16-MHz hooks-mode pod for the 12-clock Philips C654. This pod requires 50-MHz trace and emulator boards. For the 44-pin PLCC package order adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP package order adapter part # EDI/44PG/QFS31-SD.	**POD-51HB-C654-20**
24-MHz C654	16-MHz hooks-mode pod for the 12-clock Philips C654. This pod requires 50-MHz trace and emulator boards. For the 44-pin PLCC package order adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP package order adapter part # EDI/44PG/QFS31-SD.	**POD-51HB-C654-24**
20-MHz C66x	20-MHz hooks-mode pod for the 6-clock Philips C66x. This pod requires 50-MHz trace and emulator boards. For the 44-pin PLCC package order adapter part # EMUL51-PC/PGA44-PLCC44. For the QFP package order adapter part # EDI/44PG/QFS31-SD. This pod terminates to a 44-pin PGA. If this pod is to be operated above 18 MHz, please contact Nohau for a special cable. Supports the 8xC660, 8xC662, 8xC664 and 8xC668.	**POD-51HB-C66x-20**
33-MHz 89LV51RD2	33-MHz low voltage hooks-mode pod for the Philips 89LV51RD2 supporting 3.0 volts operation. The pod contains a 16-MHz crytal. The emulator must be at least 16 MHz to run with an on-board pod crystal, but a user can select a different frequency using external crystal or oscillator. This pod terminates to a 44-pin PGA. Requires at least a 50-MHz EA emulator board.	**POD-89LV51RD2**

Philips Semiconductor Pods (continued)

33-MHz 89LV51RD2	33-MHz low voltage hooks-mode pod for the Philips 89LV51RD2 supporting 5.0 volts operation with low power consumption. The pod contains a 16-MHz crystal. The emulator must be at least 16 MHz to run with an on-board pod crystal, but a user can select a different frequency using external crystal or oscillator. This pod terminates to a 44-pin PGA. Requires at least a 50-MHz EA emulator board.	**POD-89V51RD2**
12-MHz 8XC52x	12-MHz hooks-mode pod for 8XC528, 8XC524. 40-pin DIP.	**POD-C528**
16-MHz 8XC52x,	16-MHz hooks-mode pod for 8XC528, 8XC524. 40-pin DIP.	**POD-C528-16**
12-MHz 8XC550	12-MHz hooks-mode pod for 8XC550. 44-pin PGA from pod. For PLCC target use optional PGA44-PLCC44 adapter. For DIP target use optional PGA44-DIP40-C550 adapter.	**POD-C550-PGA**
16-MHz 8XC550	16-MHz version of POD-C550-PGA.	**POD-C550-PGA-16**
16-MHz 8xC557, 8xCE558, 8xCE559 and 8xCE560	16-MHz hooks-mode pod for 8xC557, 83CE558, 89CE558, 8xCE559 and 8xCE560. Contact Nohau for availability. Use ET/EPP-080-QF08-LG adapter to solder to user target board. The pod contains a 16-MHz crystal. The emulator must be at least 16 MHz to run with an on-board pod crystal, but a 12-MHz emulator can be used with a 12-MHz or slower external crystal or oscillator.	**POD-C558-16**

For the following **80C552 pods**, port 2 is upper address bus only. Port 0 is address/data bus. P3.6 is WRITE, P3.7 is READ. Unless noted, the on-board pod crystal is 12 MHz on all pods of any frequency specification. Frequency rating covers all lower frequency steps.

12-MHz	12-MHz 80C552 pod. 68-pin PGA from pod. Use optional EMUL51-PC/PGA68-PLCC68 adapter for PLCC target.	**POD-C552-PGA**
16-MHz	16-MHz 80C552 pod. 68-pin PGA from pod.	**POD-C552-PGA-16**
24-MHz	24-MHz version of POD-C552-PGA.	**POD-C552-PGA-24**
30-MHz	30-MHz version of POD-C552-PGA.	**POD-C552-PGA-30**

ST Microelectronics Pods

uPSD3000 Pod Boards

Pod Board	The 40-MHz pod uses a bondout to support the uPSD3200 architecture. The pod contains a bondout chip, a socketed PSD device that can be changed to your target device and a JTAG programming connector. The pod terminates to four male headers. The headers mate with the ST Microelectronics DK3000 evaluation board, or the 52- or 80-pin target adapter sets.	**POD-51-uPSD3000**
Pod Board 3V	3V version of the POD-51-uPSD3000 listed above.	**POD-51-uPSD3000-3V**

Note: To use either of these pods with an existing EA emulator board (except 8051MX) you will need to purchase a new COM PROM part number EPROM-COM1.51-EA51-uPSD.

Note: If you purchase POD-51-uPSD3000 and want to buy the 3V chip, please see the Target Adapters section of this price list for ordering information.

Hardware Upgrade Prices

This service is available only if the unit to be upgraded is a working unit in good condition, as judged by ICE Technology. Modified DS320 boards cannot be upgraded. Upgrade warranty period is three months or until the expiration of the original warranty period, whichever is longer. Prices and terms are subject to change. All prices are of the current list price.

Standard Emulator upgrades available from 32K to 128K for memory size and speed. Price difference plus 100.00.

Standard Emulator to an Advanced Emulator

Standard emulator boards can be returned for credit of current list price on the purchase of advanced emulator boards as follows:

Standard boards purchased within the last 3 years; 50% credit at current list price.

Standard boards purchased 4 to 6 years ago; 25% credit at current list price.

Standard boards purchased 7 or more years ago; 10% credit at current list price.

Advanced Emulator upgrades available for memory size and conversion between types (C320, C530). The advanced emulator is different from the standard emulator.

Standard Trace upgrades available: memory size, speed. An advanced trace is a different board than the standard trace, so there is no upgrade available from standard trace to advanced trace.

Advanced Trace upgrades available: memory size, speed. For customers upgrading their Advanced Trace (ATR) to another ATR configuration, the standard upgrade rules ($100.00 plus price difference, minimum $100) applies.

Enhanced Trace upgrades available: memory size, speed. Customers upgrading their ATR to an Enhanced Trace (ETR) receive a discount of 50% of the current list price of their existing ATR. (Note: No additional $100 charge applies.) Offer not valid with any other special offer or discount.
Pod upgrades available: speed, adding bankswitching, type change between pods that use the same printed circuit fabrication, upgrade to 31-S type from 40-pin generic external type. The 31A pods (HF-42 and C320) use a different board than other pods, so there is no upgrade to 31A pods from other pods.

Emulator board upgrades — Plus price difference

Example: Upgrade to E128-33 from E32-16
$1295.00 - $995.00 + $100.00 = $400.00

Trace board upgrades — Plus price difference

Example: Upgrade to TR16-33 from TR16-16
$995.00 - $795.00 + $100.00 = $300.00

Pod board upgrades — Plus price difference

Example: Upgrade to POD-C31-S-33 from POD-31
$845.00 - $295.00 + $50.00 = $600.00

EMUL51-PC Parts List

Communication Interfaces

The High Speed Parallel Box connects to the PC's parallel printer port and lets you use the in-circuit emulator and optional trace board where no ISA slots are available.

HSP chassis	The high speed parallel box (HSP) chassis, the communications interface which consists of: the HSP ISA card (CARD-HSP) and the cable (CBL-HSP), connect to the PC LPT port.	**EMUL-PC/BOX-HSP**

HSP ISA card and cable	The communications interface [HSP ISA card (CARD-HSP) and cable (CBL-HSP)] for an existing ISA chassis.	**EMUL-PC/SET-HSP**
HSP with USB card	High speed parallel box (HSP) chassis, USB card (CARD-USB) and cable (CBL-USB). This cable will work with all Windows versions that support USB such as Windows 2000Pro, 98 and 95 OSR2. Includes EMUL-PC/USB-HSP.	**EMUL-PC/BOX-USB**

USB card with cable	The communications interface [USB card (CARD-USB) and cable (CBL-USB)] for an existing ISA chassis. This cable will work with all Windows versions that support USB such as Windows 2000Pro, 98 and 95 OSR2.	**EMUL-PC/SET-USB**

Programmers for EPROMs and Microcontrollers

	Programming tool for Micros, EPROMs, Flash, etc. Connects to the computer's parallel port. (Manufactured by Hilo Systems.)	**HI-LO/ALL-11P**

Target Adapters

uPSD3200 Target Adapter Sets

52-pin NQ adapter set	An 52-pin adapter set for the uPSD3000 emulator. This set consists of a Tokyo Eletech 52-pin NQ adapter base part # ES/000-2085, an emulator cover (YQ) part # ES/000-2087, a microcontroller cover (HQ) part # ES/000-2086, a spacer part # ES/000-3588 and the EMUL-51/ADP-uPSD3000-52 adapter mezzanine board.	**EMUL51-PSD/ ADP-52-NQ-Set**
52-pin TQ adapter set	An 52-pin adapter set for the uPSD3000 emulator. This set consists of a Tokyo Eletech 52-pin TQ adapter base part # ES-000-4472, a spacer part # ES/000-2755 and the EMUL-51/ADP-uPSD3000-52 adapter mezzanine board.	**EMUL51-PSD/ ADP-52-TQ-Set**
80-pin NQ adapter set	An 80-pin adapter set for the uPSD3000 emulator. This set consists of a Tokyo Eletech 80-pin NQ adapter base part # ES/000-2174, an emulator cover (YQ) part # ES/000-2176, a microcontroller cover (HQ) part # ES/000-2175, a spacer part # ES/000-3658 and the EMUL-51/ADP-uPSD3000-80 adapter mezzanine board.	**EMUL51-PSD/ ADP-80-NQ-Set**
80-pin TQ adapter set	An 80-pin adapter set for the uPSD3000 emulator. This set consists of a Tokyo Eletech 80-pin TQ adapter base part # ES-000-4532, a spacer part # ES/000-2865 and the EMUL-51/ADP-uPSD3000-80 adapter mezzanine board.	**EMUL51-PSD/ ADP-80-TQ-Set**

Note: The emulator will connect directly to the ST uPSD3200 evaluation board. No target adapter is needed. The uPSD3000 chip must be removed from the target to use the emulator.

Target Adapters (continued)

uPSD3200 Individual Target Adapters

uPSD3200 52-pin replacement adapter components

52-pin NQ adapter base	A replacement 52-pin solder-down adapter NQ base.	**ES/000-2085**
52-pin HQ microcontroller cover	A replacement 52-pin NQ microcontroller cover (HQ).	**ES/000-2086**
52-pin YQ emulator cover	A replacement 52-pin NQ emulator cover (YQ).	**ES/000-2087**
52-pin NQ spacer	A replacement 52-pin NQ spacer between the solder-down base and the adapter.	**ES/000-3588**
52-pin TQ adapter base	A replacement 52-pin TQ solder-down adapter base.	**ES/000-4472**
52-pin TQ spacer	A replacement 52-pin TQ spacer between the solder-down base and the adapter.	**ES/000-2755**

uPSD3200 80-pin replacement adapter components

80-pin NQ adapter base	A replacement 52-pin solder-down adapter NQ base.	**ES/000-2174**
80-pin HQ microcontroller cover	A replacement 52-pin NQ microcontroller cover (HQ).	**ES/000-2175**
80-pin YQ emulator cover	A replacement 52-pin NQ emulator cover (YQ).	**ES/000-2176**
80-pin NQ spacer	A replacement 52-pin NQ spacer between the solder-down base and the adapter.	**ES/000-3658**
80-pin TQ adapter base	A replacement 52-pin TQ solder-down adapter base.	**ES/000-4532**
80-pin TQ spacer	A replacement 52-pin TQ spacer between the solder-down base and the adapter.	**ES/000-2865**

uPSD3000 Chip

3V chip	3V version of the chip for POD-51-uPSD3000.	**ST/PSD834F2V-70**

Target Adapters (continued)

Adapters for 40-pin Pods

40-pin DIP to 44-pin PLCC	EDI/40D/44PL-8051-L adapter, 40-pin DIP socket to 44-pin PLCC plug.	**EMUL51-PC/ DIP40-PLCC44**
Extender cable	EDI/EXT40D-2/6R extender cable, 6-inch, for 40-pin DIP.	**EMUL51-PC/ EXT-DIP40**
40-pin DIP isolator	Additional 40-pin DIP isolator.	**EMUL51-PC/ DIP40-ISO**
40-pin DIP to 44-pin QFP	Adapter assembly, 40-pin DIP socket to 44-pin QFP Square 0.031-inch pitch, Solder-Down, 8051 family. Includes one top and one 44QFS31-SD base to solder to user target board.	**EDI/ 40D/ 44QFS31-SD-8051**
* 44-pin PLCC into a 40-pin DIP	Adapter for the top side of some Nohau 40-pin pods to allow you to place a 44-pin PLCC part into a 40-pin DIP socket on your Nohau pod. (This adapter is not for the target connection side.)	**EDI/44PL/40D-S-8051**
Replacement base	Additional base only: 44-pin QFP Square 0.031-inch pitch Solder-Down base for EDI/40D/44QFS31-8051. To solder to an additional target board.	**EDI/44QFS31-SD**
40-pin DIP to 44-pin QFP	40-pin DIP socket to 44-pin QFP solder-on pattern.	**ET/AS-DIP-QF16S-8031/51**

Atmel Adapters for 40-pin Pods

40-pin DIP pod to 20-pin	Adapts 40-pin DIP pod to 20-pin Small Outline .300-inch solder down pattern for 8051 family pods to 2051 and 1051 targets. Does not emulate on-chip comparator.	**EDI/40D/20S030-SD-8051/2051**
40-pin DIP socket	Adapter to emulate Atmel AT89C2051, AT89C1051 using POD-C52. 40-pin DIP socket accepts either pod. 20-pin DIP plug to target system.	**EMUL51-PC/ ATMEL2051**

Adapters for 44-pin Pods

44-pin PGA to 44-pin PLCC	EDI/44PG/PL-L adapter, 44-pin PGA socket to 44-pin PLCC plug.	**EMUL51-PC/ PGA44-PLCC44**
44-pin PGA to 44-pin PLCC	EDI/2E44PG/PL extender-adapter, 44-pin PGA socket to 44-pin PLCC plug rigid 2-inch elevator or tower.	**EMUL51-PC/ PGA44-PLCC44-EL2**
DIP adapter	EDI/44PG/40D-550-S adapter to use POD-C550-PGA in a target with a DIP socket.	**EMUL51-PC/ PGA44-DIP40-C550**
44-pin PGA to 44-pin PLCC	Adapter assembly, 44-pin PGA socket to 44-pin PLCC, to solder to user target board. Includes one top and one EDI/44LC-SD base.	**EDI/ 44PG/LC-SD**
Replacement base	Additional base only. 44-pin PLCC solder down base for EDI/44G/LC-SD.	**EDI/ 44LC-SD**
44-pin PGA to 44-pin QFP	Adapter assembly, 44-pin PGA socket to 44-pin QFP Square 0.031-inch pitch, Solder-Down, 8051 family. Includes one top and one EDI/44QFS31-SD base to solder to user target board.	**EDI/44PG/ QFS31-SD**
* 44-pin PGA to 40-pin DIP	Adapter for 44-pin PGA to a 40-pin DIP	**EDI/44PG/40D-S-8051**

Target Adapters (continued)

Adapters for 52-pin Pods

52-pin PGA to 52-pin PLCC	EDI/52PG/PL-L adapter, 52-pin PGA socket to 52-pin PLCC plug.	**EMUL51-PC/ PGA52-PLCC52**
52-pin PGA to 40-pin DIP	Adapter, 52-pin PGA socket to 40-pin DIP, to plug into 80C320 or 8XC520 DIP target with POD-C520-PGA. (530/520 family).	**EDI/ 52PG/40D-530/520-S**
52-pin PGA to 44-pin PLCC	Adapter, 52-pin PGA socket to 44-pin PLCC, to plug into 8XC520 PLCC target with POD-C520-PGA.	**EDI/ 52PG/44PL-530/520**
52-pin PGA to 44-pin Quad Flat Square	Adapter, 52-pin PGA socket to 44-pin Quad Flat Square 0.031-inch pitch, solder-down, for 8XC520 target with POD-C520-PGA.	**EDI/52PG/44QFS 31-SD-530/520**

Adapters for 68-pin Pods

68-pin PGA to 68-pin PLCC	EDI/68PG/PL adapter, 68-pin PGA socket to 68-pin PLCC plug.	**EMUL51-PC/ PGA68-PLCC68**
68-pin PGA	EDI/ISV68PG/PG isolator, 68-pin PGA.	**EMUL51-PC/ PGA68-ISO**
68-pin PGA to 68-pin PLCC	EDI/ISV68PG/PL adapter-isolator, 68-pin PGA to 68-pin PLCC.	**EMUL51-PC/ PGA68-ISO-PLCC68**
68-pin PGA socket to 80-pin QFP	Adapter assembly, 68-pin PGA socket to 80-pin QFP Rectangular 0.031-inch pitch, solder-down, 8XC552. Includes one top and one 80QFR31-SD base to solder to user target board.	**EDI/68PG/80QF R31-SD-552**
68-pin PGA socket to 80-pin QFP	Adapter, same as 68PG/80QFR31-SD-552, but for 8XC592.	**EDI/68PG/80QF R31-SD-592**
Replacement base	Additional base only: 80-pin QFP Rectangular 0.031-inch pitch solder-down base for 68PG/80QFR31-552. To solder to an additional target board.	**EDI/ 80QFR31-SD**
Clip over adapter	Adapter for 8XC51GB PLCC microcontroller. Clips over target DIP microcontroller. Disables target micro to allow emulation without removing target chip. Uses on-chip emulation (ONCE) disable feature.	**EDI/ONCE68PG/ PL-CLP-51GB**

Adapters to QFP 80 for Specific Pods

80-pin QFP	Adapter for 80-pin QFP. Solders to user target board. For POD-C558-16 and POD-598-KIT. Optional for POD-5001.	**ET/ EPP-080-QF08-LG**

Adapters for POD-51EH-C505L

80-pin QFP	Emulation Solutions 80-pin QFP adapter for POD-51EH-C505L. Solders to user target board.	**ES/180-5550-65**

Adapters for POD-51EH-C508

64-pin MQFP	Emulation Solutions 64-pin MQFP adapter for POD-51EH-C508.	**ES/180-5545-00**

Target Adapters (continued)

Adapters for POD-51EH-C515

80-pin QFP	Emulation Solutions 80-pin QFP adapter for POD-51EH-C515. Solders to user target board. This adapter has a socket that accepts a regular chip when the pod is not plugged into an adapter.	**ES/180-5550-40**
80-pin QFP	Emulation Solutions 80-pin QFP adapter for POD-51EH-C515. Solders to user target board.	**ES/180-5550-45**

Adapters for POD-51EH-C515A

68-pin PLCC adapter	Emulation Solutions 68-pin PLCC adapter for POD-51EH-C515 and POD-51EH-C515A.	**ES/180-3960-10**

Adapters for POD-51EH-C515C

80-pin QFP	Emulation Solutions 80-pin QFP adapter for POD-51EH-C515C. Solders to user target board. This adapter has a socket that accepts a regular chip when the pod is not plugged into an adapter.	**ES/180-5550-50**
80-pin QFP	Emulation Solutions 80-pin QFP adapter for POD-51EH-C515C. Solders to user target board. Includes one ES/000-4534 base. Additional bases are available separately.	**ES/180-5550-55**
Add. solder-down base	Additional solder-down base for the 80-pin QFP.	**ES/000-4534**

Adapters for POD-51EH-C517A

84-pin PLCC	Emulation Solutions 84-pin PLCC adapter for POD-51EH-C517A. Plugs into an 84-pin PLCC socket.	**ES/180-3975-10**
100-pin QFP	Emulation Solutions 100-pin QFP adapter for POD-51EH-C517A. Solders to user target board.	**ES/180-5690-10**
100-pin QFP	Emulation Solutions 100-pin QFP adapter for POD-51EH-C517A. Solders to user target board. This adapter has a socket that accepts a regular chip when the pod is not plugged into an adapter.	**ES/180-5690-20**

Adapters for POD-51EH-C541U

Replacement 44-pin PLCC	Replacement Emulation Solutions 44-pin PLCC adapter for the discontinued POD-51EH-C541U. Plugs into a 44-pin PLCC socket.	**ES/180-3900-00**

Adapters for 931xX Pods

Replacement 64-pin PQFP	Replacement adapter for the discontinued POD-931xX-12 pods, solder-down, for 64-pin PQFP package.	**ES/180-1400-00**
Replacement 64-pin SDIP	Replacement adapter for the discontinued POD-931xX-12 pods, solder-down, for 64-pin SDIP package.	**ES/180-1400-01**
Replacement 68-pin PLCC	Replacement adapter for the discontinued POD-931xX-12 pods, plugs into 68-pin PLCC socket.	**ES/180-3950-10**

Miscellaneous Options: Cables and Extenders

Extractor	Extractor tool for PLCC parts.		**QILEXT-1**
Wires	E-Z-Hook 203XM-12-GRN wires for trace. E-Z-Hook is a registered trademark of Tektest, Inc.	$5 each	**EMUL51-PC/ EZ**
18 inch cable	For Pods 51HB, 51T and 51TS running above 18 MHz in X2 mode or above 33 MHz in X1 mode. 18-inch substitute for 5-foot pod cable as part of an emulator order. Part number is CBL-18. If ordered in addition to the normal system. *If you Substitute the normal 5-foot cable for the 18-inch cable there will be no cost.*		**EMUL-PC/ CBL18**
10 foot substitute cable	10-foot substitute for 5-foot pod cable as part of an emulator order. Augat SF250-122A0-B2. Recommended only for External Mode pods 20 MHz or lower. Not recommended for special emulation pods, hooks mode pods, 80C320, EA, HF, or 24 MHz or faster systems.		**EMUL-PC/ CBL10-S**
additional 10 foot cable	Additional 10-foot pod cable. Augat SF250-122A0-B2. Recommended only for external mode pods 20 MHz or lower. Not recommended for special emulation pods, hooks mode pods, 80C320, EA, HF, or 24-MHz or faster systems.		**EMUL-PC/ CBL10-A**
Replacement 5 foot cable	Replacement 5-foot pod cable. Augat SF250-062A0-162.		**EMUL-PC / CBL5-A**

Software Support Packages

Compiler Packages

Altium

C-Compiler, PL/M Compiler

TASKING 8051 Family C-Compiler, Assembler, Linker, Simulator and EDE Package. Includes editor (Tasking P/N TK008-002). **TASKING/ C51PKG**

Archimedes Software, Inc.

C-Compilers, Simulators

Professional Integrated Development Suite C-8051 and C251 C-Compilers with floating point support, assemblers, linkers, librarians, and libraries, SimCASE Windows Interface Simulators/Debuggers for 8051 and 251, Windows Development Environment. It runs under Windows 95 and NT. **ARCHM/ IDS-51/251V6-NT**

Professional C-8051 C-Compiler with floating point support, assembler, linker, librarian, libraries, and Windows Development Environment. It runs under Windows 95 and NT. **ARCHM/ C-8051V6-NT**

StartRight 8051 C-Compiler (does not include floating point support), assembler, linker, support for code space up to 16K bytes, librarian, Windows interface Simulator/Debugger, Windows Integrated Development Environment. **ARCHM/ IDE-8051-RITE**

StartRight 8051 assembler, linker, support for code space up to 16K bytes, librarian, DOS interface Simulator/Debugger, DOS Development Environment. **ARCHM/ A-8051-RITE**

Compiler Packages (continued)

ChipTools, Inc.

Debugger Interface, Simulators

ChipView is a High-Level Debugger, Keypress-compatible with Borland's Turbo Debugger. ChipView supports C-compilers from Archimedes, BSO/Tasking, Franklin, IAR, and Keil and supports PL/M-51. The Emulator interface supports Standard and Advanced Emulator Units, Bankswitching, Standard and Advanced Trace Options, and Nohau HSP chassis configurations. (Not implemented: Performance Profiling.)

ChipTools ChipView-51 High-Level/Low-Level Debugger Emulator interface for EMUL51-PC (Windows version).	**CHIPTOOLS/ CVX51W-NOH**
ChipTools ChipView-x51 High-Performance Simulator. Single user license	**CHIPTOOLS/ CVX51W-S**
ChipTools ChipView-x51 Combo of S and NOH. Single user license	**CHIPTOOLS/ CVX51W-SNOH**
RTX-51 debug support add-on for ChipView-x51.	**CHIPTOOLS/ CVX51W-RTX**
CV51-S (V3.0 or later) to CVX51W-S upgrade.	**CHIPTOOLS/ CVX51W-S-UPG**
CV51-NOH (V3.0 or later) to CVX51W-NOH upgrade.	**CHIPTOOLS/ CVX51W-NOH-UPG**
Package of five upgrades from CV51-S (V3.0 or later) to CVX51W-S.	**CHIPTOOLS/ CVX51W-S-UPKIT**
Package of five upgrades from CV51-NOH (V3.0 or later) to CVX51W-NOH.	**CHIPTOOLS/ CVX51W-NOH-UPKIT**
ChipView-x51 for EMUL51 Subscription (12 months).	**CVX51W-NOH-SUB**

HI-TECH Software

C-Compiler

ANSI C Compiler and Assembler; HI-TECH Professional Development environment (HPD); library with source code, linker. DOS.	**HI-TECH/8051C**

IAR Systems Software, Inc.

C-Compilers, Development Kits

Embedded WorkbenchKit contains ANSI optimized C compiler, C-SPY simulator, relocatable macro assembler, linker, librarian, complete ANSI runtime libraries and a fully integrated development environment under Win95/98/NT.	**IAR/ EW8051**

Compiler Packages (continued)

Keil Software, Inc.

C-Compiler, Assembler, Development Kits

C-Compiler C51, Assembler A51, Banking Linker BL51, libraries, library manager, µVision/51 environment, and editor for Windows.	**KEIL/ CA51**
Macro Assembler A51, Banking Linker BL51, libraries, library manager, µVision/51 environment, editor, and make for Windows.	**KEIL/ A51**
Developer's Kit. All items in CA51, plus dScope-51 simulator with target monitor for Windows.	**KEIL/ DK51**
Professional Kit for Windows. All items in DK51, plus tiny real-time executive RTX-51-Tiny and Windows versions of µVision/51 and dScope-51.	**KEIL/ PK51**
RTX51 full V7 RTOS . 8051 Real-Time Operating System with CAN library.	**KEIL/ FR51**
FR51 Upgrade. Upgrade from previous FR51.	**KEIL/ UFR51**

Keil is a trademark of Keil.

Raisonance

C-Compiler, Assembler, Development Kits

Includes IDE, compiler, assembler, linker, librarian, utilities.	**RAISONANCE/RC51**
Includes RC51 package and simulator/ROM debugger.	**RAISONANCE/RC51S**
Includes RC51S package, and Raisonance TINY RTOS.	**RAISONANCE/RC51SR**

Raisonance is a trademark of Raisonance, SA.

RTOS Packages

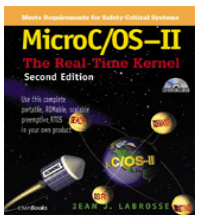
CMX Systems, Inc.

CMX-RTX is a truly preemptive, multi-tasking, RTOS supporting the entire HC12 microcontroller family. This RTOS offers the smallest footprint, the fastest context switching times, and the shortest interrupt latency times available on the market today. Each additional user is $1,350 each. If you want the product developed specifically for your site, the cost would be $5,000.	**8051-CMX-RTX**
CMXKAware is an Active X object that runs in conjunction with the Seehau debugger software. It presents all of the RTOS specific information on the screen. This RTOS debugging module can control the emulator. This feature exists as a working screen shot that can be viewed in the Seehau software package. Access it by clicking on - View/RealtimeOS/Select/CMXKAware. No target resources are used.	**8051-CMXKAware**

CMX Systems is a trademark of CMX Systems, Inc.

Micrium, Inc.

MicroC/OS-II RTOS 600 page book by Jean Labrosse. This includes a CD-ROM with source code. ISBN 1-57820-103-9. **MicroC/OS-II**



Micrium is a trademark of Micrium, Inc.

Extended Hardware Warranties

Purchase of each major EMUL51–PC item is covered by a one-year warranty as described elsewhere in this list. At the end of the first year, an additional year of hardware service coverage is available. Coverage must be continuous and is not available if coverage has lapsed. An additional year of coverage can also be purchased each year at the time an additional paid year's coverage ends.

No warranty expiration reminder notices will be sent to customers by Nohau.

For a Standard, Advanced, or Special Emulator Unit

For a Standard, Advanced or Enhanced Trace Option.

For a pod. Special emulation (bondout) pods are warranted for one replacement if Nohau determines that the failure was not due to damage caused by the user's action.

For a HSP Chassis unit, box board card and cable.

Non-Warranty Repairs

Repair service for units beyond an applicable initial one-year warranty period, repairs not covered by that warranty, or for customers who have elected to not carry an extended hardware warranty. The hourly rate includes the parts, with the exception of bondouts and some adapters.

* **Hourly rate**
* **Minimum charge**

Maximum charge One half the purchase

EMUL51-PC Parts List

Discontinued Parts

Some parts are still available for order even though they are officially discontinued. Please check with ICE Technology in California for availability: sales@icetech.com or 800.686.6428 or 650.375.0409.

POD-C51KB
POD-L51I-16
POD-L51I-20
POD-C054
POD-CL410
POD-C517B-PGA
POD-532-PGA
POD-C562-PGA-16
POD-C576-16
POD-C576U-16
POD-CL580
POD-C592-PGA
POD-C598-KIT
POD-C751
POD-C751-16
POD-C752
POD-C592-PGA-16
POD-5001-16
POD-51EH-C541U-12
POD-C152-PGA
POD-C152-PGA-16
POD-C517A-PGA-18
POD-C537-PGA
POD-CL580EX-16
POD-C321
POD-C154
POD-C154-16
EMUL51-PC/ADAP5001-DIP40
EMUL51-PC/DIP28-ISO
EMUL51-PC/DIP40-Once-PLCC44
EMUL51-PC/PGA68-DIP64
EMUL51-PC/PGA84-PLCC68-515A
PM51-EH-C541U
POD-C537-PGA-16
POD-535-PGA
EMUL51-PC/ DIP24-PLCC28
EMUL51-PC/ EXT-DIP24-PLCC28
EMUL51-PC/ EXT-DIP28
EMUL51-PC/ DIP28-PLCC28
EMUL51-PC/ DIP28-DIP24-ADAP
POD-C535-PGA
EMUL51-PC/ EXT-DIP24
POD-C535-PGA-16
EMUL51-PC/PGA84-PLCC68-515/535
EMUL51-PC/PGA84-PLCC84
EMUL51-PC/PGA84-ISO
EMUL51-PC/AD-502
EMUL51-PC/AD-503
ET/EPP-064-QF09-LG
EDI/68PG/80QFR31-SD-592/598
EMUL51-PC/DIP24-ISO
POD-931AX-12
POD-931HX-12
POD-C51GB-PGA
POD-C51GB-PGA-16
POD-31-S
POD-C31-S-1
POD-C32-S-16
POD-C252/ C51FA-S-16
MCK44-PGA/PLCC
MCK/ ADP-68PGA/PLCC
EMUL51-PC/ SYNC
PM51-EH-TS52X2
PM51-EH-TS54X2
PM51-EH-TS58X2
PM51-EH-TS51RB2
PM51-EH-TS51RC2
PM51-EH-TS51RD2
PM51-EH-TS51U2
POD-TS80C51RA2
POD-TS80C31RD2
POD-TS80C51U2

Where to get help

For help in configuring your system, choosing an emulator, a pod board, adapters, a trace card or any other items please contact Nohau or your local representative.

Telephone: 800.686.6428 or 650.375.0409
FAX: 650.375.8666
~ Please use this fax number to fax purchase orders

Sales: sales@icetech.com
Support: support@icetech.com
Website: www.icetech.com

EMUL51-PC Parts List

Prices are subject to change without notice. Depending on stock availability, orders placed before 12 noon Pacific Time according to ICE Technology terms and conditions are shipped the same day. Orders placed after noon are shipped the following business day. Unless otherwise noted, the EMUL51-PC emulator, trace, pod, emulator cable, and Nohau HSP chassis hardware are sold with a one-year warranty, except for special emulation pods. Special emulation pods are warranted for one replacement if ICE Technology determines that the failure was not due to damage caused by the user's action. Optional adapters, cables, and extenders are sold with a 90-day warranty, except that such parts might be subject to a repair charge if damage was caused by the user's actions. ICE Technology makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. In no event will Nohau be liable for consequential damages. Third-party software and programmers sold by ICE Technologycarry manufacturers' warranties. Technical support to be provided by IICE Technology representatives where applicable.