



---

# Technological Arts Inc.

*Technological Arts*

## Adapt9S12DP512M2 Module, Full Configuration

USD \$159.00



### Product Info

Adapt9S12D is a compact, modular implementation of Freescale's flagship 9S12D family of microcontroller chips. The HCS12 family is backward-compatible with 68HC12 (and 68HC11), and utilizes the latest process technology. By shrinking feature size, more functionality can be put on a chip, reducing power consumption and cost, while increasing operating speed. Adapt9S12D is an ideal low-cost platform that brings these advantages within easy reach of engineers, students, and hobbyists. The flexible design of the entire "Adapt" series microcontroller products accommodates all facets of training, evaluation, development, prototyping, and even volume production.

Implemented in an "AdaptS12" form factor board, Adapt9S12D is compatible with an entire range of application cards, prototyping cards, and backplanes, and usable with solderless breadboards ("proto boards"). The Full configuration includes all necessary support circuitry for the MCU, as well as a 5-Volt regulator, RS232, RS485, and two CAN transceivers on-board.

### Product Details

**MCU Overview:** The MC9S12DP512 is a 16-bit device composed of standard on-chip peripherals including a 16-bit central processing unit (HCS12 CPU), 512K bytes of Flash EEPROM, 14K bytes of RAM, 4K bytes of EEPROM, 2 asynchronous serial communications interfaces (SCI), three serial peripheral interfaces (SPI), an

8 channel IC/OC enhanced capture timer, two 8-channel, 10-bit analog-to-digital converters (ADC), an 8-channel pulse-width modulator (PWM), 29 discrete digital I/O channels (Port A, Port B, Port K and Port E), 20 discrete digital I/O lines with interrupt and wakeup capability, five CAN 2.0 A, B software compatible modules (MSCAN12), and an Inter-IC Bus.

### Module Features:

- surface-mounted MC9S12DP512 112-pin MCU
- 2.30" x 3.25" AdaptS12 form-factor
- two 50-pin connectors bring out all I/O pins of the MCU
- all I/O pins on a 0.1" grid for easy interfacing to standard perfboard
- versatile connector design for use with solderless breadboards, prototyping cards, or embedding into your design
- RS232 transceivers provided for both SCI channels
- RS485 transceiver accommodated for second SCI channel
- two physical-layer high-speed CAN transceivers (PCA82C250)
- 16 MHz crystal, but internal bus can run up to 24MHz (using on-chip PLL)
- accommodates optional user-supplied oscillator
- Background Debug Mode (BDM) fully supported for loading and debugging user code (requires BDM pod)
- universal 6-pin/10-pin BDM connectors support BDM pods from multiple vendors
- program in C, BASIC, Forth, assembler, etc.
- no special Flash programming voltage or switch required
- fast in-circuit programming
- on-chip bootloader/monitor (D-Bug12) for quick loading of user programs
- ideal development platform for all "D-" and "A-" series 9S12 variants (eg. 'DP256, 'DG256, 'DA256, etc.)  
- requires BDM pod
- 500mA, automotive grade, low-dropout 5V regulator on-board (underneath)
- includes low-voltage inhibit reset circuit + reset button
- accommodates optional precision voltage reference chip for analog-to-digital converters
- accommodates optional BOOT/RUN switch for alternate loaders
- second I/O connector accommodates memory expansion bus

### What's included:

- assembled, tested module, pre-programmed with D-Bug12
- red and black power connector wire (#PCJ1-8)
- printed schematic/pinout sheet
- data sheets, manuals, and all other resources for this product can be found by clicking on the blue Resources tab above

If you require mating connectors, browse Connectors in the Components category at the left. For power supplies, browse the Accessories category.

### **Before you order...**

**All of our standard connector options** are available for this board. The product photo above shows "F1" connector on both H1 and H2. Please make your choice of connectors before adding this item to your shopping cart. Otherwise, the board will be shipped with the default option (no connectors on H1 and H2).

### Here are a few ways you can use Adapt9S12DP512:

## **- RAM-based code development using DBug12 monitor/debugger**

Using the Flash-resident DBug12 supplied, you can quickly load programs into the user portion of on-chip RAM or EEPROM and run them. With this method, you will have a limited amount of program memory space, but you'll still be able to use interrupts because DBug12 implements a RAM-based pseudo-vector table. Other useful debugging features available in this configuration: insert breakpoints, examine/modify memory and registers, disassemble a range of memory, and perform line-by-line assembly. Get the DBug12 Reference Guide, below, for more details.

## **- Flash-based code development using on-chip bootloader**

With the Flash-resident bootloader portion of DBug12, you'll be able to load your program into Flash via the serial port using any terminal program, at baud rates up to 115K. The entire 512K Flash can be programmed in under one minute! Just send your .s19 file, move the Mode Select jumpers to EVB mode, and press reset when you're done. Your code runs from Flash, and interrupts are supported (via Flash-based pseudo vectors, since the D-Bug12 bootloader resides in the vector space of the MCU). A program you load into Flash this way will run every time you apply power or reset the board in Flash Mode. In this mode, the Monitor portion of DBug12 is erased (you can always load it back in again later if you need it).

## **- Flash-based code development using a BDM pod**

If you want to take advantage of the debug/monitor functions of DBug12, but you'd like to use all the Flash for your program, you can use a BDM pod (such as MicroBDM12LX) to erase and load Flash with your program. The entire 512K Flash can be used, because the Flash-resident bootloader is no longer needed (therefore pseudo-vectors aren't required either). Just use the FBULK and FLOAD commands to erase and load your programs.

## **- Low-cost Solution for C source-level code debugging with ICC12, NoICE12, and a MicroBDM12LX pod**

Now you can take advantage of the debug/monitor functions of NoICE12 to perform source-level debugging with ImageCraft's ICC12 C compilers, using our MicroBDM12LX. This combination offers the lowest-cost toolchain on the market!

Â

[Vendor Information](#)