



Technological Arts Inc.

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Adapt912B

Product Info

Features:

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- compact (2.25 inches x 3.25 inches) modular implementation of Motorola's 68HC912B32 microcontroller:
 - 53 I/O lines, all programmable as input or output
 - 10 input-only lines
 - 4-channel (8-bit) or 2-channel (16-bit) PWM
 - 8-channel, 10-bit analog-to-digital converter
 - memory map:
 - 32K Flash
 - 768 bytes EEPROM
 - 1K RAM on-chip
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 - J1850 (or MSCAN on 68HC912BC32)
 - one Serial Communications Interface (SCI)
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- SCI switch-selectable between RS232 (9-pin D-sub) and RS485 (2-pin terminal block) interfaces
- versatile connector design for use with solderless breadboards, prototyping cards, or embedding into your design
- virtual plug-in replacement for Adapt11 family of boards (minor differences)
- primary 50-pin connector for dedicated I/O
- secondary 50-pin connector for additional I/O or expanded mode memory bus
- memory expandable offboard to 64K with 8-bit or 16-bit data bus
- 16-bit memory expansion board available
- Background Debug Mode (BDM) fully supported for loading and debugging your code
- universal 6-pin/10-pin BDM connectors support BDM pods from multiple vendors
- doubles as a BDM pod, (has BDM IN and BDM OUT connectors)
- D-Bug12 firmware on-chip (same as Motorola's EVB912) permits operation in BDM Pod mode, JMP-EE, and EVB mode
- program in C, BASIC, or assembler (or any other language available for HC12)

- fully compatible with ImageCraft ICC12 (68HC12 C cross-compiler)
- convenient on-board Vfp generator circuit for Flash Erase/Program voltage
- 500mA 5V regulator on-board, delivers adequate current for most applications

Product Details

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Adapt912B(C)32

Adapt912B32 is functionally identical to the Motorola EVB912B32 Evaluation Board-- with a few significant improvements. It is in a compact, modular *Adapt12* form factor, compatible with prototyping cards, backplanes, and solderless breadboards (*proto boards*), making it a lot more versatile. It also includes a 5-volt regulator, a Vfp generator circuit for Flash Erase/Program voltage, and both RS485 and RS232 transceivers (jumper-selectable) on board. Like the EVB912B32, Adapt912B32 has Motorola's D-Bug12 monitor/debugger resident in Flash. This program has four jumper-selectable modes of operation, invoked when the processor comes out of reset. Modes 1, 3, and 4 require a dumb terminal, or the use of a terminal program on a host computer (PC, Mac, Amiga, workstation, etc.).

Mode Description

- 1)Â Â EVB Â Â Â Â Â Â Â Â Â runs the program in Flash (D-Bug12, if you haven't replaced it)
- 2)Â Â JMP-EE Â Â Â Â Â jumps to the start of on-chip EEPROM to execute a user program
- 3)Â Â POD Â Â Â Â Â Â Â Â Â D-Bug12 commands operate on a target HC12 board, connected via the BDM OUT connector;
allows you to load/modify/trace/single-step a program in a target HC12 system's Flash/EEPROM/RAM or external memory
- 4)Â Â BOOTLOAD Â Â using a terminal program, you can erase Flash or load a program (s-record) into FLASH or EEPROM

Here are a few ways you can use Adapt912:

1) As a standalone target, you can utilize D-Bug12 to write/debug programs in the 768-byte on-chip EEPROM. Once you are comfortable working with the chip, you can write larger applications and program them into Flash (erasing D-Bug12 first). There is a small write-protected *bootblock* in Flash, which contains the BOOTLOADER code implemented by Mode4, above, so if you wish to re-load D-Bug12 at some later time, it is quite easy to do so. By the way, the Flash is erasable/programmable thousands of times under normal operating temperatures and voltages, so you don't have to worry about wearing it out anytime soon. A convenient switch is provided to apply Vfp when required. Since Adapt912B32 module has a Vfp generator on-board, you don't need to provide a 12V regulated supply. Any DC supply between 8 and 15 V can be used. The module draws a nominal 50 mA, so a commonly-available 9VDC adapter with a 200mA or higher rating will work fine. For portable applications, an 8.4 V or higher NiCd pack will be adequate.

2) As a Background Debug Mode (BDM) Pod, Adapt912B32 functions as an interface between a terminal and any 'HC12 board (target). Just connect the Adapt912B32 *BDM OUT* connector to the target board's *BDM IN* connector via a ribbon cable (supplied with Starter Package). The target board could be another Adapt912B32, an Adapt812, Adapt812DX, Adapt912D60, Adapt912DG128, or any other 'HC12 board that has a 6- or 10-pin BDM interface connector. The host for using the BDM Pod can be any type of dumb terminal, or any computer running a terminal program. The BDM pod will receive its 5V operating power from the target board.

(3) As an Expanded Mode combo, utilizing the Adapt912MX1 RAM+ memory expansion card. This configuration gives you a lot more memory to work with, and a lot more code development flexibility. See the Adapt912MX1 page, and Application Note for details.

Starter Package:

- fully assembled and tested module, with D-Bug12 and bootloader installed in Flash
- module supplied with -RA (H1) and -M (H2) connector options (or you can specify)
- disk includes documentation, SBASIC compiler and AS12 assembler
- Adapt912B32 User's Guide
- full schematic, pinout and dimensional drawing
- ADHDR50-F adapter (lets you plug Adapt912 into your solderless breadboard for easy interfacing)
- standard 9-pin serial cable
- ribbon cable for BDM interface

Want to know more? Ready to buy? Click on the various folder icons at the top of the page to see all available Adapt912B32 modules, evaluation packages, application cards, and accessories.

[Documentation](#)

- [Pinout and Component Layout Diagram](#)
- [Adapt912B32 Starter Package Manual](#)

912B32 MCU Documentation

- [M68HC12B Data Sheet](#)
- [CPU12 Reference Guide](#)
- [CPU12 Reference Manual](#)
- [Freescale 912B32 webpage](#)
- [Pinout and Feature Diagram](#)
- [Starter Package Manual](#)
- [Using Hyperterminal](#)
- [Using MiniIDE](#)
- [Using the RAM Card](#)

[Resources](#)

Be sure to visit our [Support Library](#) for the latest manuals, data sheets, app notes, and code examples

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[MiniIDE: free IDE with assembler \(Windows\)](#)

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[SBASIC: free BASIC Compiler \(DOS\)](#)

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[ImageCraft C Compiler and IDE \(Windows\)](#)

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[Using MiniIDE](#)

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[Using Hyperterminal](#)

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[Using the RAM Add-on Board](#)

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[Seattle Robotics Society newsletter](#)

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[Tennessee Tech University Mechatronics Course Material](#)

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[Alex Brown's winning entry in 2001 Trinity Firefighting Robot Competition](#) based on Adapt912B32

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Adapt912B32 MCU Module
USD \$179.00

Enhanced Adapt912 module, with on-board Vfp generator circuit. [\[Product Details...\]](#)



Adapt912B32 Starter Package (with Vfp generator)
USD \$199.00

[\[Product Details...\]](#)



Adapt912 low-cost MCU Module (no Vfp generator)
USD \$149.00

Original Adapt912 module (no Vfp generator circuit). [\[Product Details...\]](#)



Adapt912 MX1 RAM Expansion Card
USD \$69.00

[\[Product Details...\]](#)

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