



Technological Arts Inc.

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Adapt9S12XEP100M2 XGATE MCU Module

USD \$199.00



Product Info

Overview: The Freescale 9S12XEP microcontroller is an enhancement of the 9S12XD, with a CPU12X core operating at up to 50 MHz, an XGATE RISC co-processor operating up to 100 Mhz, larger on-chip memory resources (up to 1MB Flash and 64K RAM), enhanced memory access and error-correcting capabilities, additional addressing modes, and faster and higher-resolution analog-to-digital converter subsystems (12-bit resolution and 3us conversion time). Adapt9S12XEP is the latest member of the "Adapt" Modular Prototyping System (AMPS) pioneered by Technological Arts. The flexible design of this system supports all aspects of evaluation, training, product development, proof-of-concept prototyping, and even volume production.

MCU Features: The MC9S12XEP100 used on this module combines a full suite of on-chip peripherals, including 1M bytes of Flash, 64K bytes of RAM, 4K bytes of EEPROM, six asynchronous serial communication interfaces (SCIs), three serial peripheral interfaces (SPIs), an 8-channel Input Capture/Output Compare enhanced capture timer, an 8-channel, 12-bit analog-to-digital converter, a 16-channel, 12-bit analog-to-digital converter, an 8-channel pulse-width modulator (PWM), five CAN 2.0A, B software compatible modules (MSCAN12), two Inter-IC Bus blocks, and a Periodic Interrupt Timer. The MC9S12XEP100 has full 16-bit data paths throughout. *Note, however, that address/data bus signals are not pinned out in the 112-pin version of the chip which is used on Adapt9S12XEP.*

The following list highlights the differences between the S12XE family and the S12 family. ⚡ 50MHz operation

- ⚡ 100MHz XGATE peripheral coprocessor
- ⚡ extended CPU instruction set
- ⚡ additional Condition Code Register
- ⚡ programmable eight level interrupt controller
- ⚡ enhanced Memory Management Controller
- ⚡ new four-channel Periodic Interrupt Timer
- ⚡ improved Enhanced Capture Timer with modulus prescaler options
- ⚡ new low-power RC trigger and fast recovery from STOP modes
- ⚡ decimal prescaler for Real Time Interrupt module
- ⚡ improved SCI featuring hardware bit manipulation for LIN
- ⚡ enhanced trigger source options for Analog to Digital Converters
- ⚡ amplitude-controlled Pierce oscillator
- ⚡ wider and deeper debug module

Product Details

Module Overview: Implemented in an "AdaptS12" form factor board, Adapt9S12XEP100 is compatible with an entire range of application cards, prototyping cards, and backplanes, and usable with solderless breadboards. The module includes all necessary support circuitry for the MCU, as well as a 5-Volt regulator, RS232, RS485, and two CAN transceivers on-board.

- MC9S12XEP100 MCU (112-pin)
- 4 MHz crystal
- bus speed up to 50MHz (using on-chip PLL)
- accommodates optional user-supplied oscillator
- automotive-grade low-dropout 5V regulator (mounted on rear)
- 64K RAM
- 4K high-endurance EEPROM
- 1M high-endurance Flash
- independent Flash blocks permit execution from one block while programming/erasing another block
- fast in-circuit programming
- Background Debug Mode (BDM) fully supported for loading and debugging user code
- universal 6-pin/10-pin BDM connectors support BDM pods from multiple vendors
- RS232 transceivers provided for two SCI channels
- RS485 transceiver provided for a third SCI channel
- two physical-layer high-speed CAN transceivers (PCA82C250)
- one I2C interface
- 8-channel Input Capture/Output Compare Enhanced Capture Timer
- dual 8-channel 12-bit analog-to-digital converter subsystems
- 8-channel PWM subsystem
- periodic interrupt timer
- includes low-voltage inhibit reset circuit + reset button
- -40C to +85C temperature range
- accommodates optional precision voltage reference chip for analog-to-digital converters
- 2.30" x 3.25" standard AdaptS12 form-factor card

- two 50-pin connectors (designated H1 and H2) 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
 - stackable vertically or horizontally
 - corner mounting holes for #4 hardware
 - ideal development platform for all 9S12XE variants
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- assembled, tested module, with Technological Arts serial monitor pre-programmed in flash (ready for use with uBug12JE)
 - red and black power connector wire (#PCJ1-8)
 - printed schematic/pinout sheet
 - find data sheets, manuals, and all other resources for this product by clicking on the 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...

This is an advanced product, for experienced users. We recommend using a compatible BDM pod (such as our USBDMMLT) to assist you with product development. The [Special Edition of CodeWarrior for S12\(X\)](#) is a good starting point for C or assembler programmers.

All of our [standard connector options](#) are available for this board. The product photo above shows "RA1" connector style populated on both H1 and H2. Please make your choice of connector styles before adding this item to your shopping cart. Otherwise, the board will be shipped with the default option (i.e. no connectors on H1 and H2).

Attention volume users! We can customize this module to suit your needs (e.g. different crystal/oscillator, different MCU variant, selectively populated communications transceivers, etc.). Please contact us for a quote on volumes of 25+ units.

[Resources](#)

- [Data Sheet and Schematic](#)

- [HCS12XE Family Fact Sheet](#)
- [HCS12 and S12X Family Compatibility](#)
- [XGATE Overview](#)
- [HCS12XE Product Family Brief](#)

- [XGATE Tutorial](#)
 - [MCU Reference Manual and Device Guide](#)
 - [S12XD and S12XE Family Compatibility](#)
 - [Freescale S12XE web page](#)
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- [uBug12JE: a free Java-based multi-platform GUI designed for working with the on-chip serial monitor \(no BDM pod required\)](#)
 - [Demo C compiler for S12X from Freescale \(32K C code limit; unlimited assembler\)](#)
 - [Learn Programming in C with CodeWarrior](#)
 - [Cosmic C Compiler](#)
 - [QuantiPhi \(Low-Level Driver Configuration and Generation Tool\) for Simulink](#)
 - [Compiler Build Tools](#)

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[Vendor Information](#)