

Stellaris® Microcontrollers

Introducing ARM® Cortex™-M3 Microcontrollers to Academia



The Stellaris® family of ARM® Cortex™-M3 microcontrollers (MCUs) provide the perfect way to introduce this popular industry-standard architecture to students. Stellaris MCUs provides over 30 useful development kits and expansion cards, supported by Code Composer Studio and other software development tools, learning materials, books and industry-leading technical support. TI is the only company to offer an integrated path from year 1 “Basic MCU” classes to “Advanced Control” or “Multi-Core DSP” classes at MSc and PhD levels with one consistent software environment.

Why Teach with Stellaris?

Software

Modern microcontrollers have become very complicated devices with many high performance peripherals. StellarisWare™ makes this easy by supplying you with well documented, tested, and easy to modify blocks of code that allow students to initialize complex features like Ethernet or USB with a few simple function calls. However, it is also possible to customize these features and get into the bits thanks to the well documented code that is even included in ROM on some chips.

Features

With the extremely efficient ARM Cortex-M3 at its heart, the Stellaris designers were free to focus on creating the best system of integrated analog and digital peripherals in the industry. Features like integrated 10/100 Ethernet MAC and PHY (Physical Layer) allow users to create web servers and high speed networked communication with a single chip! In addition, the highly integrated motion control modules include PWM, Dead Band Generators, Quadrature Encoders, interrupt generators, and comparators allowing users to attach many different kinds of motors and be up and running in moments.

Support

Documentation is the name of the game. If an average student can't muddle through the datasheet, then there will be a need for extra teaching resources most Universities do not have. With Stellaris, every datasheet comes with a clickable Table of Contents to *every single piece of technical detail for every part!* No more switching between datasheets, code examples, User's guides and other Reference sheets. Finally, if a problem is encountered, TI keeps our [Engineer-2-Engineer](#) forum staffed and answers most questions within 24 hours. Visit www.e2e.ti.com

Tools for Teaching

These evaluation kits enable quick analysis, prototype development and implementation of a wide variety of designs. The **evaluation kits contain all cables, software, and documentation** needed to develop and run applications for Stellaris microcontrollers quickly and easily.

Evalbot Robotics Platform

With Code Composer Studio

Part#: EKS-EVALBOT

\$149

www.ti.com/evalbot

In one little robotic evaluation kit, you can experience the Stellaris ARM® Cortex™-M3-based [LM3S9B92](#) MCU in real-world applications that leverage the processor's integrated peripherals. The board also uses a range of Texas Instruments' analog components for motor drive, power supply, and communications functions. After a few minutes of assembly, the EVALBOT's electronics are ready-to-run.

- Also a textbook available for bundle with the book
- Works with Code Composer, IAR, Keil, CodeRed, and Code Sourcery Development environments



LM3S1968 Ethernet Evaluation Kit

With Code Composer Studio

Part#: EKS-LM3S1968

\$59

<http://focus.ti.com/docs/toolsw/folders/print/eks-lm3s1968.html>

Features:

- Fully integrated 10/100 Ethernet to demonstrate an embedded web server
- OLED Display with 128x64 pixel resolution and 16 shades of gray
- 8 Ω Magnetic speaker with amplifier
- Up to 47 I/O available on breakout pads
- MicroSD card slot



LM3S3748 USB Evaluation Kit

With Code Composer Studio

Part#: EKS-LM3S3748

\$109

<http://focus.ti.com/docs/toolsw/folders/print/ek-lm3s3748.html>

The Stellaris LM3S3748 kit is a compact and versatile evaluation platform. Its design highlights the LM3S3748 microcontroller's key feature, a USB 2.0 full speed (12 Mbps) Host/Device controller. **This kit also includes:**

- 50-MHz Stellaris LM3S3748 microcontroller with 128 KB Flash memory
- 2-channel oscilloscope quick-start application
- Color LCD graphics display with 128 x 128 pixel resolution
- 8Ω magnetic speaker with amplifier
- microSD card slot



EKT-LM3S9B92 Evaluation Kit

With Code Composer Studio

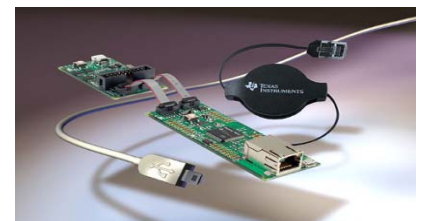
Part #: EKS-LM3S9B92

\$99

<http://focus.ti.com/docs/toolsw/folders/print/ek-lm3s9b92.html>

This Ethernet + USB-OTG Evaluation Kit is a low-cost evaluation platform for the LM3S9B92 microcontroller.

- Small form factor - just 36mm x 102mm
- LM3S9B92 high-performance (80 MHz) microcontroller with large memory
- Ethernet 10/100 port with two LED indicators
- USB 2.0 Full speed (12 Mbps) On-The-Go port for Host or Device applications
- Virtual serial communications port capability.



- Oversized board pads for GPIO access
- Detachable In-Circuit Debug Interface (ICDI) board can be used for programming and debugging other Luminary boards

LM3S811 Evaluation Kit

\$49

With Code Composer Studio

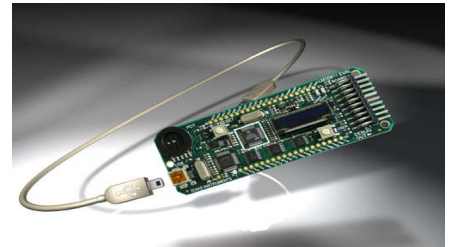
Part#: EKS-LM3S811

<http://focus.ti.com/docs/toolsw/folders/print/ek-lm3s811.html>

This is a compact and versatile evaluation platform for the Stellaris® LM3S811 microcontroller, and an In-Circuit Debug Interface (ICDI) for any Stellaris® microcontroller-based target board.

The EK-LM3S811 expansion board has the following features:

- 50 MHz Stellaris® LM3S811 ARM® Cortex™-M3-based microcontroller
- OLED graphics display with 96 x 16 pixel resolution
- User-programmable pushbutton and LED
- Reset pushbutton and power indicator LED Thumbwheel potentiometer for driving an Analog-to-Digital Converter (ADC) input



Tools for Research

LM3S9B96 Development Kit

\$449

Part#: DK-LM3S9B96

<http://focus.ti.com/docs/toolsw/folders/print/dk-lm3s9b96.html>

The LM3S9B96 is a member of the Stellaris® Tempest-class microcontroller family. In addition to new hardware to support these features, the DK-LM3S9B96 board includes the rich set of peripherals found on other Stellaris® boards. **Features:**

- LM3S9B96 with fully-integrated Ethernet, CAN, and USB OTG/Host/Device
- ARM® 10-pin JTAG debug connector with input and output modes
- MicroSD card interface w/ 1 GB MicroSD Card, 128 MB USB Flash Drive.
- External Peripheral Interface (EPI) for FPGA, CPLD, or M2M communication
- 8 MB SDR SDRAM module (attaches through the EPI signal breakouts)
- LM3S9B96 I/O available on labeled break-out pads
- Bright 3.5" QVGA LCD touch-screen display. Navigation POT switch and select pushbuttons



Expansion Boards for LM3S9B96 Development Kit:

Several other TI kits can be attached through the integrated board interconnects:

- **FPGA Expansion board** with video (<http://focus.ti.com/docs/toolsw/folders/print/dk-lm3s9b96-fpga.html>) **\$199**
 - Use the EPI to interface at high speed with a Xilinx Spartan 3E FPGA with 640x480 color camera module
 - Memory mapped LCD I/F, Graphical overlay with touch-screen capability
- **Flash and SRAM Memory Expansion Board** (<http://focus.ti.com/docs/toolsw/folders/print/dk-lm3s9b96-fs8.html>) **\$59**
 - Connect through EPI to add 8MB Flash and 1MB SRAM with memory mapped LCD Interface

Software

StellarisWare®

FREE
Part#: SW-LM3S
www.ti.com/stellarisware

StellarisWare makes it easy to develop applications with verified code. It is well documented, and provides a detailed software suite containing complete solutions for implementing the various functions on the Stellaris devices across all of the supported software environments. It includes:

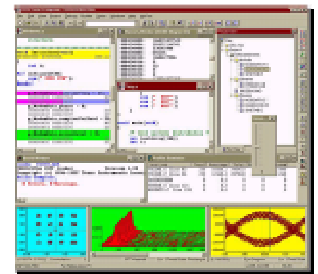
- Peripheral Driver Libraries for all of the on chip peripherals, and a USB Driver Library
- Third party stacks for Ethernet protocols including IEEE 1588
- Graphics Libraries for GUI design including touch-screen design
- RTOS (Real-Time Operating System) stacks and function libraries
- Code Examples (More than 30 for each evaluation board!)
- In-system programming support



Code Composer Studio

FREE FOR ACADEMIA
www.ti.com/ccs

Code Composer Studio provides the suite of tools necessary to develop and debug embedded applications on any Ti processor. It includes compilers for each of TI's device families, source code editor, project build environment, debugger, profiler, simulators and many other features. The CCS IDE is based on the Eclipse framework and provides a single user interface taking you through each step of the application development flow. Familiar tools and interfaces allow users to get started faster than ever before and add functionality to their application thanks to sophisticated productivity tools. The full version of this industry-leading IDE is available with 100 floating licenses free of charge for academia on request from the University Program.



Training Materials

The Stellaris® One Day Workshop

DOWNLOAD FREE
Additional Stellaris® Training Material
<http://www.ti.com/ww/eu/university/roms.html>

The Stellaris® One Day Workshop: Written by TI's internal training organization, this workshop is an introduction and technical overview of the TI Stellaris microcontroller family

Additional Stellaris® Training Material: Written by our Applications team, this provides work-session materials for the EK-LM3S8962 and EK-LM3S3748 Kits and training modules on connectivity, graphics, core systems, motor control and others.

Books

Micrium μ C/OS-III Real Time Kernel: This book teaches Real-Time OS basics through the use of the μ C/OS-III kernel and a wonderful student's robotics platform based on the LM3S9B92 chip with IAR tools
Written by: Jean J. Lebrosse & TI's Stellaris team Published by: Micrium (**\$199 incl. robot kit**)

The Definitive Guide to the Cortex M3 by Joseph Yiu:

This book describes the Cortex M3 architecture.
Written by ARM Architect Joseph Yiu, it includes a chapter about using the LM3S811 Kit.
Published by Newnes (**\$39 in the USA**)



Product Support

Worldwide <http://community.ti.com>

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