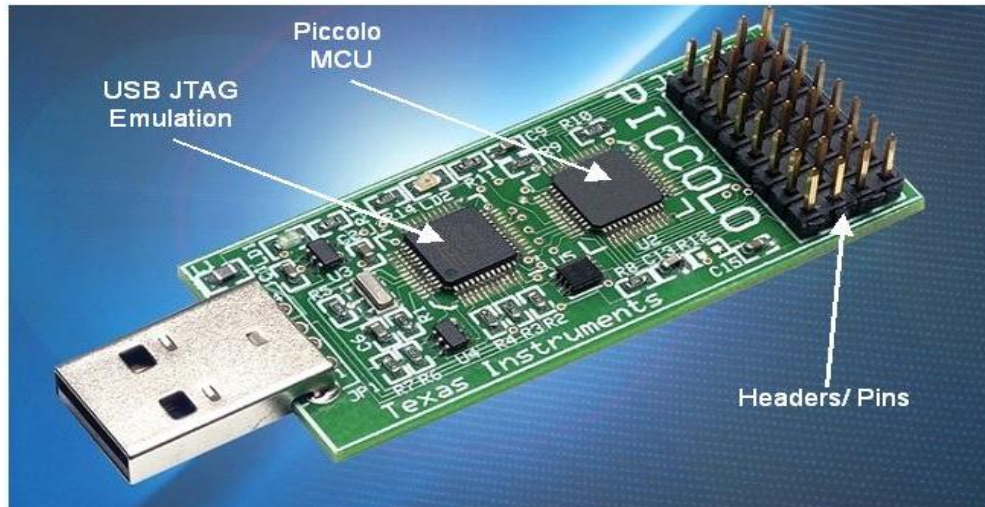


Real-Time Control

C2000 tools for projects and teaching



Above: TMDX20F28027 Piccolo controlSTICK Part#: TMDX28027USB \$39

Control applications are a very fertile area for University activities: robotics, mechatronics, electric drives, power conversion, renewable energy, Class D Audio Amplifiers....these are all applications that are using C2000 microcontrollers. These 32 bit devices span a wide range: from the very low-cost "Piccolo" to the high-performance floating-point 28335. This span overlaps 16 bit MCU applications at the low-end, up to traditional DSP applications such as filtering and audio using floating-point.

New tools like the Peripheral Explorer and Experimenters Kits make this an ideal teaching and projects platform. Used with Code Composer Studio and with links to MatLab™ and Simulink, these processors are easy to use. TI has also facilitated the creation of excellent teaching materials for these tools:

C2000 Teaching ROM

This CD-ROM provides a series of 16 modules with teaching material for the TMS320F2812. The contents include presentation slides, a textbook with 488 pages, along with procedures and solutions for laboratory exercises, all presented in source-code form to allow flexibility of use. The laboratory exercises are based on the TMS320F2812 eZdsp and the C programming language. Author Frank Bormann is a Lecturer in Automotive Electronics, Real-Time- Control and Digital Signal Processing at FH Zwickau, Germany.

Request you FREE ROM at: https://www-a.ti.com/apps/dspuniv/teaching_rom_request.asp

A new and enhanced revision of the existing C2000 Teaching ROM is currently in beta-test, which will be based on the TMS320F28335 floating point device. All new laboratory exercises will be based on a Texas Instruments hardware platform: The new TMS320F28335Control Card and a new experimental platform called "Peripheral Explorer Board".

The new C2000 Teaching ROM will cover all internal peripherals (ADC, PWM, Capture, Timer, the Interrupt system, watchdog timer), all communication channels (CAN, SPI, I2C, SCI, McBSP), the main features of the Integrated Design Environment (Code Composer Studio) and some typical application examples. It will be divided into a series of chapters; each of them will provide set of PowerPoint slides, a student textbook, procedures for laboratory exercises, templates and solution files for all laboratory exercises.

We expect to release this new version early in **2010**

C2000 For Teaching

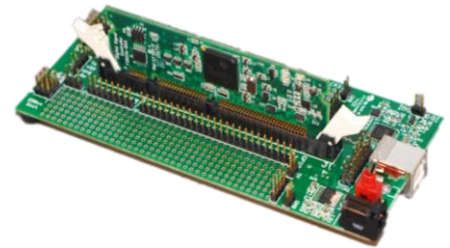
TMDSDOCK28335 Experimenter Kit

Part#: TMDSDOCK28335

\$49.50

<http://focus.ti.com/docs/toolsw/folders/print/tmdsdock28335.html>

The new C2000 Experimenter Kits from Texas Instruments are ideal products for OEMs to use for initial device exploration and testing. The 28335 Experimenter Kit has a docking station with access to all controlCARD signals, breadboard areas, RS-232, JTAG connector, and on board USB JTAG emulation. Each kit contains a 28335 controlCARD. The controlCARD is a complete board level module that utilizes an industry-standard DIMM form factor to provide a low-profile single-board controller solution. Kit is complete with Code Composer Studio™ IDE v3.3 C28x™ Free 32K Byte Version. C2000 applications software with example code and full hardware details also available. No JTAG emulator required, as docking station features on board USB JTAG emulation.



Features:

- TMS320F28335 MCU based controlCARD
- Docking station with on board USB JTAG emulation
- Code Composer Studio™ IDE v3.3, C28x™ Free 32KB Version
- Applications software and example code also available for download

TMS320F28335 eZdsp Starter Kit

Part#: TMDSEZ28335

\$459.02

<http://focus.ti.com/docs/toolsw/folders/print/tmdsez28335.html>

The F28335 eZdsp starter kit is a complete software development platform for the TMS320F2833x series of floating-point Digital Signal Controllers. The eZdsp kit includes an F28335 target board that features integrated JTAG emulation, 128Kx16 asynchronous SRAM, CAN 2.0 and RS-232 interfaces, and expansion headers that provide access to all F28335 I/O signals. Also included in the kit is the Code Composer Studio™ Integrated Development Environment, USB interface to the host PC, and a universal power supply. This single orderable part number supports all regions of the world.



Features:

- TMS320F28335 Floating-Point Digital Signal Controller
- 150 MHz operation
- 512 KB on-chip flash memory
- 68 KB on-chip RAM
- 12-bit ADC with 16 input channels
- 128k x 16 off-chip SRAM
- Clamshell socket for the F28335 DSC
- RS-232 interface with on-board transceiver and 9-pin DSUB connector
- CAN interface with on-board transceiver and 9-pin DSUB connector
- Multiple expansion connectors provide access to all F28335 I/O signals
- Embedded USB JTAG Controller
- Operates from a single 5V supply with provided AC adapter
- IEEE 1149.1 JTAG emulation connector

TMS320F28335 controlCARD

Part#: TMDSCNCD28335

\$69

<http://focus.ti.com/docs/toolsw/folders/print/tmdscncd28335.html>

The new C2000 controlCARDS from Texas Instruments are ideal products for OEMs to use for initial software development and short run builds for system prototypes, test stands, and many other projects that require easy access to high-performance controllers. The controlCARDS are complete board-level modules that utilize an industry-standard DIMM form factor to provide a low-profile single-board controller solution. All of the C2000 controlCARDS use the same 100-pin connector footprint to provide the analog and digital I/Os on-board controller and are completely interchangeable. Each controlCARD provides an isolated RS-232 interface for communications. The host system needs to provide only 5V power to the controlCARD.



Features:

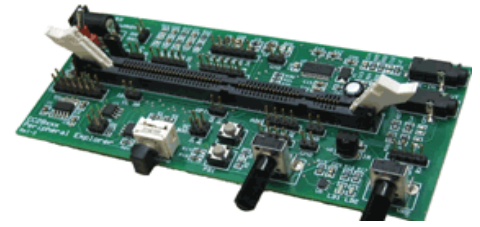
- TMS320F28335 Digital Signal Controller
- Small form factor - 9cm x 2.5cm
- Standard 100-pin DIMM interface
- 5V power supply required
- F28x analog I/O, digital I/O and JTAG signals at DIMM interface
- Isolated RS-232 interface
- Standalone JTAG emulator required for debug. Sold separately.

**C2000
Peripheral Explorer Kit**

Part#: TMDSPREX28335
<http://focus.ti.com/docs/toolsw/folders/print/tmdsprex28335.html>

\$89.50

The C2000 Peripheral Explorer Kit enables new C2000 users to easily learn how to use all of the advanced peripherals on a C2000 microcontroller. The kit includes an F28335 controlCARD and a baseboard with all the hardware necessary to interact with the peripherals. The included software allows users to easily learn how to use each peripheral. Using the included F28335 controlCARD users can easily move to designing their own application specific baseboard. The kit includes a peripheral explorer EVM, an F28335 controlCARD, 32KB limited version of CCS V3.3 and full hardware and software documentation. The primary platform for the new Teaching ROM (2010>).



Features:

- F28335 controlCARD based learning platform
- Demos all major C2000 peripherals including the ePWM, ADC, eCAP, CAN, I2C, SPI, GPIO pins, McBSP and DMA
- Quick Start GUI easily shows the functionality of the peripherals and the baseboard
- Open source software and hardware
- 32KB Code Composer Studio V3.3 included
- F28335 controlCARD included

**TMDSEZ2812
eZdsp Starter Kit (DSK)
Socketed version**

Part#: TMDSEZS2812
<http://focus.ti.com/docs/toolsw/folders/print/tmdsezs2812.html>

\$445

The F2812 eZdsp™ is a standalone module that lets evaluators examine certain characteristics of the F2812 digital signal processor (DSP) to determine if this DSP meets their application requirements. This module has a single chip parallel port to JTAG scan controller. Therefore the module can be operated without additional development tools such as an emulator. Furthermore, the module is an excellent platform to develop, demonstrate, and run software for the F2812 processor. The platform for the current (2006-9) C2000 Teaching ROM.



Features:

- TMS320F2812 Digital Signal Processor
- 18K words RAM
- 128K words on chip Flash ROM
- 64K words on board RAM
- Expansion connectors
- Onboard embedded IEEE 1149.1 JTAG controller
- 5 Volt only operation with supplied adapter
- Onboard IEEE 1149.q JTAG emulation

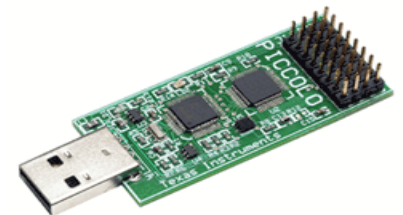
C2000 For Projects

**TMX20F28027
Piccolo controlSTICK**

Part#: TMDX28027USB
<http://focus.ti.com/docs/toolsw/folders/print/tmdx28027usb.html>

\$39

The innovative Piccolo controlSTICK allows quick and easy evaluation all of the advanced capabilities of TI's new Piccolo microcontroller for just \$39. Slightly larger than a memory stick, the Piccolo controlSTICK features on board JTAG emulation and access to all control peripherals. Example projects walk the user through the advanced functionality of Piccolo, from simply blinking an LED to configuring the high resolution ePWM peripherals.



Features:

- On board USB JTAG emulation
- Small USB memory stick form factor
- Access to all control peripherals through header pins
- Example projects show how to use Piccolo's features Low-cost

F28035

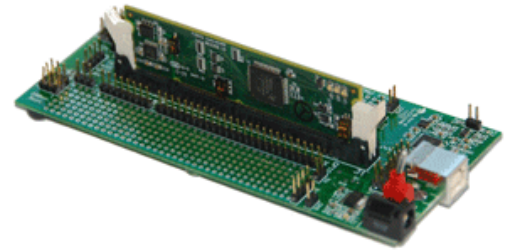
Piccolo Experimenter's Kit

Part#: TMDXDCK28035

<http://focus.ti.com/docs/toolsw/folders/print/tmdxdock28035.html>

\$44.50

The C2000 Experimenter Kits from Texas Instruments are ideal products for OEMs to use for initial device exploration and testing. The Piccolo Experimenter Kit has a docking station that features on board USB JTAG emulation, access to all controlCARD signals, breadboard areas and RS-232 and JTAG connectors. Each kit contains a 28035 controlCARD. The controlCARD is a complete board level module that utilizes and industry-standard DIMM form factor to provide a low-profiles single-board controller solution. Kit is complete with Code Composer Studio™ IDE v3.3 C28x™ Free 32K Byte Version and USB cable. C2000 applications software with example code and full hardware details also available.



Features:

- TMX320F28035 microcontroller based controlCARD.
- Docking station with on board USB JTAG emulation and access to all controlCARD signals
- Fully powered from USB connection, no external power supply needed
- Code Composer Studio™ IDE v3.3 C28x™ Free 32K Byte Version
- Applications software and example code also available for download.

C2000 Digital Power Experimenter Kit

Part#: TMSDCDC2KIT

<http://focus.ti.com/docs/toolsw/folders/print/tmsdcadc2kit.html>

\$229.01

C2000 Digital Power Experimenter Kit (DPEK) is ideal for hardware or software design engineers who want to explore the concept of digital power supply design. The kit contains a 2-rail DC-DC evaluation board using TI PowerTrain™ modules, on-board digital multi-meter and active load for transient response tuning. The DPEK also contains Code Composer Studio™ IDE v.3.3 C28x™ Free 32K byte Version, 9V power supply and a TMS320F2808-based controlCARD. The controlCARD is a complete board level module that utilizes and industry-standard DIMM form factor to provide a low-profiles single-board controller solution. C2000 application software with example code and full hardware details available. Digital Power Supply Workshop teaching material and lab software are also available. Standalone JTAG emulator required.



Features:

- TMS320F2808 based controlCARD.
- 2-rail DC-DC EVM w/on-board multi-meter
- Composer Studio™ IDE v.3.3 C28x™ Free 32K byte Version
- 9V power supply

Code Composer Studio Version 4

<http://focus.ti.com/docs/toolsw/folders/print/ccstudio.html>

Code Composer Studio v4 is a major new release of Code Composer Studio (CCS) that is based on the Eclipse open source software framework. The Eclipse software framework is used for many different applications but it was originally developed as an open framework for creating development tools. We have chosen to base CCSv4 on Eclipse as it offers an excellent software framework for building software development environments and is becoming a standard framework used by many embedded software vendors. CCSv4 combines the advantages of the Eclipse software framework with advanced embedded debug capabilities from TI resulting in a compelling rich development environment for embedded developers.

On request, TI will usually donate the FULL version of CCS to Universities for academic use.

Product Support:

Europe, Middle East and Africa

www.ti.com/europe/csc



Prices Valid as of 1st August 2009

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