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## Summary

MATLAB Coder™, Simulink Coder™, and Embedded Coder® generate ANSI/ISO C/C++ code that can be compiled and executed on Texas Instruments™ (TI) C2000 microcontrollers using Code Composer Studio IDE. Embedded Coder lets you easily configure the code generated from MATLAB® and Simulink® algorithms to control software interfaces, optimize execution performance, and minimize memory consumption.

Embedded Coder Support Package for Texas Instruments C2000 Processors provides the following features like: automated build and execution, ability to perform processor-in-the-loop (PIL) tests with execution profiling Block libraries for on-chip and on-board peripherals such as ADC, digital I/O, PWM.

C2000 32-bit microcontrollers are designed for real-time closed loop control applications such as motor control, digital power supplies, industrial drives, and solar inverters.

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# 1 Software Guidelines

**Prerequisites** Tested MATLAB version: 2015b or 2016b

Starting from 2015b, it is necessary to install **MinGW-w64**, a compiler suite for Windows based on the GNU tool chain. It includes a GCC compiler and related tools for compiling C and C++ applications for Windows. C and C++ applications compiled with MinGW-w64 GCC can be called from MATLAB using MEX. This GCC compiler can also be helpful for other MathWorks products that require a C or C++ compiler.

1. On MATLAB® Home tab, in the Environment section, select **Add-Ons > Get Add-Ons**
2. In the Add-On Explorer window, search **MATLAB Support for MinGW-w64 C/C++ Compiler** and install it

## 1.1 TI C2000 Support Package for Embedded Coder

Code Composer Studio is an integrated development environment (IDE) that supports TI's Microcontroller and Embedded Processors portfolio. Code Composer Studio comprises a suite of tools used to develop and debug embedded applications. It includes an optimizing C/C++ compiler, source code editor, project build environment, debugger, profiler, and many other features. The intuitive IDE 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. Code Composer Studio combines the advantages of the Eclipse software framework with advanced embedded debug capabilities from TI resulting in a compelling feature-rich development environment for embedded developers.

controlSUITE™ for C2000™ microcontrollers is a cohesive set of software infrastructure, tools, and documentation designed to minimize system development time. From device-specific drivers and support software to complete examples in sophisticated system applications, controlSUITE™ provides the needed resources at every stage of development and evaluation.

### Step-by-Step Installation

Start installing:

- **Texas Instruments Code Composer Studio v5 (C2000)** - file: [CCS5.5.exe](#) or more
  - *select*: Custom installation
  - *select*: C28X 32bit Real Time MCUs (only)
    - \* Compiler Tools ✓
      - TI ARM Compiler Tools
      - TI C2800 Compiler Tools
      - TI Documentation
    - \* Device Software ✓
      - DSP/BIOS v5
      - SYS/BIOS v6
    - \* Simulators ✓
      - TI SImulators
    - \* JTAG Emulator Support ✓
      - Blackhawk Emulators
      - Spectrum Digital Emulators
      - TI Emulators
      - XDS 100 Class Emulator Support
  - **Texas Instruments ControlSUITE 3.2.9** - file: [controlSUITE3.2.9.exe](#)
    - Instal all packages

## 1.2 Embedded Coder Support Package for Texas Instruments C2000 Processors

Embedded Coder® Support Package for Texas Instruments™ C2000™ Processors enables you to generate a real-time executable and download it to your TI development board. Embedded Coder automatically generates C code and inserts the I/O device drivers in your block diagram. These device drivers are inserted in the generated C code.

1. On MATLAB® Home tab, in the Environment section, select **Add-Ons > Get Hardware Support Packages**
2. In the Add-On Explorer window, search **Embedded Coder Support Package for Texas Instruments C2000 Processors** and install it
3. agree to third-party packages (*Ostermiller Circular Buffer* in 2016b), then click **setup now**
4. Chose support package for: **Texas Instruments C2000 (Embedded Coder)**
5. Select the Code Composer Studio toolchain: **Texas Instruments Code Composer Studio v5 (C2000)** (the previous installed)
6. You already have the third-party software listed above, click "Next" to validate your installation
7. Verify the two installation folders\*
8. **do not switch** version of ControlSUITE and **confirm/validate** the usage of the 3.2.9 version

### Pay Attention \*

Earlier versions of ControlSUITE may require to run `checkEnvSetup()` tool to complete the installation: The tool will ask you the correct folder paths:

- *enter:* `checkEnvSetup('ccsv5', 'f28069', 'setup')`
- for CCSv5: `ti\ccsv5`
- for CGT: `ti\ccsv5\tools\compiler\c2000_6.2.0`
- for DSP/BIOS: `ti\bios_5_42_01_09`

### For other Issue & Questions:

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## Revision

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