QUICK START with CCS C Compiler

How to start programming PICmicro® MCUs

Why C on a PICmicro® MCU?

The widespread use of C on microcontrollers has gained popularity because writing in C takes a fraction of the time it takes to write the same code in Assembly. C is a well-known language and is the language of choice by embedded programmers. Thus, using C saves a developer countless hours.

TO BEGIN...

To start development, you will need at least an IBM compatible PC running Windows 95, 98, NT, ME, XP or Linux. Depending upon the specific chip your project requires, you will also need to purchase one of the C compilers from CCS Inc. The compiler will actually allow you to write in easy to read, high level C instructions, and it will convert those instructions into machine language outputting a HEX file.

Why the CCS C Compiler?

Embedded C designers find the CCS PICmicro® MCU compiler very user friendly, and an exceptionally cost-effective tool for all embedded C projects. The CCS C compiler offers an extensive list of built-in functions, device drivers, example programs, and included libraries. Since CCS offers engineering services for custom software, firmware, and hardware design, we relate to other developers and always continue to try to accommodate their special engineering needs. This is demonstrated by continuous updates to the compiler as new capabilities and application examples, and as chips become available. These advantages only begin to explain why programmers find the compiler so easy to use. We strive to make our compiler the most efficient C compiler on the market.

CCS C Compiler Packages

PCW, PCWH, or PCWHD

The three CCS C compiler packages that integrate a powerful development environment (IDE) are the PCW, PCWH, and the PCWHD. All the compiler packages offer several unique features: C Aware Editor, New Project Wizard, Device Drivers, Built-in Functions, Example Programs, Device Drivers, and a MPLAB® Interface. Visit our website at http://www.ccsinfo.com/demo.html for a free demo of our compiler.

PCB, PCM, or PCH

PCB, PCM, and PCH are the command line PICmicro® C compilers from CCS. They require you to provide your own editor, such as Microchip’s MPLAB®. These compilers are attractively priced for hobbyists and low throughput users. Note that PCB supports only 12-bit chips, PCM supports only 14-bit chips, and PCH supports only 16-bit PIC18XXX chips.

All of the CCS C compiler versions come complete with Built-in Functions, Example Programs, Device Drivers, and a MPLAB® Interface. Visit our website at http://www.ccsinfo.com/demo.html for a free demo of our compiler.

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HARDWARE TOOLS:

Device Programming

WARP-13

WARP-13 is a very good, low cost device programmer that supports PIC® microcontrollers. It is easy to use because it relies on using Windows® as the operating system.

PICSTART® Plus

PICSTART® Plus is a development kit providing a highly flexible microcontroller design for all PIC® microcontroller devices. It operates only with Windows® under MPLAB® environment.

MPLAB® ICD

MPLAB® ICD is a very useful in-circuit debugger for Microchip's PIC® Flash microcontroller devices. It can also be used to program PIC® microcontroller devices.

Software

There are a number of large and effective programming systems available. As a general guide, make sure to check that the device programmer works as advertised and that your hardware setup will be compatible.

To develop your hardware design, choose one of many device programmers to burn the program onto the chip. You will then need to debug your code with either an emulator, simulator, or debugger. Both of these will allow you to step through the program code as you watch the microcontroller execute the program code. If your target platform is not yet ready, a special prototyping board may be the simplest solution.

LCD Thermometer Sample Application Program

The example shown here illustrates a PIC® microcontroller based temperature measurement system. The current temperature is displayed on an LCD, along with the minimum and maximum temperatures recorded since the last reset.

Target Platform

If needed, your target hardware can be used for testing. If using an emulator, make sure that the socket is right (emulators usually have DIP sockets by default). If using the ICD to debug your project, make sure that the socket is compatible with the socket used for the device.

Test Platform

The C Programming Language

The C Programming Language is a very good book that explains the basics of C from the perspective of writing programs for the PIC® microcontroller.

Some PIC® microcontroller chips, but not all, have built-in hardware to aid in the debugging process. These chips can be programmed with an ICD equipped with a PIC® microcontroller.

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