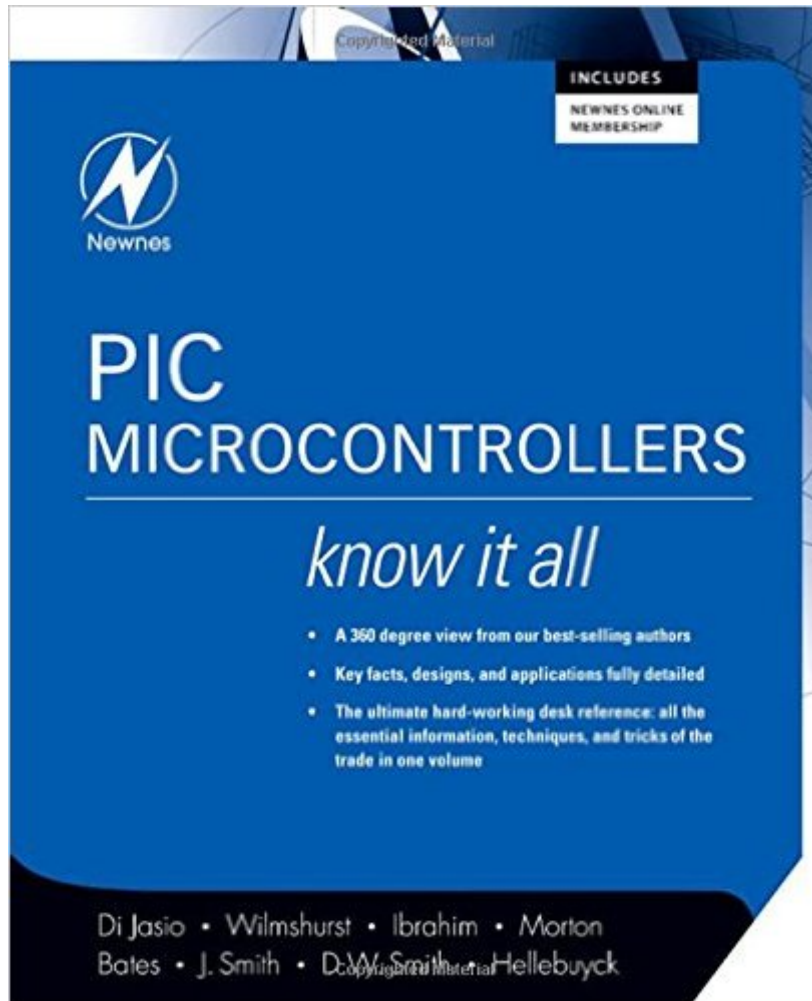


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# PIC Microcontrollers: Know It All (Newnes Know It All)



## Synopsis

The Newnes Know It All Series takes the best of what our authors have written over the past few years and creates a one-stop reference for engineers involved in markets from communications to embedded systems and everywhere in between. PIC design and development a natural fit for this reference series as it is one of the most popular microcontrollers in the world and we have several superbly authored books on the subject. This material ranges from the basics to more advanced topics. There is also a very strong project basis to this learning. The average embedded engineer working with this microcontroller will be able to have any question answered by this compilation. He/she will also be able to work through real-life problems via the projects contained in the book. The Newnes Know It All Series presentation of theory, hard fact, and project-based direction will be a continual aid in helping the engineer to innovate in the workplace.

Section I. An Introduction to PIC Microcontrollers

Chapter 1. The PIC Microcontroller Family

Chapter 2. Introducing the PIC 16 Series and the 16F84A

Chapter 3. Parallel Ports, Power Supply and the Clock Oscillator

Section II. Programming PIC Microcontrollers using Assembly Language

Chapter 4. Starting to Program • An Introduction to Assembler

Chapter 5. Building Assembler Programs

Chapter 6. Further Programming Techniques

Chapter 7. Prototype Hardware

Chapter 8. More PIC Applications and Devices

Chapter 9. The PIC 1250x Series (8-pin PIC microcontrollers)

Chapter 10. Intermediate Operations using the PIC 12F675

Chapter 11. Using Inputs

Chapter 12. Keypad Scanning

Chapter 13. Program Examples

Section III. Programming PIC Microcontrollers using PicBasic

Chapter 14. PicBasic and PicBasic Pro Programming

Chapter 15. Simple PIC Projects

Chapter 16. Moving On with the 16F876

Chapter 17. Communication

Section IV. Programming PIC Microcontrollers using MBasic

Chapter 18. MBasic Compiler and Development Boards

Chapter 19. The Basics • Output

Chapter 20. The Basics • Digital Input

Chapter 21. Introductory Stepper Motors

Chapter 22. Digital Temperature Sensors and Real-Time Clocks

Chapter 23. Infrared Remote Controls

Section V. Programming PIC Microcontrollers using C

Chapter 24. Getting Started

Chapter 25. Programming Loops

Chapter 26. More Loops

Chapter 27. NUMB3RS

Chapter 28. Interrupts

Chapter 29. Taking a Look under the Hood

Over 900 pages of practical, hands-on content in one book!

Huge market - as of November 2006 Microchip Technology Inc., a leading provider of microcontroller and analog semiconductors, produced its 5 BILLIONth PIC microcontroller

Several points of view, giving the reader a complete 360 of this microcontroller

## Book Information

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## Customer Reviews

I'm a computer tech by trade. I've never programmed a pic, but do do some basic computer programming. I've wanted to learn about PIC microcomputers, so I was excited to read this book. For me it's just what I wanted: a technical manual with a lot of good information. This book is for you if you are:-wanting to know everything about PICs. There really is a lot of info here. If you want one book to take you through every area of PICs, this seems to me to be it all. I am a beginner, but I'm more than happy with all the info it has! This book is not for you if you:-If you need any hand holding. All the info is here, but if you don't understand it, you're out of luck. One reviewer said this book isn't for beginners, and another review said it's the perfect place for beginners. Well they're both right. If you already are a computer programmer/geek, long time electronics hobbyist, etc, but you know nothing about PIC--it is a great place to start. But if you're looking for PIC for dummies, this is definitely not it. It does have chapters on programming PICS in BASIC, but it does not teach you BASIC for example. The first chapter jumps into a decent amount of technical info and expects you to know what a computer register is and differentiates between PICs by the bit length of their instruction set. If you don't understand what I am talking about, you might need something more basic first (learning some assembler language may help a lot). But again, for me this book is at the perfect level. I am learning a lot from this book!

So often when purchasing technical books I am disappointed by their contents. This book does not

fall into that category. It provides a solid overview of using PIC micro-controllers. Examples are given with the usual assortment of stepper motors and temperature sensors. It provides an introduction to programming with a variety of tools, including my personal favorites for the PIC, assembler and MELabs' PIC BASIC. I do wish the coverage of assembler were more in depth, but that is my personal bias. Another reviewer felt that this book was not for beginners. Perhaps thirty years of doing this stuff has skewed my perspective, but I do not think that this book is a bad place for a serious beginner to start. Yes, it is a handy reference for the pro's, but if you have a talent for this sort of stuff, I think this book can get you started (with some effort) and continue to serve as a useful reference going forward. No one book is likely to solve all of your questions, but this will one give you an overview of what your options are with the PIC. If you are a beginner, and not a pro, I will offer you a suggestion that virtually no one else will agree with. Learn an assembler language first. Once you overcome the initial learning curve of all the mnemonics, registers, and the odd ways we do math, you will understand what is going on under the hood as few do. And, like me, you may find that it is actually fun to program in assembler. I'd rather write in assembler than C any day. If, on the other hand, you need a little instant gratification (and we all do from time to time) try PIC BASIC, or even a BASIC STAMP. But I digress. This is an excellent book in spite of lacking depth in some areas. I am glad I spent the money for it, and most of you will be as well.

I wish that such an omnibus handbook had been available for the design of Microcontroller Systems when I was introduced to their eight-bit ancestors in the late 1970's. In fact, I wish that a volume which described Assembly and Higher-Level Language Programming, Interface Circuit Design, Analog-to-Digital Conversions, everything one needs to know about interfacing a variety of Sensors and Actuators, Stepper Motors, Real-Time Clocks and IR-Remote Controls were available for the design of any kind of Microcontroller System. Now, an unbelievably comprehensive guide to the Programming, Hardware Prototyping, Interfacing and Debugging of significant real applications for the widely available Harvard-Architecture PIC Microcontroller family. This invaluable reference will guide my subsequent design of any Microcontroller-based system, and is well enough explicated to serve as an introduction for the Hardware Novice (such as typical graduates of most university Computer Science programs), or as complete reference for the EE who must implement a PIC-based Microcontroller solution to any real-world problem in sensing and control.--Ira Laefsky  
Information Technology Consultant and HCI Researcher

On the outside this looks like dozens of other engineering selection guides for various electronic

parts. What sets it apart and makes it a little easier to review is that it takes a kind of a textbook approach to the subject. It contains program examples, the basics of each device, and some usage examples. I would highly recommend this to someone with a little bit of technical background, and whose goal is to develop a smart product or device. It would not only aid in the selection of which programmable processor to choose, but you may even find examples on how to implement solutions that would save valuable development time. I think this book had a number of potential users, not only the engineer, but the dabbler, the student, the inventor, or the teacher. There is enough information in the technical data to make decisions in case a chip choice might include some future expansion. All in all a good little book to have on the electronics shelf. A CD is included with source code and a student evaluation edition of a compiler, various functions will cease to work after 60 days so, if you are gonna work seriously with the processors you'll eventually have to buy a compiler, but at least you can try out some test projects. You will typically need some hardware to flash these with too, so the book doesn't get you everything, it just provides the basic knowledge.

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