



## Intelligent sensor design using the microchip dsPIC [

Huddleston, Creed

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Monografía

Intelligent sensors are revolutionizing the world of system design in everything from sports cars to assembly lines. These new sensors have abilities that leave their predecessors in the dust! They not only measure parameters efficiently and precisely, but they also have the ability to enhance and interrupt those measurements, thereby transformng raw data into truly useful information. Unlike many embedded systems books that confine themselves strictly to firmware and software, this book also delves into the supporting electronic hardware, providing the reader with a complete understand

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**Contenido:** Cover; Copyright Page; Contents; Introduction; Acknowledgments; About the Author; What's on the CD-ROM?; Chapter 1. What Are Intelligent Sensors, and Why Should I Care about Them?; 1.1 Conventional Sensors Aren't Perfect; 1.2 First Things First, Digitizing the Sensor Signal; 1.3 Next Step, Add Some Intelligence; 1.4 Finish Up with Quick and Reliable Communications; 1.5 Put It All Together, and You've Got an Intelligent Sensor; 1.6 Why Don't We Make Everything Intelligent?; 1.7 Real-world Examples of Intelligent Sensors; 1.8 Outline of the Remainder of the Book Chapter 2. Intuitive Digital Signal Processing 2.1 Foundational Concepts for Signal Processing; 2.2 Issues Related to Signal Sampling; 2.3 How to Analyze a Sensor Signal Application; 2.4 A General Sensor Signal-processing Framework; 2.5 Summary; Chapter 3. Underneath the Hood of the dsPIC DSC; 3.1 The dsPIC DSC's Data Processing Architecture; 3.2 Interrupt Structure; 3.3 The On-chip Peripherals; 3.4 Summary; Chapter 4: Learning to be a Good Communicator; 4.1 Types of Communications; 4.2 Communication Options Available on the dsPIC30F; 4.3 High-level Protocols; 4.4 Summary Chapter 5. A Basic Toolkit for the dsPIC DSC 5.1 The Application Test Bed; 5.2 Overview of the Firmware Framework; 5.3 Implementation of the Framework Modules; 5.4 Summary; Chapter 6. Sensor Application, Temperature Sensor; 6.1 Types of Temperature

Sensors; 6.2 Key Aspects of Temperature Measurement; 6.3 Application Design; 6.4 Hardware Implementation; 6.5 Firmware Implementation; 6.6 Summary; Chapter 7. Sensor Application,,Pressure and Load Sensors; 7.1 Types of Load and Pressure Sensors; 7.2 Key Aspects of Load Measurement; 7.3 Application Design; 7.4 Firmware Implementation; 7.5 Summary Chapter 8. Sensor Application,,Flow Sensors8.1 Types of Flow Sensors; 8.2 Key Aspects of Flow Measurement; 8.3 Application Design; 8.4 Hardware Implementation; 8.5 Firmware Implementation; 8.6 Summary; Chapter 9. Where Are We Headed?; 9.1 Technology Trends; 9.2 Economic Trends; 9.3 Summary; Appendix A. Software on the Included CD-ROM; A.1 On-disk Website of Resources; A.2 Source Code for the Three Applications; Appendix B. Initialization of the dsPIC DSC and the System Start-up Code; Appendix C. Buffered, Interrupt-driven Serial I/O; C.1 Pseudo-code for the Framework; C.2 System Initialization C.3 Reading Data From the InterfaceC.4 Writing Data to the Interface; Index

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## Baratz Innovación Documental

- Gran Vía, 59 28013 Madrid
- (+34) 91 456 03 60
- [informa@baratz.es](mailto:informa@baratz.es)