

Contents

| | |
|--|------------|
| Preface | 2 |
| Project Overview | 3 |
| Introduction | 6 |
| PART 1: Local Controller | 17 |
| Chapter 1: Industrial Control | 18 |
| Chapter 2: Control Algorithms | 28 |
| Chapter 3: Microcontroller and Data Acquisition | 41 |
| Chapter 4: Controller Firmware | 54 |
| PART 2: Ethernet Controller | 60 |
| Chapter 5: Industrial Control Busses | 61 |
| Chapter 6: Ethernet Interface Hardware | 67 |
| Chapter 7: Ethernet Interface Software | 74 |
| PART 3: Wireless Accessibility | 85 |
| Chapter 8: Wireless Networking Concepts | 86 |
| Chapter 9: Wireless Security | 103 |
| PART 4: Software | 110 |
| Chapter 10: Process Control Studio | 111 |
| Chapter 11: Process Control Studio Mobile Edition | 135 |
| Appendices | 143 |
| Appendix 1: Microcontroller Peripheral Functions | 143 |
| Appendix 2: Microcontroller Layouts and Schematics | 148 |
| Appendix 3: PID Implementation | 152 |
| Appendix 4: PDAs and Pocket PCs | 171 |