
Contents

| | |
|--|-------------|
| <i>Preface</i> | <i>vii</i> |
| <i>Disclaimer</i> | <i>ix</i> |
| <i>Acknowledgments</i> | <i>xi</i> |
| <i>Author</i> | <i>xiii</i> |
| | |
| 1 Measurement fundamentals and instrumentation | 1 |
| 2 Control terminology, theory, and tuning | 39 |
| 3 Basic electronics | 67 |
| 4 Digital theory, logic, and two-state control | 85 |
| 5 Motor controllers | 105 |
| 6 Variable-frequency drives and harmonics | 153 |
| 7 Boiler controls | 193 |
| 8 Pump and fan controls | 243 |
| 9 Control valves | 265 |
| 10 Speed, load, and alternator control | 307 |
| 11 Programmable-logic controllers and operation | 339 |
| 12 Wiring PLCs and I/O devices | 359 |
| 13 Allen-Bradley RSLogix software and ladder-diagram programming | 373 |
| 14 Electronic 4–20mA analog signals | 407 |
| 15 Analog functions using Allen-Bradley's RSLogix software | 419 |

| | |
|---|-----|
| 16 IEC 61131-3 PLC programming languages (LD, FBD, SFC, ST, and IF) | 445 |
| 17 Centralized control systems, DCS, and SCADA | 463 |
| 18 PLC cabling, data transmission, and networking | 493 |
| 19 Industrial control system security | 511 |
| 20 PLC terms and definitions | 527 |
| <i>Index</i> | 537 |