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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Part I: The Automation Knowledge Base -- 1 - The Automation Practicum -- 2 - Basic Principles of Industrial Automation -- 3 - Measurement Methods and Control Strategies -- 4 - Simulation and Design Software -- 5 - Security for Industrial Automation -- Part II: Mechanical Measurements -- 6 - Measurement of Flow -- 7 - Measurement of Viscosity -- 8 - Measurement of Length -- 9 - Measurement of Strain -- 10 - Measurement of Level and Volume -- 11 - Vibration -- 12 - Measurement of Force -- 13 - Measurement of Density -- 14 - Measurement of Pressure -- 15 - Measurement of Vacuum -- 16 - Particle Sizing -- 17 - Fiber Optics in Sensor Instrumentation -- 18 - Nanotechnology for Sensors -- 19 - Microprocessor-Based and Intelligent Transmitters -- 20 - Industrial Wireless Technology and Planning -- Part III: Measurement of Temperature and Chemical Composition -- 21 - Temperature Measurement -- 22 - Chemical Analysis: Introduction -- 23 - Chemical

Analysis: Spectroscopy -- 24 - Chemical Analysis: Electrochemical Techniques -- 25 - Chemical Analysis: Gas Analysis -- 26 - Chemical Analysis: Moisture Measurement -- Part IV: Electrical and Radiation Measurements -- 27 - Electrical Measurements -- 28 - Optical Measurements -- 29 - Nuclear Instrumentation Technology -- 30 - Measurements Employing Nuclear Techniques -- 31 - Non-Destructive Testing -- 32 - Noise Measurement -- Part V: Controllers, Actuators, and Final Control Elements -- 33 - Field Controllers, Hardware and Software -- 34 - Advanced Control for the Plant Floor -- 35 - Batch Process Control -- 36 - Applying Control Valves -- Part VI: Automation and Control Systems -- 37 - Design and Construction of Instruments -- 38 - Instrument Installation and Commissioning -- 39 - Sampling -- 40 - Telemetry -- 41 - Display and Recording -- 42 - Pneumatic Instrumentation -- 43 - Reliability in Instrumentation and Control -- 44 - Safety -- 45 - EMC -- Appendix A - General Instrumentation Books -- Appendix B - Professional Societies and Associations -- Appendix C - The Institute of Measurement and Control -- Appendix D - International Society of Automation, Formerly Instrument Society of America -- Index.

Sommario/riassunto

The discipline of instrumentation has grown appreciably in recent years because of advances in sensor technology and in the interconnectivity of sensors, computers and control systems. This 4th edition of the Instrumentation Reference Book embraces the equipment and systems used to detect, track and store data related to physical, chemical, electrical, thermal and mechanical properties of materials, systems and operations. While traditionally a key area within mechanical and industrial engineering, understanding this greater and more complex use of sensing and monitoring controls and systems is essential for a wide variety of engineering areas - from manufacturing to chemical processing to aerospace operations to even the everyday automobile. In turn, this has meant that the automation of manufacturing, process industries, and even building and infrastructure construction has been improved dramatically. And now with remote wireless instrumentation, heretofore inaccessible or widely dispersed operations and procedures can be automatically monitored and controlled. This already well-established reference work will reflect these dramatic changes with improved and expanded coverage of the traditional domains of instrumentation as well as the cutting-edge areas of digital integration of complex sensor/control systems.