Introduction

The purpose of Measurement, Instrumentation, and Sensors Handbook CRCnetBase 1999 is to provide a reference that is both concise and useful for engineers in industry, scientists, designers, managers, research personnel and students, as well as many others who have measurement problems. The CD-ROM covers an extensive range of topics that comprise the subject of measurement, instrumentation, and sensors.

The CD-ROM describes the use of instruments and techniques for practical measurements required in engineering, physics, chemistry, and the life sciences. It includes sensors, techniques, hardware, and software. It also includes information processing systems, automatic data acquisition, reduction and analysis and their incorporation for control purposes.

Articles include descriptive information for professionals, students, and workers interested in measurement. Articles include equations to assist engineers and scientists who seek to discover applications and solve problems that arise in fields not in their specialty. They include specialized information needed by informed specialists who seek to learn advanced applications of the subject, evaluative opinions, and possible areas for future study. Thus, the CD-ROM serves the reference needs of the broadest group of users — from the advanced high school science student to industrial and university professionals.

Organization

The CD-ROM is organized according to the measurement problem. Section I includes general instrumentation topics, such as accuracy and standards. Section II covers spatial variables, such as displacement and position. Section III includes time and frequency. Section IV covers solid mechanical variables such as mass and strain. Section V comprises fluid mechanical variables such as pressure, flow, and velocity. Section VI covers thermal mechanical variables such as temperature and heat flux. Section VII includes electromagnetic variables such as voltage and capacitance. Section VIII covers optical variables such as photometry and image sensors. Section IX includes radiation such as x rays and dosimetry. Section X covers chemical variables in composition and environmental measurements. Section XI includes biomedical variables such as blood flow and medical imaging. Section XII comprises signal processing such as amplifiers and computers. Section XIII covers display such as cathode ray tube and recorder. Section XIV includes control such as optimal control and motion control. The Appendix contains conversion factors to SI units.

Locating Your Topic

To find out how to measure a given variable, do a word or phrase search, select the section and the chapters that describe different methods of making the measurement. Consider the alternative methods of making the measurement and each of their advantages and disadvantages. Select a method, sensor,
and signal processing method. Many articles list a number of vendors to contact for more information. You can also visit the http://www.sensorsmag.com site under Buyer’s Guide to obtain a list of vendors.

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