Measurement, Instrumentation, and Sensors Handbook, Second Edition: Two-Volume Set (Electrical Engineering Handbook)

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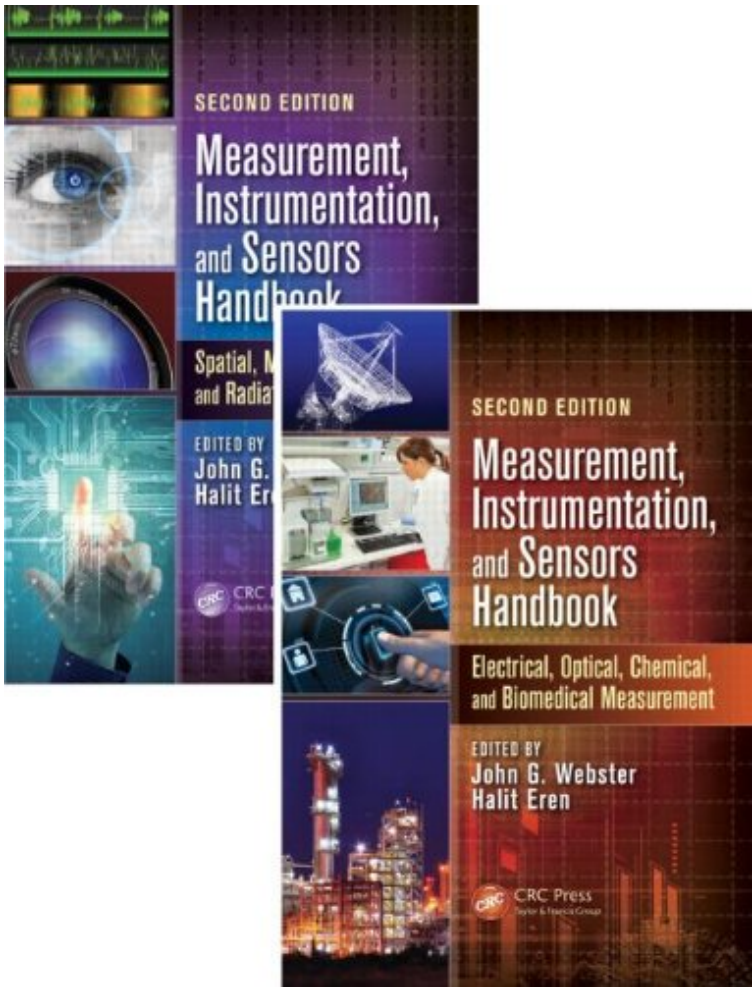

#1547711 in Books 2014-01-29Original language:EnglishPDF # 1 11.00 x 8.25 x 7.00l, .0 #File Name: 14398488313559 pages | File size: 51.Mb

From CRC Press : Measurement, Instrumentation, and Sensors Handbook, Second Edition: Two-Volume Set (Electrical Engineering Handbook) before purchasing it in order to gage whether or not it would be worth my time, and all praised Measurement, Instrumentation, and Sensors Handbook, Second Edition: Two-Volume Set (Electrical Engineering Handbook):

1 of 1 people found the following review helpful. Great desktop reference book for RD EngineersBy CJThis 2 volume set is well organized and well illustrated. So far the content has proven very useful, although it could use a revision seeing as it was published over a decade ago. Each section seems to lay down the fundamentals of the sensor, give the relevant mathematical formulas and then proceed to give real world data - whether it be sensor properties and

performance, application advice, or calibration data. There are tons of data tables and charts included in this text that would be difficult to get your hands on elsewhere; for example, in the temperature measurement section there is a data table that provides the response time and dissipation constant of a wide range of thermistors.I will try and add more comments as I continue to use these handbooks but so far they have been of good use to me as a RD Engineer.5 of 6 people found the following review helpful. Great book?By Happy FaceI'm a little confused because all of the other three reviews refer to this thing as a great "book" however this is supposed to be a volume SET. And they all gave it 5 stars. Hmmm.... It seems a bit fishy to me that no one says "THESE are great bookS."Okay, that fishiness aside, my order arrived today and I was disappointed to find that I only got "Volume 2" which commences at Chapter 45. is having me return the volume I got and sending me a new "set."The book has a beautiful cover. The inside is LOTS and LOTS of pages of black and white text, tables, graphs, and plenty of calculus. I skimmed several chapters. Seems well written without excessively technical language (I mean, yeah, it's technical language where needed--this ain't a Harlequin Romance!)The pages aren't numbered from 1 to 2050, they are numbered by page within a chapter. For example 25-11. 40-3.Without having READ the entire thing or Proofed any of the equations I'd have to say that Volume 2 is a pretty good book.It's exactly what I was looking for: sort of an encyclopedia behind the theory and construction of the many many different types of sensors for use in industrial processes.I have to return Volume 2 and supposedly will be sent the entire set. I'll update if upon receipt of the entire 2 volume set there is anything of note to add.5 of 5 people found the following review helpful. Quite variable, on average somewhat better than WikipediaBy Daniel T BrownThe two-volume set contains approximately 100 chapters. Almost all chapters are devoted to specific measurements, such as temperature, time, voltage, etc. The chapters vary in greatly in quality and comprehensiveness. I have used the set for a few years, read 6-10 of the chapters in detail, and skimmed more. On the average, I find the chapters somewhat more useful than the corresponding Wikipedia articles - enough to make buying the set useful, but not enough to make buying the set essential. Your experience of the book will depend almost completely on which chapters you use.As an example of the best writing, Section 32.4 "Thermocouple Thermometers" is almost 33 pages long, and covers thermcouples in great detail, with good references for further reading. Overall, the section is excellent and comprehensive, covering almost every aspect of dealing with thermocouples. My only complaint is that the discussion of a reference thermocouple or cold junction compensation would have been difficult to understand had I not already been familiar with thermocouples. The discussion suffers from having too few diagrams and relying too much on text explanations.This high standard is not maintained throughout the volumes. As an example, section 32.2 "Resistive Thermometers" describing RTDs appears to be a first draft that was incorrectly typeset. Paragraphs are redundant, essential information is missing, equation variables are mislabeled, and important discussions are incomplete. Some examples are:- The text states the "Matthiessen rule" is that the total resistivity is (equation 32.20): p(total) = p(temperature) + p(impurities) + p(deformation) [I have written p instead of the Greek lower-case rho]. However, that is the end of the discussion, without any discussion of the relative effects of temperature, impurities, and deformation. The equation is pointless. The reader is left with no useful information to use to make decisions about whether or not these are important for a given application.- The text provides the Callendar-Van Dusen equations to calculate the resistance of an RTD as a function of temperature (equations 32.22 and 32.23), with the standard coefficients A, B, and C. However, the text defines the coefficients as (Greek letters) alpha, gamma, and beta - the definitions appear to have been pasted in from a different equation. The text also leaves out the values of the coefficients. The RTD manufacturer will usually provide these, so the lack is not an essential problem. Of course, the inverse equation is the most useful - temperature as a function of measured resistance - but this equation is provided with pointless coefficient names and no information about how to calculate them.The Wikipedia article on RTDs (probably non-existent when this section was written) is far clearer and more informative.Some chapters display the strong biases of their authors.Chapters 18 (Time Measurement) and 19 (Frequency Measurement) are written by the same person from the US NIST, and they discuss primarily reference-quality solutions from the NIST. For example, chapter 18 lists only solutions that trace to NIST clocks (through radio transmissions, GPS, or networks), not very useful for anyone in a situation in which a connection is not available. Chapter 19 is almost redundant with chapter 18, listing the same NIST sources for frequency standards. Chapter 19 does mention crystal oscillators (the overwhelmingly most common frequency source for electronics), without any substantive quantitative discussion. These chapters are almost useless unless you intend to tie up to the NIST. (I should note that section 19.2 on frequency uncertainty and stability is useful.)In a few cases the author biases are helpful. For example, chapter 101 (on motors) contains a brilliant discussion of stepper motor electrical behavior that is both compact and clear, based on the work of the authors. The chapter is necessarily incomplete, given the available space. Irritatingly, the authors reference essentially only their own papers on specific aspects, there is no further reference for more general information about the topic.

This new edition of the bestselling Measurement, Instrumentation, and Sensors Handbook brings together all aspects of the design and implementation of measurement, instrumentation, and sensors. Reflecting the current state of the art, it describes the use of instruments and techniques for performing practical measurements in engineering, physics,

chemistry, and the life sciences; explains sensors and the associated hardware and software; and discusses processing systems, automatic data acquisition, reduction and analysis, operation characteristics, accuracy, errors, calibrations, and the incorporation of standards for control purposes. Organized according to measurement problem, the Second Edition: Consists of 2 volumes Features contributions from 240+ field experts Contains 53 new chapters, plus updates to all 194 existing chapters Addresses different ways of making measurements for given variables Emphasizes modern intelligent instruments and techniques, human factors, modern display methods, instrument networks, and virtual instruments Explains modern wireless techniques, sensors, measurements, and applications A concise and useful reference for engineers, scientists, academic faculty, students, designers, managers, and industry professionals involved in instrumentation and measurement research and development, Measurement, Instrumentation, and Sensors Handbook, Second Edition provides readers with a greater understanding of advanced applications.

"The new edition of this manualshows the state of the art of measures, instrumentation, and sensors used in the field of biomedical engineering.It describes the use of instrumentation and techniques for performing underlying practical measures required particularly for medical sciences, explaining in detail the sensors that are used as well asthe techniques, hardware, and software associated. ... Thesecond edition certainly offers the most complete source of reference."Centro Nazionale Edilizia e Tecnica Ospedaliera (CNETO)'s Progettare per la Sanit, October 2015 " a superb and well treated collection of engineering topics delving in-depth in the essential MEASUREMENT activity of almost any variable there is."Max E. Valentinuzzi, Institute Biomed Engineering-University Buenos Aires, Argentina" Even though different experts in their respective fields wrote the chapters; they are well-written and clear demonstrating the expert editing done by Professors Webster and Eren. The wide base of experts drawn together for this book demonstrates the broad coverage of this book by leading experts in the field of instrumentation.Michael R. Neuman, Michigan Technological University, Houghton, USA"This is a very interesting, and moreover incredibly thorough, treatment of all aspects relating to sensors and measurements. The material presented on soft sensors was very much a representation of the state-of-the-art whilst also being understandable and a good introduction to the subject."Alex Casson, University of Manchester, UKAbout the AuthorJohn G. Webster received his BS from Cornell University, Ithaca, New York, USA and M.Sc and Ph.D from University of Rochester, New York, USA. A fellow of the Institute of Electrical and Electronics Engineers, Instrument Society of America, American Institute of Medical and Biological Engineering, Biomedical Engineering Society, and Institute of Physics, he served on the IEEE-EMBS Administrative Committee and NIH Surgery and Bioengineering Study Section, authored/co-authored and edited/co-edited numerous books and publications, and received the IEEE-EMBS Career Achievement Award. A highly cited researcher for King Abdulaziz University, Jeddah, Saudi Arabia, he is currently a professor emeritus at University of Wisconsin-Madison, USA. Halit Eren received his BS, M.Sc, and Ph.D from University of Sheffield, UK. He also obtained an MBA from Curtin University, Perth, Western Australia. He has served as an instrumentation engineer at Etibank, as well as an assistant professor for Hacettepe University and Middle East Technical University, all in Turkey. An author and co-editor of several books and publications, he was associate professor at Polytechnic University, Hong Kong and visiting professor at University of Wisconsin-Madison, USA. A senior member of IEEE taking roles in Region 10 activities and various committees for organizing conferences, he is currently teaching and conducting research at Curtin University.