Data Sheet Siemens

"Sensors is the first self-contained series to deal with the whole area of sensors. It describes general aspects, technical and physical fundamentals, construction, function, applications and developments of the various types of sensors. Consisting of nine volumes altogether, with eight dedicated to various topics and the ninth as cumulative index, each volume offers in-depth information in one particular field within sensor technology. The entire set is an indispensable reference work for both specialists and newcomers, researchers and developers working in this interdisciplinary field that ranges from research to commercial application." -- Publisher's website.

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This SpringerBrief presents cutting-edge research on an important aspect of smart firefighting which will improve performance, safety, prediction, and resilience. It demonstrates the viability of real-time decision support for smart firefighting and provides validation data for continued cyber-physical system (CPS) development by using a smart networked fire test bed consisting of a multi-story instrumented building, a variety of fire and non-fire networked sensors, and a computational framework anchored by a Building Information Modeling (BIM) representation of the building. The author conducted well-controlled full-scale fire experiments and represents them in the three-dimensional BIM, allowing for visualization of critical static and dynamic building and fire information. The CPS test bed produces clear evidence about the opportunities for fire safety created by the communication between sensors, BIM, and fire. When applied to fire protection, CPS fuses the emerging sensor and computing technologies with building control systems, firefighting equipment, and apparatus. This SpringerBrief reveals some of the key ways CPS makes firefighting safer and more efficient.

Gaseous Dielectrics VIII covers recent advances and developments in a wide range of basic, applied, and industrial areas of gaseous dielectrics.

With a focus on the transition from fossil fuels to renewable energy, Energy Science provides a comprehensive overview of the latest energy technologies, combining an accessible but rigorous explanation of the physical principles behind energy science with a cohesive examination of its environmental, economic, and social impacts.

This unique resource offers you a clear overview of medical and industrial accelerators. Using minimal mathematics, this book focuses on offering thorough explanations of basic concepts surrounding the operation of accelerators. You find well illustrated discussions designed to help you use accelerator-based systems in a safer, more productive, and more reliable manner. This practical book details the manufacturing process for producing accelerators for medical and industrial applications. You become knowledgeable about the commonly encountered real-world manufacturing issues and potential sources of defects which help you avoid costly production problems. From principles of operation and the role of accelerators in cancer radiation therapy, to manufacturing techniques and future trends in accelerator design and applications, this easy-to-comprehend volume quickly brings you up-to-speed with the critical concepts you need to understand for your work in the field.

The Physics of Medical Imaging reviews the scientific basis and physical principles underpinning imaging in medicine. It covers the major imaging methods of x-radiology, nuclear medicine, ultrasound, and nuclear magnetic resonance, and considers promising new techniques. Following these reviews are several thematic chapters that cover the mathematics of medical imaging, image perception, computational requirements, and techniques. Throughout the book, the author encourages readers to consider key questions concerning imaging. This profusely illustrated and extensively indexed text is accessible to graduate physical scientists, advanced undergraduates, and research students. It logically complements books on applications of imaging techniques in medicine, making it useful for clinicians as well.

From traditional topics that form the core of industrial electronics, to new and emerging concepts and technologies, The Industrial Electronics Handbook, in a single volume, has the field covered. Nowhere else will you find so much information on so many major topics in the field. For facts you need every day, and for discussions on topics you have only dreamed of, The Industrial Electronics Handbook is an ideal reference.

SIMPLE STEPS TO A NATURALLY CLEAN HOME Toxic chemicals are found in almost all commercial cleaners—the very products you buy to make your home hygenic and healthy. Homemade Cleaners offers a better solution. Its tips, tricks and formulas guarantee to make your home sparkling and germ-free. Homemade Cleaners features over 150 recipes that are: • Toxin-Free • Simple and Affordable • Highly Effective • Environmentally Sound • Kid and Baby Friendly Using ingredients like vinegar, baking soda, and even vodka, the authors tackle the nitty-gritty of everything from countertop cleaners to air-purifying plants so you avoid using commercial products that can cause side effects including skin irritation, asthma and central nervous system damage.

Updated to reflect recent industry developments, this edition features practical information on Rockwell Automation's SLC 500 family of PLCs and includes a no-nonsense introduction to RSLogix software and the new ControlLogix PLC. To assist readers in understanding key concepts, the art program has been modernized to include improved illustrations, current manufacturer-specific photos, and actual RSLogix software screens to visibly illustrate essential principles of PLC operation. New material has been added on ControlNet and DeviceNet, and a new chapter on program flow instructions includes updated references to the SLC 500, MicroLogix, and the PLC 5. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Preface; Introduction to Communications; Networking Fundamentals; Ethernet Networks; Fast and Gigabit Ethernet Systems; Introduction to TCP/IP; Internet Layer Protocols; Host to Host Layer Protocols; Application Layer Protocols; TCP/IP Utilities; LAN System Components; The Internet; Internet Access; The Internet for Communications; Security Considerations; Process Automation;

Installing and Troubleshooting TCP/IP; Satellites and TCP/IP.

Agricultural production is one of the main keys to the development of healthy societies. It is anticipated that agricultural systems will increasingly have to contend with temperature, humidity and water stress in the near future. This makes the need to increase the efficiency of land and water use ever more urgent. The control and design of greenhouses allows to increase dramatically the quality of crops and extend the cultivation period year-round. A properly designed autonomous greenhouse based on hydroponics can greatly reduce the amounts of nutrients and energy expended in agricultural production. This book deals with different types of greenhouses, materials, structures, advanced control techniques and tendencies that are needed for designing and controlling an advanced greenhouse. The control system is presented as an integral system which covers the explanation of basic and advanced concepts for a real time controller. Also, structural analysis is introduced, whereby mechanical design is regarded as a key factor. The book incorporates simulations and experimental results, and utilizes LabVIEW and ADAMS software. Finally, it provides a perspective on the present state and future of greenhouses globally. Written in a highly accessible manner, this book will prove useful to horticulturalists, agricultural engineers, greenhouse engineers and designers. Its easy-to-absorb contents are also suitable for (under)graduate students and researchers in agricultural and electronic engineering, horticulture, crop cultivation and soft computing.

The trend towards larger power ratings of wind turbines asks for innovations in power generation, which requires lower weight and cost, smaller size, higher efficiency and reliability. Due to high current-carrying capability and no DC losses of superconductors, a superconducting wind generator can have a superior power to weight/volume ratio with high efficiency. The work in the book mainly focuses on the feasibility study and design of a superconducting DC wind generator.

This book gathers the proceedings of the Sixth International Conference on Computational Science and Technology 2019 (ICCST2019), held in Kota Kinabalu, Malaysia, on 29–30 August 2019. The respective contributions offer practitioners and researchers a range of new computational techniques and solutions, identify emerging issues, and outline future research directions, while also showing them how to apply the latest large-scale, high-performance computational methods.

A guide to the fundamentals of applied gas chromatography and the process gas chromatograph, with practical procedures for design and troubleshooting This comprehensive resource provides the theory that underpins a full understanding of the fundamental techniques of gas chromatography and the process analyzer. Without relying on complex mathematics, the book addresses hands-on applications of gas chromatographs within process industries. The author – a noted expert on the topic – details both the scientific information needed to grasp the material presented and the practical applications for professionals working in the field. Process Gas Chromatographs: Fundamentals, Design and Implementation comprises 15 chapters, a glossary of terms and a series of self-assessment questions and quizzes. This

important resource: Describes practical procedures for design and troubleshooting Contains concise chapters that provide a structured course for advanced students in process engineering Reviews the fundamentals of applied gas chromatography Details the operation and maintenance of process gas chromatographs Offers a summary, and self-assessment questions, for every chapter Is written by an international expert in the field with extensive industry knowledge and teaching experience in courses on process sampling systems and gas chromatography Written for process analyzer engineers and technicians, application engineers, and industrial environmental engineers, Process Gas Chromatographs: Fundamentals, Design and Implementation offers an essential guide to the basics of gas chromatography and reviews the applications of process gas chromatographs in industry today.

This book reports the recent results obtained by Italian researchers in fuzzy logic. It collects some selected papers presented at the 1995 Italian Workshop on Fuzzy Logic (WILF '95), and some invited contributions. The book covers some of the most interesting topics in fuzzy logic: theory, evolutionary computing, and gives an overview of applications in control, image processing, pattern recognition, decisions support systems, and high energy physics. Contents:Structures Related to Fuzzy Logic Approach in Modelling (M Fedrizzi et al)Function Approximation by a Neuro-Fuzzy Method (M Marinaro & D Oricchio)Soft Computing for Control and Identification (R Caponetto et al)Color Classification and Image Enhancement Using Fuzzy Logic (R Attias et al)Application of the Unsupervised Fuzzy Kohonen Clustering Network for Remote Sensed Data Segmentation (P Blonda et al)Rough Fuzzy Sets and Unsupervised Neural Learning: Applications in Computer Vision (A Petrosino)Uncertainty and Approximation in Multimodel-Based Industrial Diagnosis (A Bonarini & P Sassaroli)Environmental Impact Assessment for Industrial Plants: A New Approach with Fuzzy Sets Techniques (R De Vita et al)Fuzzy Adaptive Inference and Medical Decision Support Systems: A Modular Approach for Dialysis Procedure (S Giove et al)High Speed (>50 MFIPS) Digital VLSI CMOS Fuzzy Processors Designed for HEPE Applications (M Masetti et al)and other papers Readership: Scientists and researchers in fuzzy logic, robotics, image processing & computer vision, artificial intelligence, neural networks, systems & knowledge engineering, electrical & electronic engineering, experimental physics, applied mathematics and economics/finance. keywords:

To reduce the amount of Rare-earth Elements in high efficient permanent magnet electric motors, the magnetic stray flux has to be reduced. Additonally, a temperature reduction inside the motor reduces the necessary amount of the so called Heavy Rare-earth Elements, which account for the bulk part of the magnet material costs. In this thesis a permanent magnet motor in wet rotor configuration for an automotive application is designed. It was shown that by simple thermal improvements of the electric insulation system the maximum temperature of the stator can be reduced. Extensive measurements on different combinations of insulation material of the stator and the development of a new thermal model for orthocyclic wound stators were performed. Due to the use of fiber cans eddy current losses could be eliminated and the stray flux minimized. In a second stage a magnetizing fixture was build up, which is able to magnetize the buried magnets inside the rotor. The rotor and the magnetizing fixture was developed, so that the magnets can be optimal magnetized. To check the

quality of the magnets the magnetizing coil was developed in a way, such that the hysteresis curve of every single magnet during magnetization can be measured. Different magnets were tested and ways to calculate parasitics are given. Um die Menge an Selten Erden in hoch-effizienten permanent erregten Elektromotoren zu reduzieren, muss der magnetische Streufluss verringert werden. Eine Temperaturreduktion im Motor verringert zudem die nötige Menge an so genannten schweren Selten Erden, welche einen Großteil der Kosten der Magnetmaterialien ausmachen. In dieser Arbeit wird dazu ein permanent erregter Nassläufer für eine automotive Anwendung ausgelegt. Es konnte gezeigt werden, dass durch einfache Maßnahmen im Bereich der elektrischen Isolation die maximale Temperatur im Stator reduziert werden konnte. Umfangreiche Messungen an verschiedenen Kombinationen von elektrischen Isolationen des Stators und die Entwicklung eines neuen thermischen Models für orthozyklisch gewickelte Statoren wurden getätigt. Durch Einsatz von Spaltrohren aus Faserverbundwerkstoffen konnten die Wirbelstromverluste beseitigt werden und der Streufluss minimiert werden. In einem zweiten Schritt wurde eine Magnetisiervorrichtung aufgebaut, mit der die zu Anfang unmagnetisierten eingebetteten Magneten im Rotor aufmagnetisiert werden konnten. Der Rotor wurde zudem zusammen mit der Magnetisierungsspule so ausgelegt, dass die Magnete optimal magnetisiert werden können. Um die Qualität der Magnete zu testen wurde die Magnetisierspule zudem so ausgelegt, dass eine Messung der Hysteresekurve jedes einzelnen Magneten während der Magnetisierung möglich ist. Verschiedene Magnete wurden vermessen und Möglichkeiten zur Bestimmung von parasitären Effekten gegeben.

The information infrastructure - comprising computers, embedded devices, networks and software systems - is vital to operations in every sector: chemicals, commercial facilities, communications, critical manufacturing, dams, defense industrial base, emergency services, energy, financial services, food and agriculture, government facilities, healthcare and public health, information technology, nuclear reactors, materials and waste, transportation systems, and water and wastewater systems. Global business and industry, governments, indeed society itself, cannot function if major components of the critical information infrastructure are degraded, disabled or destroyed. Critical Infrastructure Protection XI describes original research results and innovative applications in the interdisciplinary field of critical infrastructure protection. Also, it highlights the importance of weaving science, technology and policy in crafting sophisticated, yet practical, solutions that will help secure information, computer and network assets in the various critical infrastructure sectors. Areas of coverage include: Infrastructure Protection, Infrastructure Modeling and Simulation, Industrial Control System Security, and Internet of Things Security. This book is the eleventh volume in the annual series produced by the International Federation for Information Processing (IFIP) Working Group 11.10 on Critical Infrastructure Protection, an international community of scientists, engineers, practitioners and policy makers dedicated to advancing research, development and implementation efforts focused on infrastructure protection. The book contains a selection of sixteen edited papers from the Eleventh Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection, held at SRI International, Arlington, Virginia, USA in the spring of 2017. Critical Infrastructure Protection XI is an important resource for researchers, faculty members

and graduate students, as well as for policy makers, practitioners and other individuals with interests in homeland security.

SCI: Scalable Coherent InterfaceArchitecture and Software for High-Performance Compute ClustersSpringer

Considered a standard industry resource, the Embedded Systems Handbook provided researchers and technicians with the authoritative information needed to launch a wealth of diverse applications, including those in automotive electronics, industrial automated systems, and building automation and control. Now a new resource is required to report on current developments and provide a technical reference for those looking to move the field forward yet again. Divided into two volumes to accommodate this growth, the Embedded Systems Handbook, Second Edition presents a comprehensive view on this area of computer engineering with a currently appropriate emphasis on developments in networking and applications. Those experts directly involved in the creation and evolution of the ideas and technologies presented offer tutorials, research surveys, and technology overviews that explore cutting-edge developments and deployments and identify potential trends. This first self-contained volume of the handbook, Embedded Systems Design and Verification, is divided into three sections. It begins with a brief introduction to embedded systems design and verification. It then provides a comprehensive overview of embedded processors and various aspects of system-on-chip and FPGA, as well as solutions to design challenges. The final section explores power-aware embedded computing, design issues specific to secure embedded systems, and web services for embedded devices. Those interested in taking their work with embedded systems to the network level should complete their study with the second volume: Network Embedded Systems.

Magnetic Materials and their Applications discusses the principles and concepts behind magnetic materials and explains their applications in the fields of physics and engineering. The book covers topics such as the principal concepts and definitions related to magnetism; types of magnetic materials and their electrical and mechanical properties; and the different factors influencing magnetic behavior. The book also covers topics such as permanent-magnet materials; magnetic materials in heavy-current engineering; and the different uses of magnetic materials. The text is recommended for physicists and electrical engineers who would like to know more about magnetic materials and their applications in the field of electronics.

This book discusses the most significant recent advances in oncological molecular imaging, covering the full spectrum from basic and preclinical research to clinical practice. The content is divided into five sections, the first of which is devoted to standardized and emerging technologies and probe designs for different modalities, such as PET, SPECT, optical and optoacoustic imaging, ultrasound, CT, and MRI. The second section focuses on multiscale preclinical applications ranging from advanced microscopy and mass spectroscopy to whole-body imaging. In the third section, various clinical applications are presented, including image-guided surgery and the radiomic analysis of multiple imaging features. The final two sections are dedicated to the emerging, crucial role that molecular imaging can play in the planning and monitoring of external and internal radiotherapy, and to future challenges and prospects in multimodality imaging. Given its scope, the handbook will benefit all readers who are interested in the revolution in diagnostic and therapeutic oncology that is now being

brought about by molecular imaging.

This book presents the scientific outcomes of the conference 11th Days of Bosnian-Herzegovinian American Academy of Arts and Sciences, held in Sarajevo, Bosnia and Herzegovina, June 20–23, 2019. Including innovative applications of advanced technologies, it offers a uniquely comprehensive, multidisciplinary and interdisciplinary overview of the latest developments in a broad range of technologies and methodologies, viewed through the prism of computing, networking, information technology, robotics, complex systems, communications, energy, mechanical engineering, economics and medicine, among others.

During the past few years there has been an dramatic upsurge in research and development, implementations of new technologies, and deployments of actual solutions and technologies in the diverse application areas of embedded systems. These areas include automotive electronics, industrial automated systems, and building automation and control. Comprising 48 chapters and the contributions of 74 leading experts from industry and academia, the Embedded Systems Handbook, Second Edition presents a comprehensive view of embedded systems: their design, verification, networking, and applications. The contributors, directly involved in the creation and evolution of the ideas and technologies presented, offer tutorials, research surveys, and technology overviews, exploring new developments, deployments, and trends. To accommodate the tremendous growth in the field, the handbook is now divided into two volumes. New in This Edition: Processors for embedded systems Processor-centric architecture description languages Networked embedded systems in the automotive and industrial automation fields Wireless embedded systems Embedded Systems Design and Verification Volume I of the handbook is divided into three sections. It begins with a brief introduction to embedded systems design and verification. The book then provides a comprehensive overview of embedded processors and various aspects of system-on-chip and FPGA, as well as solutions to design challenges. The final section explores power-aware embedded computing, design issues specific to secure embedded systems, and web services for embedded devices. Networked Embedded Systems Volume II focuses on selected application areas of networked embedded systems. It covers automotive field, industrial automation, building automation, and wireless sensor networks. This volume highlights implementations in fast-evolving areas which have not received proper coverage in other publications. Reflecting the unique functional requirements of different application areas, the contributors discuss inter-node communication aspects in the context of specific applications of networked embedded systems.

In recent years, there has been considerable interest in highly integrated, low power, portable wireless devices. This monograph focuses on the problem of low power GFSK/GMSK modulation and presents an architectural approach for improved performance. Including several valuable tools for the practicing engineer.

Scalable Coherent Interface (SCI) is an innovative interconnect standard (ANSI/IEEE Std 1596-1992) addressing the high-performance computing and networking domain. This book describes in depth one specific application of SCI: its use as a high-speed interconnection network (often called a system area network, SAN) for compute clusters built from commodity workstation nodes. The editors and authors, coming from both academia and industry, have been instrumental in the SCI standardization process, the development and deployment of SCI adapter cards, switches, fully integrated clusters, and software systems, and are closely

involved in various research projects on this important interconnect. This thoroughly cross-reviewed state-of-the-art survey covers the complete hardware/software spectrum of SCI clusters, from the major concepts of SCI, through SCI hardware, networking, and low-level software issues, various programming models and environments, up to tools and application experiences.

This book is a comprehensive and richly-illustrated guide to cardiac CT, its current state, applications, and future directions. While the first edition of this text focused on what was then a novel instrument looking for application, this edition comes at a time where a wealth of guideline-driven, robust, and beneficial clinical applications have evolved that are enabled by an enormous and ever growing field of technology. Accordingly, the focus of the text has shifted from a technology-centric to a more patient-centric appraisal. While the specifications and capabilities of the CT system itself remain front and center as the basis for diagnostic success, much of the benefit derived from cardiac CT today comes from avant-garde technologies enabling enhanced visualization, quantitative imaging, and functional assessment, along with exciting deep learning, and artificial intelligence applications. Cardiac CT is no longer a mere tool for non-invasive coronary artery stenosis detection in the chest pain diagnostic algorithms; cardiac CT has proven its value for uses as diverse as personalized cardiovascular risk stratification, prediction, and management, diagnosing lesion-specific ischemia, guiding minimally invasive structural heart disease therapy, and planning cardiovascular surgery, among many others. This second edition is an authoritative guide and reference for both novices and experts in the medical imaging sciences who have an interest in cardiac CT.

This practical guide provides a comprehensive survey of all relevant inductive sensor classes for industrial applications in a single volume, from automotive use to white goods, covering design, fabrication, implementation, principles and functionality as well as standards and EMC requirements. The book addresses professional engineers and technicians, but is also accessible to students who require a solid basic knowledge of inductive sensors. Each chapter begins with classic, traditional explanations and gradually moves on to state-of- the art analog and digital solutions, including large-scale integrated systems-on-chip, software defined sensors SDS, digital signal synthesis, coils on silicon and active inductors. The book employs three modern analysis methods: analytic computation; popular graphical methods (phasor diagrams, phase plans, Smith charts, etc.) and computer assisted tools, like the electromagnetic field simulator, Maxwell, and the popular Spice simulator for electronic circuits. For traditional solutions, the chapters give overviews in tables with computation formulae (including empirical expressions). Numerical examples help the reader consolidate the theoretical knowledge gained. Concrete examples for currently available commercial parts are provided.

From the reviews: "Takes the reader on a journey that covers all the basic science and engineering related to the topic of developing a solid-state laser for common materials processing problems. [...] Entrants to the field will certainly find it a book to keep for future reference." Optics & Photonic News