

The Power Supply Handbook

Practical Design of Power Supplies "In a rare and very welcome departure from the power industry's standard technical treatise, Ron Lenk's book . . . offers a clear, pragmatic view of the practical real-world aspects governing power supply design . . . Engineers at all levels . . . can expect to gain an enlightened perspective normally gained only after years of design experience." --Frank Wahl, Managing Editor, PCIM Magazine "This is a real hands-on reference in which Ron has done an outstanding job of combining just enough theory for understanding, together with several lifetimes' worth of experience. I am confident that it is destined to become dog-eared and worn on the top of every power supply designer's desk." --Bob Mammano, Vice President Advanced Technology, Unitrode Practical Design of Power Supplies details key techniques and offers advice to engineers and technicians who want to design and build power supplies that work the first time they are turned on. Leading authority Ron Lenk presents current, experiment-based information that can save hours of research and design time. Containing many handy "Practice Notes" and real-world examples, Practical Design of Power Supplies is an excellent how-to reference to keep by your side throughout the design, lab, and production phases. The topics covered will be immediately useful in everyday circuits and systems work: * Common terms and instrumentation * How to design successful magnetics * How to compensate the feedback loop to obtain stable operation * Practical EMI * Topology selection * Worst-case analysis Practical Design of Power Supplies will be especially useful to designers who need to understand and implement the concepts behind loop compensation and magnetics design.

Loop control is an essential area of electronics engineering that today's professionals need to master. Rather than delving into extensive theory, this practical book focuses on what you really need to know for compensating or stabilizing a given control system. You can turn instantly to practical sections with numerous design examples and ready-made formulas to help you with your projects in the field. You also find coverage of the underpinnings and principles of control loops so you can gain a more complete understanding of the material. This authoritative volume explains how to conduct analysis of control systems and provides extensive details on practical compensators. It helps you measure your system, showing how to verify if a prototype is stable and features enough design margin. Moreover, you learn how to secure high-volume production by bench-verified safety margins.

Sooner or later, power system protection is going to cost money. How much is entirely up to you. Setting up a safe and effective AC power system from the very beginning can help avoid costly downtime and repairs, provide backup power during system outages, and minimize workplace accidents. For the past 15 years, Jerry Whitaker's AC Power Systems Handbook has supplied industry professionals with a comprehensive, practical guide to the key elements of AC power for commercial and industrial systems. This third edition is thoroughly revised and completely reorganized to reflect the changing demands of modern power systems. To ease navigation, many sections are now presented as separate chapters filled with updated and expanded information. Most notably, the author adds heavily in the areas of transient suppression hardware, electrical system components, and power system fundamentals. Following a logical progression, coverage flows from power system operation to protecting equipment loads, selecting the right level of protection, grounding, standby power, and safety. Along the way, the author paints a clear picture of the sources of disturbances, the tradeoffs involved for different options, and the advantages and limitations of various approaches. Streamlined to be a hands-on, user-oriented guide, the AC Power Systems Handbook offers expert guidance on designing and installing a safe and efficient power system.

Ready-made SPICE power supply solutions Now you can get solutions to the most difficult problems facing power supply designers: shrinking size and increased thermal constraints. Christophe Basso's SMPS SPICE Cookbook is a complete designer's toolkit with tested, ready-to-run SPICE models on an accompanying CD-ROM. The models come in all three SPICE flavors with demo versions. You can start from scratch, installing the software and simulating the examples in the book without any SPICE experience whatsoever. All the common SMPS topologies are covered: buck, boost, buck-boost, and SEPIC. Each is described in terms of relative strengths and weaknesses and then modeled. Just turn to the CD, pull out the model in the flavor of SPICE you use, plug in your own values – and out comes a design solution. All the models in the book have been carefully simulated and tested. A special website even lets you access new models that will be posted on a continuing basis

Harness Powerful SPICE Simulation and Design Tools to Develop Cutting-Edge Switch-Mode Power Supplies Switch-Mode Power Supplies: SPICE Simulations and Practical Designs is a comprehensive resource on using SPICE as a power conversion design companion. This book uniquely bridges analysis and market reality to teach the development and marketing of state-of-the art switching converters. Invaluable to both the graduating student and the experienced design engineer, this guide explains how to derive founding equations of the most popular converters...design safe, reliable converters through numerous practical examples...and utilize SPICE simulations to virtually breadboard a converter on the PC before using the soldering iron. Filled with more than 600 illustrations, Switch-Mode Power Supplies: SPICE Simulations and Practical Designs enables you to: Derive founding equations of popular converters Understand and implement loop control via the book-exclusive small-signal models Design safe, reliable converters through practical examples Use SPICE simulations to virtually breadboard a converter on the PC Access design spreadsheets and simulation templates on the accompanying CD-ROM, with numerous examples running on OrCAD[®], ICAPSE[®], ?Cap[®], TINA[®], and more Inside This Powerful SPICE Simulation and Design Resource • Introduction to Power Conversion • Small-Signal Modeling • Feedback and Control Loops • Basic Blocks and Generic Models • Simulation and Design of Nonisolated

Converters • Simulation and Design of Isolated Converters-Front-End Rectification and Power Factor Correction • Simulation and Design of Isolated Converters-The Flyback • Simulation and Design of Isolated Converters-The Forward

Unarguably the leading hands-on guide in this rapidly expanding area of electronics, Keith Billings' new revision of his Switchmode Power Supply Handbook brings state-of-the-art techniques and developments to engineers at all levels. Offering sound working knowledge of the latest in topologies and clear, step-by-step approaches to component decisions, this Handbook gives power supply designers practical, solutions-oriented design guidance free of unnecessarily complicated mathematical derivations and theory. This thoroughly updated Handbook features many new fully worked examples, as well as numerous nomograms--everything you need to design today's smaller, faster, and cooler systems. Turn to just about any page, and you'll find cutting-edge design expertise on electronic ballast, power factor correction, new thermal management techniques, transformers, chokes, input filters, EMI control, converters, snubber circuits, auxiliary systems, and much more. The most comprehensive book on power supply design available anywhere, Switchmode Power Supply Handbook is the industry standard, now fully updated for the 21st century.

The Third Edition of this classic reference is designed to provide authoritative guidance for engineers and technicians who have responsibility for planning, designing, building and operating electrical installation systems. The extensively revised scope includes a comprehensive overview of conventional and state-of-the-art installation equipment and its current usage. Special emphasis is placed on equipment with communication capability and the way in which this equipment is networked to the instabus EIB? bus system for a wide range of applications in residential and commercial buildings. The construction, dimensioning and protection of electrical distribution systems are treated taking into account the latest developments in systems engineering. In view of the electricity market deregulation and globalization and the associated standardization initiatives that are underway, reference has been made, where appropriate, to international, European and German norms, regulations and standards. This single volume edition is extensively illustrated throughout and includes a broad range of example applications of electrical installation systems.

Whether you are a student, a newly-minted engineer entering the field of power electronics, a salesperson needing to understand a customer's needs, or a seasoned power supply designer desiring to track down a forgotten equation, this book will be a significant aid. Beginning with the basic definition of a power supply, we will traverse through voltage regulation techniques and the components necessary for their implementation, and then move on to the myriad of circuit topologies and control algorithms prevalent in modern-day design solutions. Separate chapters on feedback-loop compensation and magnetic design principles will build on this foundation, along with in-depth descriptions for dealing with regulations for electromagnetic compatibility, human safety, and energy efficiency issues. Additional chapters will describe the value proposition for digital control and the practical aspects power supply construction.

This comprehensive book focuses on DC-DC switching power supply circuits, which are receiving attention as a key technology in green IT, especially in the automotive and consumer electronics industries. It covers buck converters, isolated converters, PFC converters, their modeling and analysis, several control methods, passive components, and their several recent applications (on-chip power supplies, DC-DC and AC-DC converter applications, single-inductor multi-output DC-DC converters, energy harvest applications, wireless power delivery, charge pump circuits, and power amplifiers). The contents are well balanced as the authors are from both academia and industry and include pioneers and inventors of hysteretic PWM control. Power Supplies for LED Driving, Second Edition explores the wide use of light-emitting diodes due to their efficient use of power. The applications for power LEDs include traffic lights, street lamps, automotive lighting, architectural lights, theatre lighting, household light replacements, signage lighting (replacing neon strip lights and fluorescent tubes), LCD display backlighting, and many more. Powering (driving) these LED's is not always simple. Linear driving is inefficient and generates far too much heat. With a switching supply, the main issues are EMI, efficiency, and of course cost. This book covers the design trade-offs involved in LED driving applications, from low-power, to UB-LEDs and beyond. Provides a practical, hands-on approach to power supply design for LED drivers Contains detailed examples of what works throughout the design process Presents commentary on how the calculated component value compares with the actual value used, including a description of why the choice was made

Simplified Design of Linear Power Supplies is an all-inclusive, one-stop guide to linear power-supply design, using step-by-step instructions and diagrams. The first half of the book describes how linear power supplies operate, and explains what is required to design such supplies. The second half provides specific design examples, using the techniques described in the first half. The basic approach in Simplified Design of Linear Power Supply is to start design problems with approximations for trial-value components in experimental circuits, then to vary the component values until the desired results (input/output, voltage and current, line and load regulation, ripple rejection, noise, etc.) are produced. The design examples can be put to immediate use, as is, or can be modified as required to meet a specific design goal, by following the instructions. John D. Lenk has been a technical author specializing in practical electronic design and troubleshooting guides for more than 40 years. An established writer of international best-sellers in the field of electronics, Mr. Lenk is the author of more than 80 books on electronics, which together have sold well over two million copies in nine languages. No previous design experience is required to use the techniques described. All popular forms of linear supplies are covered in detail (including zener, 3-terminal, feedback, current foldback, op-amp, series, shunt, and IC package). Extensive use of headings and subheadings helps the reader seeking information on specific types of supplies.

This book is essential for audio power amplifier designers and engineers for one simple reason...it enables you as a professional to develop reliable, high-performance circuits. The Author Douglas Self covers the major issues of distortion and linearity, power supplies, overload, DC-protection and reactive loading. He also tackles unusual forms of compensation and distortion produced by capacitors and fuses. This completely updated fifth edition includes four NEW chapters including one on The XD Principle, invented by the author, and used by Cambridge Audio. Crosstalk, power amplifier input systems, and microcontrollers in amplifiers are also now discussed in this fifth edition, making this book a must-have for audio power amplifier professionals and audiophiles.

Power Supply Cookbook, Second Edition provides an easy-to-follow, step-by-step design framework for a wide variety of power supplies. With this book, anyone with a basic knowledge of electronics can create a very complicated power supply design in less than one day. With the common industry design approaches presented in each section, this unique book allows the reader to design linear, switching, and quasi-resonant switching power supplies in an organized fashion. Formerly complicated design topics such as magnetics, feedback loop compensation design, and EMI/RFI control are all described in simple language and design steps. This book also details easy-to-modify design examples that provide the reader with a design template useful for creating a variety of power supplies. This newly revised edition is a practical, "start-to-finish" design reference. It is organized to allow both seasoned and inexperienced engineers to quickly find and apply the information they need. Features of the new edition include updated information on the design of the output stages, selecting the controller IC, and other functions associated with power supplies, such as: switching power supply control, synchronization of the power supply to an external source, input low voltage inhibitors, loss of power signals, output voltage shut-down, major current loops, and paralleling filter capacitors. It also offers coverage of waveshaping techniques, major loss reduction techniques, snubbers, and quasi-resonant converters. Guides engineers through a step-by-step design framework for a wide variety of power supplies, many of which can be designed in less than one day Provides easy-to-understand information about often complicated topics, making power supply design a much more accessible and enjoyable process

The World's #1 Guide to Power Supply Design Now Updated! Recognized worldwide as the definitive guide to power supply design for over 25 years, Switching Power Supply Design has been updated to cover the latest innovations in technology, materials, and components. This Third Edition presents the basic principles of the most commonly used topologies, providing you with the essential information required to design cutting-edge power supplies. Using a tutorial, how-and-why approach, this expert resource is filled with design examples, equations, and charts. The Third Edition of Switching Power Supply Design features: Designs for many of the most useful switching power supply topologies The core principles required to solve day-to-day design problems A strong focus on the essential basics of transformer and magnetics design New to this edition: a full chapter on choke design and optimum drive conditions for modern fast IGBTs Get Everything You Need to Design a Complete Switching Power Supply: Fundamental Switching Regulators * Push-Pull and Forward Converter Topologies * Half- and Full-Bridge Converter Topologies * Flyback Converter Topologies * Current-Mode and Current-Fed Topologies * Miscellaneous Topologies * Transformer and Magnetics Design * High-Frequency Choke Design * Optimum Drive Conditions for Bipolar Power Transistors, MOSFETs, Power Transistors, and IGBTs * Drive Circuits for Magnetic Amplifiers * Postregulators * Turn-on, Turn-off Switching Losses and Low Loss Snubbers * Feedback-Loop Stabilization * Resonant Converter Waveforms * Power Factor and Power Factor Correction * High-Frequency Power Sources for Fluorescent Lamps, and Low-Input-Voltage Regulators for Laptop Computers and Portable Equipment

Switchmode Power Supply Handbook 3/EMcGraw Hill Professional

Take the "black magic" out of switching power supplies with Practical Switching Power Supply Design! This is a comprehensive "hands-on" guide to the theory behind, and design of, PWM and resonant switching supplies. You'll find information on switching supply operation and selecting an appropriate topology for your application. There's extensive coverage of buck, boost, flyback, push-pull, half bridge, and full bridge regulator circuits. Special attention is given to semiconductors used in switching supplies. RFI/EMI reduction, grounding, testing, and safety standards are also detailed. Numerous design examples and equations are given and discussed. Even if your primary expertise is in logic or microprocessor engineering, you'll be able to design a power supply that's right for your application with this essential guide and reference! Gives special attention to resonant switching power supplies, a state-of-the-art trend in switching power supply design Approaches switching power supplies in an organized way beginning with the advantages of switching supplies and their basic operating principles Explores various configurations of pulse width modulated (PWM) switching supplies and gives readers ideas for the direction of their designs Especially useful for practicing design engineers whose primary specialty is not in analog or power engineering fields

Design any internal or external DC power supply. Sharpen your technical mastery of dc power supplies and keep your electronics career on the fast track with DC Power Supplies, by Joseph J. Carr. It's your complete, on-to-the-job guide to building virtually every kind of internal and external dc power supply - high-voltage, remote, portable and emergency. You'll hone your skills with build-it-yourself projects and work with real-world components and values to: Design and build flawless power supply architectures. Ensure electrical safety. Understand batteries - from voltaic cells to gel-cell units. Generate alternating current. Protect transistors and IC regulators. Master switching, monitoring, metering and control. Deploy and test transformers. Operate and select rectifiers. Apply ripple filter circuits. And much more.

Power Supply design is all about detail. And a large part of that detail lies in the practical domain, largely because of the typically small number of microseconds of switching periods involved, and the even smaller tens of nanoseconds of switch transition times --- all these, in effect accentuating various "second-order" effects, that eventually end up playing prime havoc with "normal" expectations of how the circuit should behave. So not unsurprisingly, even after reading several books, most readers still find themselves no closer to the ultimate goal of designing an actual power supply. Sooner or later, all engineers start realizing the hard fact that designing a switching power supply isn't the trivial task it once seemed to be. But even after years of successfully mastering the underlying theory, the ultimate goal of creating a cost-effective, reliable and commercially viable power supply may still remain a distant dream, since success ultimately hinges on experience. That is, in fact, what clearly differentiates a senior and seasoned power supply engineer from the others --- the ability to navigate and surmount a veritable minefield of tricky issues that can only be learned the hard way, by actual hands-on experience on the job. This book presents practical knowledge the author acquired rather painfully, while working "in the trenches" for several years in major engineering companies scattered across several continents. This is intended to be the mythical senior engineer's "bag of tricks," finally made available in the form of an easy-to-read book on your shelf. This book will make life for the ambitious power supply engineer much simpler --- besides reducing significantly, the rigorous requirement of having to be a senior engineer's protégé for years on end, just to gain a small measure of real success in this field. * A practical presentation that answers the important question: why is my switching converter behaving so differently than what I was expecting on the basis of my paper design? And how do I bridge that huge gap? * For the first time, a systematic and thorough discussion of troubleshooting switching power supplies. * Coverage of AC/DC and DC/DC power supplies. * Bench Evaluation of semiconductor ICs used in power conversion --- describing standard and unusual techniques mastered by the author, while testing similar chips at National Semiconductor. * Detailed coverage of vital topics that haven't been covered by available sources --- grounding systems, the subtleties of component datasheets, and using instruments and probes effectively. * Systematic investigation (type of failure mechanism, topology, etc.) and solutions for 5 years of reported power supply issues on a prominent, public web forum. This approach will ensure that engineers will not repeat the same mistakes. * A unique, readable style: personal and direct; no mystification--- just the plain truth, easily and logically explained, with plenty of pictures, graphs and plots.

THE LATEST SPICE SIMULATION AND DESIGN TOOLS FOR CREATING STATE-OF-THE-ART SWITCHMODE POWER SUPPLIES Fully updated to incorporate new SPICE features and capabilities, this practical guide explains, step by step, how to simulate, test, and improve switch-mode power supply designs. Detailed formulas with founding equations are included. Based on the author's continued research and in-depth, hands-on work in the field, this revised resource offers a collection of the latest SPICE solutions to the most difficult problem facing power supply designers: creating smaller, more heat-efficient power supplies in shorter design cycles. NEW to this edition: Complete analysis of rms currents for the three basic cells in CCM and DCM PWM switch at work in the small-signal analysis of the DCM boost and the QR flyback OTA-based compensators Complete transistor-level TL431 model Small-signal analysis of the

borderline-operated boost PFC circuit operated in voltage or current mode All-over power phenomena in QR or fixed-frequency discontinuous/continuous flyback converters Small-signal model of a QR flyback converter Small-signal model of the active clamp forward converter operated in voltage mode control Electronic content—design templates and examples available online Switch-Mode Power Supplies: SPICE Simulations and Practical Designs, Second Edition, covers: Small-signal modeling * Feedback and control loops * Basic blocks and generic switched models * Nonisolated converters * Off-line converters * Flyback converters * Forward converters * Power factor correction

Crandall's Power Supply Testing Handbook comes into the marketplace at an optimum time. Now, more than ever, there is an urgency for a comprehensive handbook on power supply testing that will fulfill the reference needs of the wide variety of professionals testing power supplies, including designers, manufacturers, purchasers, and field service organizations.

Chapter 1: The Principles of Switching Power Conversion Chapter 2: DC-DC Converter Design and Magnetics Chapter 3: Off-line Converter Design and Magnetics Chapter 4: The Topology FAQ Chapter 5: Optimal Core Selection Chapter 6: Component Ratings, Stresses, Reliability and Life Chapter 7: Optimal Power Components Selection Chapter 8: Conduction and Switching Losses Chapter 9: Discovering New Topologies Chapter 10: Printed Circuit Board Layout Chapter 11: Thermal Management Chapter 12: Feedback Loop Analysis and Stability Chapter 13: Paralleling, Interleaving and Sharing Chapter 14: The Front-End of AC-DC Power Supplies Chapter 15: DM and CM Noise in Switching Power Supplies Chapter 16: Fixing EMI across the Board Chapter 17: Input Capacitor and Stability Chapter 18: The Math behind the Electromagnetic Puzzle Chapter 19: Solved Examples Appendix A.

Using this book as a guide, Pressman promises, even a novice can immediately design a complete switching power supply circuit. No other book has such complete instruction in one volume. Using a tutorial, how-to approach, Pressman covers every aspect of this new technology, including circuit and transformer design, using higher switching frequencies, new topologies, and integrated PWM chips. For this latest edition, Pressman has added in-depth discussion of power factor correction, high-frequency ballasts for fluorescent lamps, and low-input voltage power supplies for laptop computers.

As industry power demands become increasingly sensitive, power quality distortion becomes a critical issue. The recent increase in nonlinear loads drawing non-sinusoidal currents has seen the introduction of various tools to manage the clean delivery of power. Power demands of medical facilities, data storage and information systems, emergency equipment, etc. require uninterrupted, high quality power. Uninterruptible power supplies (UPS) and active filters provide this delivery. The first to treat these power management tools together in a comprehensive discussion, Uninterruptible Power Supplies and Active Filters compares the similarities of UPS, active filters, and unified power quality conditioners. The book features a description of low-cost and reduced-parts configurations presented for the first time in any publication, along with a presentation of advanced digital controllers. These configurations are vital as industries seek to reduce the cost of power management in their operations. As this field of power management technology continues to grow, industry and academia will come to rely upon the comprehensive treatment found within this book. Industrial engineers in power quality, circuits and devices, and aerospace engineers as well as graduate students will find this a complete and insightful resource for studying and applying the tools of this rapidly developing field.

This book describes the fundamentals and principles of energy harvesting and provides the necessary theory and background to develop energy harvesting power supplies. It explains the overall system design and gives quantitative assumptions on environmental energy. It explains different system blocks for an energy harvesting power supply and the trade-offs. The text covers in detail different energy transducer technologies such as piezoelectric, electrodynamic, and thermoelectric generators and solar cells from the material to the component level and explains the appropriate power management circuits required in these systems. Furthermore, it describes and compares storage elements such as secondary batteries and supercapacitors to select the most appropriate one for the application. Besides power supplies that use ambient energy, the book presents systems that use electromagnetic fields in the radio frequency range. Finally, it discusses different application fields and presents examples of self-powered electronic systems to illustrate the content of the preceding chapters.

The latest techniques for designing state-of-the-art power supplies, including resonant (LLC) converters Extensively revised throughout, Switching Power Supply Design & Optimization, Second Edition, explains how to design reliable, high-performance switching power supplies for today's cutting-edge electronics. The book covers modern topologies and converters and features new information on designing or selecting bandgap references, transformer design using detailed new design charts for proximity effects, Buck efficiency loss teardown diagrams, active reset techniques, topology morphology, and a meticulous AC-DC front-end design procedure. This updated resource contains design charts and numerical examples for comprehensive feedback loop design, including TL431, plus the world's first top-down simplified design methodology for wide-input resonant (LLC) converters. A step-by-step comparative design procedure for Forward and Flyback converters is also included in this practical guide. The new edition covers: Voltage references DC-DC converters: topologies to configurations Contemporary converters, composites, and related techniques Discontinuous conduction mode Comprehensive front-end design in AC-DC power conversion Topologies for AC-DC applications Tapped-inductor (autotransformer-based) converters Selecting inductors for DC-DC converters Flyback and Forward converter transformer design Forward and Flyback converters: step-by-step design and comparison PCBs and thermal management Closing the loop: feedback and stability, including TL431 Practical EMI filter design Reset techniques in Flyback and Forward converters Reliability, testing, and safety issues Unraveling and optimizing Buck converter efficiency Introduction to soft-switching and detailed LLC converter design methodology with PSpice simulations Practical circuits, design ideas, and component FAQs

Power and Energy industry is a highly capital intensive business field. Furthermore there is a very close interlinkage between technologies and economics that requires engineering consultants, economists and lawyers dealing with investments in this field to have a basic knowledge of the power sector technologies and a common understanding of project evaluation approaches and methodologies. The book's overall objective is to provide a comprehensive but concise coverage of power supply technologies and the related economics as required for techno-economic evaluation of investments in power and business projects. Throughout the book, the emphasis is on transferring practical know-how rather than pure theoretical knowledge. This is also demonstrated in numerous examples derived from experience of respective projects. The book comprises eleven chapters, 35 tables, 100 figures, 35 application examples and 10 case studies Target audience of the book are primarily international consultants, staff members of engineering companies, utility personnel, energy economists and lawyers, as well as

employees of government agencies entrusted with regulating the energy and utility sector and, finally, students in related fields of engineering and economics.

The definitive guide to switchmode power supply design--fully updated Covering the latest developments and techniques, Switchmode Power Supply Handbook, third edition is a thorough revision of the industry-leading resource for power supply designers. New design methods required for powering small, high-performance electronic devices are presented. Based on the authors' decades of experience, the book is filled with real-world solutions and many nomograms, and features simplified theory and mathematical analysis. This comprehensive volume explains common requirements for direct operation from the AC line supply and discusses design, theory, and practice. Engineering requirements of switchmode systems and recommendations for active power factor correction are included. This practical guide provides you with a working knowledge of the latest topologies along with step-by-step approaches to component decisions to achieve reliable and cost-effective power supply designs. Switchmode Power Supply Handbook, third edition covers: Functional requirements of direct off-line switchmode power supplies Power components selection and transformer designs for converter circuits Transformer, choke, and thermal design Input filters, RFI control, snubber circuits, and auxiliary systems Active power factor correction system design Worked examples of would components Examples of fully resonant and quasi-resonant systems A resonant inverter fluorescent ballast An example of high-power phase shift modulated system A new MOSFET resonant inverter drive scheme A single-control, wide-range wave oscillator

Power electronics, which is a rapidly growing area in terms of research and applications, uses modern electronics technology to convert electric power from one form to another, such as ac-dc, dc-dc, dc-ac, and ac-ac with a variable output magnitude and frequency. Power electronics has many applications in our every day life such as air-conditioners, electric cars, sub-way trains, motor drives, renewable energy sources and power supplies for computers. This book covers all aspects of switching devices, converter circuit topologies, control techniques, analytical methods and some examples of their applications. * 25% new content * Reorganized and revised into 8 sections comprising 43 chapters * Coverage of numerous applications, including uninterruptable power supplies and automotive electrical systems * New content in power generation and distribution, including solar power, fuel cells, wind turbines, and flexible transmission Outlines in technical terms the design, construction, and application of power sources as used in high and low-voltage situations encountered by the hobbyist or engineer

Now that computer and electronic control systems are widely established, many essential services (such as hospitals, traffic control, airports etc) and industrial / production facilities (including power stations) can be seriously disturbed by breaks in or contamination of their power supplies. This book is a comprehensive guide to the various types of uninterruptible power supply (UPS) available, and how a UPS can be specified and applied for safe and reliable functioning in the working environment.

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