

Synchronous Demodulator And Configurable Analog Filter

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Optical Engineering - 1998

Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society - IEEE Engineering in Medicine and Biology Society. Conference 1988

A CMOS Self-Powered Front-End Architecture for Subcutaneous Event-Detector Devices - Jordi Colomer-Farrarons 2011-02-17

A CMOS Self-Powered Front-End Architecture for Subcutaneous Event-Detector Devices presents the conception and prototype realization of a Self-Powered architecture for subcutaneous detector devices. The architecture is designed to work as a true/false (event detector) or threshold level alarm of some substances, ions, etc... that are detected through a three-electrodes amperometric BioSensor approach. The device is envisaged as a Low-Power subcutaneous implantable application powered by an inductive link, one emitter antenna at the external side of the skin and the receiver antenna under the skin. The sensor is controlled with a Potentiostat circuit and then, a post-processing unit detects the desired levels and activates the transmission via a backscattering method by the inductive link. All the instrumentation, except the power module, is implemented in the so called BioChip. Following the idea of the powering link to harvest energy of the magnetic induced link at the implanted device, a Multi-Harvesting Power Chip (MHPC) has been also designed.

Multigigabit Microwave and Millimeter-Wave Wireless Communications - Jonathan Wells 2010

For decades, microwave radios in the 6 to 50 GHz bands have been providing wireless communications. Recently, newer technologies at the 60 to 100 GHz mm-wave bands have taken advantage of new wireless regulations that are designed to enable ultra-high capacity communications. Exploring this exciting area in depth, this cutting-edge resource offers you the latest details on multigigabit wireless communications. The book places emphasis on practical use and applications, but also provides a thorough explanation of important technological underpinnings to give you a complete understanding of subject. You find clear guidance on system design and link planning, helping you to determine performance levels given the physical limitations of operating in these frequency bands. Supported with over 50 illustrations, the book covers a wide range of critical topics, from the high frequency electromagnetic spectrum and high data rate mm-wave radios, to wireless link margins and path profiling.

State of the Art in Biosensors - Toonika Rinken 2013-03-13

As biosensors comprise a prospective alternative to traditional chemical analyses, enabling fast on- and in-line measurements with sufficient selectivity, the field is expanding rapidly and is offering new ideas and developments every day. This book aims to cover the present state of the art in the biosensor technology and introduce the general aspects of biosensor-based techniques and methods. The book consists of 13 chapters by 44 authors and is divided into 3 sections, focused on bio-recognition techniques, signal transduction methods and signal analysis.

Telecommunication Electronics - Dante Del Corso 2020-02-29

This practical, hands-on resource describes functional units and circuits of telecommunication systems. The functions characterizing these systems, including RF amplifiers (both low noise and power amplifiers), signal sources,

mixers and phase lock loops, are explored from an operational level viewpoint. And as all functions are migrating to digital implementations, this book describes functional units and circuits of telecommunication systems (with radio, wire, or optical links), from functional level viewpoint to the circuit details and examples. The structure of a radio transceiver is described and a view of all functional units, including migration to SDR (Software Defined Radio) is provided. Chapters include a functional identification of the units described and analysis of possible circuit solutions and analysis of error sources. The sequence reflects the actual design procedure: functional identification, search and analysis of solutions, and critical review to provide an understanding of the various solutions and tradeoffs, with guidelines for design and/or selection of proper functional units.

Industrial Instrumentation - Tattamangalam R. Padmanabhan 1999-12-13

Pneumatic, hydraulic and allied instrumentation schemes have given way to electronic schemes in recent years thanks to the rapid strides in electronics and allied areas. Principles, design and applications of such state-of-the-art instrumentation schemes form the subject matter of this book. Through representative examples, the basic building blocks of instrumentation schemes are identified and each of these building blocks discussed in terms of its design and interface characteristics. The common generic schemes synthesized with such building blocks are dealt with subsequently. This forms the scope of Part I. The focus in Part II is on application. Displacement and allied instrumentation, force and allied instrumentation and process instrumentation in terms of temperature, flow, pressure level and other common process variables are dealt with separately and exhaustively. Despite the diversity in the sensor principles and characteristics and the variety in the applications and their environments, it is possible judiciously to carve out broad areas of application for each type of sensor and the instrumentation built around it. The last chapter categorises instrumentation schemes according to their different levels of complexity. Specific practical examples - especially at involved complexity levels - are discussed in detail.

Official Gazette of the United States Patent and Trademark Office - 2002

Proceedings of the United States Naval Institute - United States Naval Institute 1978

Optical Modulation - Le Nguyen Binh 2017-11-22

This books aims to present fundamental aspects of optical communication techniques and advanced modulation techniques and extensive applications of optical communications systems and networks employing single-mode optical fibers as the transmission system. New digital techqniues such as chromatic dispersion, polarization mode dispersion, nonlinear phase distortion effects, etc. will be discussed. Practical models for practice and understanding the behavior and dynamics of the devices and systems will be included.

CMOS Analog Circuit Design - Phillip E. Allen 2011

"A textbook for 4th year undergraduate/first year graduate electrical engineering students"--

UAV-Based Remote Sensing Volume 1 - Felipe Gonzalez Toro 2018-04-27

This book is a printed edition of the Special Issue "UAV-Based Remote Sensing" that was published in Sensors

Electronic Interfaces for Differential Capacitive Sensors - Gianluca Barile 2022-09-01

In a world where great efforts are spent designing and creating more complex, yet efficient systems, sensing elements and related readout circuits, which constitute an integral part of them, need to be designed fulfilling these constraints, beside the common key parameters, such as high sensitivity, resolution and accuracy. Capacitive sensors and their differential subset provide virtually no energy dissipation, show insensitivity to temperature variations and have the capability to be micromachined directly onto a silicon substrate, together with the readout interface. Designing a readout circuit that takes advantage of these benefits, according to any specific application, is thus of utmost importance. This volume introduces the reader to state-of-the-art techniques and research achievements in interfacing differential capacitance sensors. Technical topics discussed in the book include:• Switched capacitor based interfaces;• Voltage mode, differential capacitance to time, voltage, digital converters;• Current mode interfaces based on standard components;• Current mode interfaces based on CCIIs and VCIIs;• Principles of second generation current and voltage conveyors. This book gives the reader a comprehensive overview on the working principles, equivalent circuit models and most advanced interfacing techniques for differential capacitive transducers, highlighting benefits and downsides of each option. Electronic interfaces for differential capacitive sensors is an ideal text for academic staff and Masters/research students in electronic and microelectronic engineering. Optical Engineering for Cold Environments - George W. Aitken 1983

Electronic Products Magazine - 1973

Practical Analog and RF Electronics - Daniel B. Talbot 2020-09-22

This is a book about real-world design techniques for analog circuits: amplifiers, filters, injection-locked oscillators, phase-locked loops, transimpedance amplifiers, group delay correction circuits, notch filters, and spectrum regrowth in digital radio frequency (RF) transmitters, etc. The book offers practical solutions to analog and RF problems, helping the reader to achieve high-performance circuit and system design. A variety of issues are covered, such as: How to flatten group delay of filters How to use reciprocity to advantage How to neutralize a parasitic capacitance How to deepen a notch by adding only two components to the network How to demodulate a signal using the secant waveform and its benefit How to flatten the frequency response of a diode detector When to use a transimpedance amplifier and how to maximize its performance How to recover non-return-to-zero (NRZ) data when alternating current (AC) coupling is required Why phase noise corrupts adjacent communication channels Simple method to prevent false locking in phase-locked loops How to improve the bandwidth of amplification by using current conveyors A very simple impedance matching technique requiring only one reactive component How to use optimization Quadrature distortion and cross-rail interference This book is meant to be a handbook (or a supplemental textbook) for students and practitioners in the design of analog and RF circuitry with primary emphasis on practical albeit sometimes unorthodox circuit realizations. Equations and behavioral simulations result in an abundance of illustrations, following a "words and pictures" easy-to-understand approach. Teachers will find the book an important supplement to a standard analog and RF course, or it may stand alone as a textbook. Working engineers may find it useful as a handbook by bookmarking some of the step-by-step procedures, e.g., the section on simplified impedance matching or group delay flattening.

Bipolar and MOS Analog Integrated Circuit Design - Alan B. Grebene 1984-01-23

A practical, engineering book discussing the most modern and general techniques for designing analog integrated circuits which are not digital (excluding computer circuits). Covers the basics of the devices, manufacturing technology, design procedures, shortcuts, and analytic techniques. Includes examples and illustrations of the best current practice.

Design, Modeling and Control of Nanopositioning Systems - Andrew J. Fleming 2014-05-15

Covering the complete design cycle of nanopositioning systems, this is the first comprehensive text on the topic. The book first introduces concepts

associated with nanopositioning stages and outlines their application in such tasks as scanning probe microscopy, nanofabrication, data storage, cell surgery and precision optics. Piezoelectric transducers, employed ubiquitously in nanopositioning applications are then discussed in detail including practical considerations and constraints on transducer response. The reader is then given an overview of the types of nanopositioner before the text turns to the in-depth coverage of mechanical design including flexures, materials, manufacturing techniques, and electronics. This process is illustrated by the example of a high-speed serial-kinematic nanopositioner. Position sensors are then catalogued and described and the text then focuses on control. Several forms of control are treated: shunt control, feedback control, force feedback control and feedforward control (including an appreciation of iterative learning control). Performance issues are given importance as are problems limiting that performance such as hysteresis and noise which arise in the treatment of control and are then given chapter-length attention in their own right. The reader also learns about cost functions and other issues involved in command shaping, charge drives and electrical considerations. All concepts are demonstrated experimentally including by direct application to atomic force microscope imaging. Design, Modeling and Control of Nanopositioning Systems will be of interest to researchers in mechatronics generally and in control applied to atomic force microscopy and other nanopositioning applications. Microscope developers and mechanical designers of nanopositioning devices will find the text essential reading.

Analog Circuit Design - Bob Dobkin 2011-09-26

Analog circuit and system design today is more essential than ever before. With the growth of digital systems, wireless communications, complex industrial and automotive systems, designers are challenged to develop sophisticated analog solutions. This comprehensive source book of circuit design solutions will aid systems designers with elegant and practical design techniques that focus on common circuit design challenges. The book's in-depth application examples provide insight into circuit design and application solutions that you can apply in today's demanding designs. Covers the fundamentals of linear/analog circuit and system design to guide engineers with their design challenges Based on the Application Notes of Linear Technology, the foremost designer of high performance analog products, readers will gain practical insights into design techniques and practice Broad range of topics, including power management tutorials, switching regulator design, linear regulator design, data conversion, signal conditioning, and high frequency/RF design Contributors include the leading lights in analog design, Robert Dobkin, Jim Williams and Carl Nelson, among others

Position Sensors - David S. Nyce 2016-05-20

A resource on position sensor technology, including background, operational theory, design and applications This book explains the theory and applications of the technologies used in the measurement of linear and angular/rotary position sensors. The first three chapters provide readers with the necessary background information on sensors. These chapters review: the working definitions and conventions used in sensing technology; the specifications of linear position transducers and sensors and how they affect performance; and sensor output types and communication protocols. The remaining chapters discuss each separate sensor technology in detail. These include resistive sensors, cable extension transducers, capacitive sensors, inductive sensors, LVDT and RVDT sensors, distributed impedance sensors, Hall Effect sensors, magnetoresistive sensors, magnetostrictive sensors, linear and rotary encoders, and optical triangulation position sensors. Discusses sensor specification, theory of operation, sensor design, and application criteria Reviews the background history of the linear and angular/rotary position sensors as well as the underlying engineering techniques Includes end-of-chapter exercises Position Sensors is written for electrical, mechanical, and material engineers as well as engineering students who are interested in understanding sensor technologies.

Computer Design - 1988

The SQUID Handbook - John Clarke 2006-12-13

This two-volume handbook offers a comprehensive and coordinated

presentation of SQUIDs (Superconducting Quantum Interference Devices), including device fundamentals, design, technology, system construction and multiple applications. It is intended to bridge the gap between fundamentals and applications, and will be a valuable textbook reference for graduate students and for professionals engaged in SQUID research and engineering. It will also be of use to specialists in multiple fields of practical SQUID applications, from human brain research and heart diagnostics to airplane and nuclear plant testing to prospecting for oil, minerals and buried ordnance. While the first volume presents the theory and fabrication of SQUIDs, the second volume is devoted to applications. It starts with an important aspect of the analysis of measured magnetic signals generated by current sources (the inverse problem), and includes several chapters devoted to various areas of application, namely biomagnetism (research on and diagnostics of human brain, heart, liver, etc.), detection of extremely weak signals, for example electromagnetic radiation and Nuclear Magnetic Resonance. The volume closes with a chapter on motion detectors and the detection of gravity waves.

Official Gazette of the United States Patent Office - United States. Patent Office 1969

Wiley Encyclopedia of Telecommunications, 5 Volume Set - John G. Proakis 2003-01-06

Engineers have long required a comprehensive yet concise resource to turn to for reliable, up-to-date information on the continually evolving field of telecommunications. In five easily searched volumes, the Wiley Encyclopedia of Telecommunications provides a broad, clear overview of both the fundamentals of and recent advances in telecommunications. This essential reference—the only one dedicated to telecommunications for electrical engineers—is available in print and online formats. Topics Include: Optical communications Modulation and demodulation Coding and decoding Communication networks Antennas John G. Proakis is the Series Editor for the Wiley Series in Telecommunications and Signal Processing. In preparing this Encyclopedia, Dr. Proakis been assisted by an editorial board of five leading telecommunications engineers from academia and industry to bring you: Approximately 300 articles on various topics in telecommunications Articles are written by experts in their fields A broad, clear overview of both the fundamentals and recent advances in telecommunications Cutting edge topics covering the entire field of telecommunications and signal processing For more information regarding the online edition of this major reference work, please visit: www.mrw.interscience.wiley.com/eot

Measurement Techniques in Space Plasmas - Robert F. Pfaff 1998-02-04
Published by the American Geophysical Union as part of the Geophysical Monograph Series, Volume 103. Space plasma measurements are conducted in a hostile, remote environment. The art and science of measurements gathered in space depend therefore on unique instrument designs and fabrication methods to an extent perhaps unprecedented in experimental physics. In-situ measurement of space plasmas constitutes an expensive, unforgiving, and highly visible form of scientific endeavor.

Wearable Devices - Noushin Nasiri 2019-12-04

Wearable technologies are equipped with microchips and sensors capable of tracking and wirelessly communicating information in real time. With innovations on the horizon, the future of wearable devices will go beyond answering calls or counting our steps to providing us with sophisticated wearable gadgets capable of addressing fundamental and technological challenges. This book investigates the development of wearable technologies across a range of applications from educational assessment to health, biomedical sensing, and energy harvesting. Furthermore, it discusses some key innovations in micro/nano fabrication of these technologies, their basic working mechanisms, and the challenges facing their progress.

Denshi Tsūshin Gakkai ronbunshi - Denshi Tsūshin Gakkai 1976

Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society - IEEE Engineering in Medicine and Biology Society. Annual Conference 1988

Circuits at the Nanoscale - Krzysztof Iniewski 2018-10-08

Circuits for Emerging Technologies Beyond CMOS New exciting opportunities are abounding in the field of body area networks, wireless communications, data networking, and optical imaging. In response to these developments, top-notch international experts in industry and academia present Circuits at the Nanoscale: Communications, Imaging, and Sensing. This volume, unique in both its scope and its focus, addresses the state-of-the-art in integrated circuit design in the context of emerging systems. A must for anyone serious about circuit design for future technologies, this book discusses emerging materials that can take system performance beyond standard CMOS. These include Silicon on Insulator (SOI), Silicon Germanium (SiGe), and Indium Phosphide (InP). Three-dimensional CMOS integration and co-integration with Microelectromechanical (MEMS) technology and radiation sensors are described as well. Topics in the book are divided into comprehensive sections on emerging design techniques, mixed-signal CMOS circuits, circuits for communications, and circuits for imaging and sensing. Dr. Krzysztof Iniewski is a director at CMOS Emerging Technologies, Inc., a consulting company in Vancouver, British Columbia. His current research interests are in VLSI circuits for medical applications. He has published over 100 research papers in international journals and conferences, and he holds 18 international patents granted in the United States, Canada, France, Germany, and Japan. In this volume, he has assembled the contributions of over 60 world-reknown experts who are at the top of their field in the world of circuit design, advancing the bank of knowledge for all who work in this exciting and burgeoning area.

Proceedings of the ... IEEE International Caracas Conference on Devices, Circuits and Systems - 1998

Extreme Environment Electronics - John D. Cressler 2017-12-19

Unfriendly to conventional electronic devices, circuits, and systems, extreme environments represent a serious challenge to designers and mission architects. The first truly comprehensive guide to this specialized field, Extreme Environment Electronics explains the essential aspects of designing and using devices, circuits, and electronic systems intended to operate in extreme environments, including across wide temperature ranges and in radiation-intense scenarios such as space. The Definitive Guide to Extreme Environment Electronics Featuring contributions by some of the world's foremost experts in extreme environment electronics, the book provides in-depth information on a wide array of topics. It begins by describing the extreme conditions and then delves into a description of suitable semiconductor technologies and the modeling of devices within those technologies. It also discusses reliability issues and failure mechanisms that readers need to be aware of, as well as best practices for the design of these electronics. Continuing beyond just the "paper design" of building blocks, the book rounds out coverage of the design realization process with verification techniques and chapters on electronic packaging for extreme environments. The final set of chapters describes actual chip-level designs for applications in energy and space exploration. Requiring only a basic background in electronics, the book combines theoretical and practical aspects in each self-contained chapter. Appendices supply additional background material. With its broad coverage and depth, and the expertise of the contributing authors, this is an invaluable reference for engineers, scientists, and technical managers, as well as researchers and graduate students. A hands-on resource, it explores what is required to successfully operate electronics in the most demanding conditions.

The Transactions of the Institute of Electronics and Communication Engineers of Japan - Denshi Tsūshin Gakkai 1976

Ultrasound contrast agents - Gaio Paradossi 2010-07-16

Recent advancements in nano/micro materials and related characterization approaches allow the design of a new type of ultrasound contrast agents (UCAs) with enhanced multifunctional behaviour. This is chance is also supported by the recent achievements in modelling and signal processing. This book provides the state of art of the research activity of two successful

European projects, TAMIRUT and SIGHT, addressing an integrated system, encompassing the contrast agent, the hardware equipment and the processing strategies, as a key tool for a combined diagnostic and therapeutic approaches (theranostics) in medical ultrasound. The work provides a highlight of the state of art in the research of novel ultrasound contrast agents (UCAs). Main progresses on the multifunctional aspects of next-generation UCAs concern targeting and drug release properties, perfusion and biointerface behaviour, ultrasound scattering performance, signal processing, electronic equipment.

Software-Defined Radio for Engineers - Alexander M. Wyglinski 2018-04-30

Based on the popular Artech House classic, Digital Communication Systems Engineering with Software-Defined Radio, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

Synchronization Techniques for Digital Receivers - Umberto Mengali
2013-11-11

Synchronization is a critical function in digital communications; its failures may have catastrophic effects on the transmission system performance. Furthermore, synchronization circuits comprehend such a large part of the receiver hardware that their implementation has a substantial impact on the overall costs. For these reasons design engineers are particularly concerned with the development of new and more efficient synchronization structures. Unfortunately, the advent of digital VLSI technology has radically affected modem design rules, to a point that most analog techniques employed so far have become totally obsolete. Although digital synchronization methods are well established by now in the literature, they only appear in the form of technical papers, often concentrating on specific performance or implementation issues. As a consequence they are hardly useful to give a unified view of an otherwise seemingly heterogeneous field. It is widely recognized that a fundamental understanding of digital synchronization can only be reached by providing the designer with a solid theoretical framework, or else he will not know where to adjust his methods when he attempts to apply them to new situations. The task of the present book is just to develop such a framework.

Nanopositioning Technologies - Changhai Ru 2015-12-22

This book covers the state-of-the-art technologies for positioning with nanometer resolutions and accuracies, particularly those based on piezoelectric actuators and MEMS actuators. The latest advances are described, including the design of nanopositioning devices, sensing and actuation technologies and control methods for nanopositioning. This is an ideal book for mechanical and electrical engineering students and researchers; micro and nanotechnology researchers and graduate students; as well as those working in the precision instrumentation or semiconductor industries.

Encyclopedia of Medical Devices and Instrumentation, Hydrocephalus, Tools for Diagnosis and Treatment of - Monoclonal Antibodies - John G. Webster
2006-04-07

The articles in The Encyclopedia of Medical Devices and Instrumentation focus on what is currently useful or is likely to be useful in future medicine. They answer the question, What are the branches of medicine and how does technology assist each of them? Articles focus on the practice of medicine that is assisted by devices, rather than including, for example, the use of drugs to treat disease. The title is the only resource on the market dealing with the ~~Subject in Power Electronic Innovation and Possible Technologies of Instruments with a Low-achange Control Systems~~ from students to researchers and physicians * Articles cover the latest developments such as nanotechnology, fiber optics, and signal processing

Contemporary Advancements in Information Technology Development in Dynamic Environments - Khosrow-Pour, Mehdi 2014-06-30

The advancement of information technology is becoming more prevalent in all aspects of the world today, including online environments. Understanding technology's effect on niche markets and all fields of research is crucial for practitioners in this area. Contemporary Advancements in Information Technology Development in Dynamic Environments presents an in-depth discussion into the information technology revolution present in fields such as government, gaming, social networking, and cloud computing. This book's investigation into the research and application of information technology in several specific areas make this a useful resource for practitioners, professionals, undergraduate/graduate students, and academics.

- Yang Xu 2020-01-07

This book presents a compilation of selected papers from the Fourth International Symposium on Software Reliability, Industrial Safety, Cyber Security and Physical Protection of Nuclear Power Plant, held in August 2019 in Guiyang, China. The purpose of the symposium was to discuss inspection, testing, certification and research concerning the software and hardware of instrument and control (I&C) systems used at nuclear power plants (NPP), such as sensors, actuators and control systems. The event provides a venue for exchange among experts, scholars and nuclear power practitioners, as well as a platform for the combination of teaching and research at universities and enterprises to promote the safe development of nuclear power plants. Readers will find a wealth of valuable insights into achieving safer and more efficient instrumentation and control systems.

Digest of Technical Papers - 1970