





S7-300, S7-1200, S7-400, and S7-1500. There are extensive questions and exercises for each chapter to guide and aid learning. The book includes answers to selected chapter questions and programming exercises. The book includes a link to download a trial version of Siemens Step 7 (TIA Portal) software. This is the black and white version of the book.

This book presents the proceedings of the 20th Polish Control Conference. A triennial event that was first held in 1958, the conference successfully combines its long tradition with a modern approach to shed light on problems in control engineering, automation, robotics and a wide range of applications in these disciplines. The book presents new theoretical results concerning the steering of dynamical systems, as well as industrial case studies and worked solutions to real-world problems in contemporary engineering. It particularly focuses on the modelling, identification, analysis and design of automation systems; however, it also addresses the evaluation of their performance, efficiency and reliability. Other topics include fault-tolerant control in robotics, automated manufacturing, mechatronics and industrial systems. Moreover, it discusses data processing and transfer issues, covering a variety of methodologies, including model predictive, robust and adaptive techniques, as well as algebraic and geometric methods, and fractional order calculus approaches. The book also examines essential application areas, such as transportation and autonomous intelligent vehicle systems, robotic arms, mobile manipulators, cyber-physical systems, electric drives and both surface and underwater marine vessels. Lastly, it explores biological and medical applications of the control-theory-inspired methods. Questo libro, edito nel marzo 2018, nasce per estendere e aggiornare l'edizione precedente con lo stesso titolo e edito nel 2016. Contiene l'evoluzione verso le nuove piattaforme software e nuove tecnologie delle reti di PLC e TIA Portal V14. Concentra la ventennale esperienza nel campo maturata dall'autore e sostituisce la precedente edizione già molto nota e apprezzata dal pubblico. Una nuova impaginazione e la successione con cui si presentano gli argomenti sono ottimali sia per l'apprendimento scolastico sia per autodidatta portandole conoscenze a livello professionale. IL testo è adatto anche ai corsi universitari di ingegneria. L'impiego di sistemi HMI programmati tramite WinCC integrato in TIA Portal, connessi in Profinet e Profibus completa la preparazione del tecnico. Ogni argomento è corredato di numerosi esercizi. Nella sezione programmazione avanzata si interfaccia un motore asincrono trifase a un inverter. Fondamentale il capitolo sulla normalizzazione dei segnali analogici.

This volume of Advances in Intelligent and Soft Computing contains accepted papers presented at SOCO 2016, CISIS 2016 and ICEUTE 2016, all conferences held in the beautiful and historic city of San Sebastián (Spain), in October 2016. Soft computing represents a collection or set of computational techniques in machine learning, computer science and some engineering disciplines, which investigate, simulate, and analyze very complex issues and phenomena. After a thorough peer-review process, the 11th SOCO 2016 International Program Committee selected 45 papers. In this relevant

edition a special emphasis was put on the organization of special sessions. Two special session was organized related to relevant topics as: Optimization, Modeling and Control Systems by Soft Computing and Soft Computing Methods in Manufacturing and Management Systems. The aim of the 9th CISIS 2016 conference is to offer a meeting opportunity for academic and industry-related researchers belonging to the various, vast communities of Computational Intelligence, Information Security, and Data Mining. The need for intelligent, flexible behaviour by large, complex systems, especially in mission-critical domains, is intended to be the catalyst and the aggregation stimulus for the overall event. After a through peer-review process, the CISIS 2016 International Program Committee selected 20 papers. In the case of 7th ICEUTE 2016, the International Program Committee selected 14 papers.

Totally Integrated Automation is the concept by means of which SIMATIC controls machines, manufacturing systems and technical processes. Taking the example of the SIMATIC S7 programmable controller, this book provides a comprehensive introduction to the architecture and operation of a state-of-the-art automation system. It also gives an insight into configuration and parameter setting for the controller and the distributed I/O. Communication via network connections is explained, along with a description of the available scope for operator control and monitoring of a plant. The new engineering framework TIA Portal combines all the automation software tools in a single development environment. Inside the TIA Portal, SIMATIC STEP 7 Professional V11 is the comprehensive engineering package for SIMATIC controllers. As the central engineering tool, STEP 7 manages all the necessary tasks, supports programming in the IEC languages LAD, FBD, STL, S7-SCL and S7-GRAPH, and also contains S7-PLCSIM for offline tests. As well as updating the previously-depicted components, this edition also presents new SIMATIC S7-1200 hardware components for PROFIBUS and PROFINET. In addition to the STEP 7 V5.5 engineering software, now STEP 7 Professional V11 is also described, complete with its applications inside TIA Portal. The book is ideally suited to all those, who, despite little previous knowledge, wish to familiarize themselves with the topic of programmable logic controllers and the architecture and operation of automation systems.

This book is intended to meet the need for an easy to understand book that can quickly get the reader up and programming with Siemens Step 7. The book includes a link to download a trial version of Siemens Step 7 (TIA Portal) software. We wanted the book to be practical, and also have breadth and depth of coverage. We also wanted it to be affordable for readers. There are many practical explanations and examples to illustrate and ease learning. There is a step-by-step appendix on creating a project to ease the learning curve. The coverage of project organization provides the basis for a good understanding of programming and project organization. Linear and modular programming are covered to provide the basis for an understanding of how a Step 7 project is organized and how it functions. The book covers ladder logic and Function Block Diagram (FBD) programming. There is In-depth coverage of ladder logic, timers, counters, math, special instructions, and function blocks. There is also a chapter that features a step-by-step coverage on how to create a working HMI application. There are extensive questions and exercises for each chapter to guide and aide learning. The book includes answers to selected chapter questions and programming exercises.

Das Buch beschreibt die Geräte-Konfiguration und Netz-Projektierung der S7-300-Komponenten mit der Benutzeroberfläche TIA Portal. Sie erfahren, wie man ein Steuerungsprogramm mit den jeweiligen Programmiersprachen KOP und FUP bzw. AWL und SCL formuliert und

testet. Mit STEP 7 Professional V12 lassen sich auch einfache PID-Anweisungen für kontinuierliche oder diskrete Regelungsaufgaben formulieren. Abgerundet wird das Buch durch die Projektierung der dezentralen Peripherie mit PROFIBUS DP und PROFINET IO bei SIMATIC S7-300 und den Datenaustausch über Industrial Ethernet. SIMATIC ist das weltweit etablierte Automatisierungssystem für die Realisierung von Industriesteuerungen für Maschinen, fertigungstechnische Anlagen und verfahrenstechnische Prozesse. Die SIMATIC S7-300 ist speziell für innovative Systemlösungen in der Fertigungsindustrie konzipiert und bietet mit einem vielfältigen Baugruppenspektrum die optimale Lösung für Anwendungen im zentralen und dezentralen Aufbau. Neben der Standard-Automatisierung lassen sich auch Sicherheitstechnik und Motion Control integrieren. Steuerungs- und Regelungsaufgaben werden mit der Engineeringsoftware STEP 7 Professional V12 in den bewährten Programmiersprachen Kontaktplan (KOP), Funktionsplan (FUP) und Anweisungsliste (AWL) und Structured Control Language (SCL) formuliert. Die Benutzeroberfläche TIA Portal ist auf intuitive Bedienung abgestimmt und umfasst in ihrer Funktionalität alle Belange der Automatisierung: von der Konfiguration der Controller über die Programmierung in den verschiedenen Sprachen bis zum Programmtest.

We saw the need for an understandable book on Siemens Step 7 programming. The book includes a link to download a trial version of Siemens Step 7 (TIA Portal) software. We wanted the book to be practical, and also have breadth and depth of coverage. We also wanted it to be affordable for readers. There are many practical explanations and examples to illustrate and ease learning. There is also a step-by-step appendix on creating a project to ease the learning curve. The book covers various models of Siemens PLCs including S7-300, S7-1200, S7-400, and S7-1500. The coverage of project organization provides the basis for a good understanding of programming and project organization. The book covers ladder logic and Function Block Diagram (FBD) programming. Linear and modular programming are covered to provide the basis for an understanding of how an S7 project is organized and how it functions. There is In-depth coverage of ladder logic, timers, counters, math, special instructions, function blocks, and technology objects. Wiring and use of I/O modules for various PLC models is covered. Sinking/sourcing, and the wiring of digital and analog modules are covered. There are also practical examples of the use and application of analog modules and their resolution. There is also a chapter that features step-by-step coverage on how to create a working HMI application. The setup and application of Technology Objects for PID and motion control are also covered. There are extensive questions and exercises for each chapter to guide and aide learning. The book includes answers to selected chapter questions and programming exercises.

The information infrastructure - comprising computers, embedded devices, networks and software systems - is vital to day-to-day operations in every sector: information and telecommunications, banking and finance, energy, chemicals and hazardous materials, agriculture, food, water, public health, emergency services, transportation, postal and shipping, government and defense. Global business and industry, governments, indeed society itself, cannot function effectively if major components of the critical information infrastructure are degraded, disabled or destroyed. Critical Infrastructure Protection 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: themes and issues; control systems security; infrastructure modeling and simulation; risk and impact assessment. This book is the tenth 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 fourteen edited papers from the Tenth Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection, held at SRI International, Arlington, Virginia, USA in the spring of 2016. Critical Infrastructure Protection 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.

Wireless technology has become extremely important for human life and nearly everyone carries at least one cell/mobile phone. Voice communication affects our daily lives and we are influenced by day-to-day routine. Wireless systems are being explored for numerous applications in addition to their current communication function. One can only imagine the possible innovations from an area is expanding at an unprecedented rate and offers significant future potentials. This volume is a carefully selected collection of papers that characterizes the technology and establishes its use.

This book presents new software engineering approaches and methods, discussing real-world problems and exploratory research that describes novel approaches, modern design techniques, hybrid algorithms and empirical methods. This book constitutes part of the refereed proceedings of the Software Engineering and Algorithms in Intelligent Systems Section of the 7th Computer Science On-line Conference 2018 (CSOC 2018), held in April 2018.

Siemens Step 7 (Tia Portal) Programming, a Practical Approach, 2nd Edition Independently Published

ADVANCES IN DIGITAL FORENSICS XIV Edited by: Gilbert Peterson and Sujeet Shenoj Digital forensics deals with the acquisition, preservation, examination, analysis and presentation of electronic evidence. Computer networks, cloud computing, smartphones, embedded devices and the Internet of Things have expanded the role of digital forensics beyond traditional computer crime investigations. Practically every crime now involves some aspect of digital evidence; digital forensics provides the techniques and tools to articulate this evidence in legal proceedings. Digital forensics also has myriad intelligence applications; furthermore, it has a vital role in information assurance - investigations of security breaches yield valuable information that can be used to design more secure and resilient systems. Advances in Digital Forensics XIV describes original research results and innovative applications in the discipline of digital forensics. In addition, it highlights some of the major technical and legal issues related to digital evidence and electronic crime investigations. The areas of coverage include: Themes and Issues; Forensic Techniques; Network Forensics; Cloud Forensics; and Mobile and Embedded Device Forensics. This book is the fourteenth volume in the annual series produced by the International Federation for Information Processing (IFIP) Working Group 11.9 on Digital Forensics, an international community of scientists, engineers and practitioners dedicated to advancing the state of the art of research and practice in digital forensics. The book contains a selection of nineteen edited papers from the Fourteenth Annual IFIP WG 11.9 International Conference on Digital Forensics, held in New Delhi, India in the winter of 2018. Advances in Digital Forensics XIV is an important resource for researchers, faculty members and graduate students, as well as for practitioners and individuals engaged in research and development efforts for the law enforcement and intelligence communities. Gilbert Peterson, Chair, IFIP WG 11.9 on Digital Forensics, is a Professor of Computer Engineering at the Air Force Institute of Technology, Wright-

Patterson Air Force Base, Ohio, USA. Sujeet Shenoi is the F.P. Walter Professor of Computer Science and a Professor of Chemical Engineering at the University of Tulsa, Tulsa, Oklahoma, USA.

This book is about the Zynq-7000 All Programmable System on Chip, the family of devices from Xilinx that combines an application-grade ARM Cortex-A9 processor with traditional FPGA logic fabric. Catering for both new and experienced readers, it covers fundamental issues in an accessible way, starting with a clear overview of the device architecture, and an introduction to the design tools and processes for developing a Zynq SoC. Later chapters progress to more advanced topics such as embedded systems development, IP block design and operating systems. Maintaining a 'real-world' perspective, the book also compares Zynq with other device alternatives, and considers end-user applications. The Zynq Book is accompanied by a set of practical tutorials hosted on a companion website. These tutorials will guide the reader through first steps with Zynq, following on to a complete, audio-based embedded systems design.

It is always hard to set manufacturing systems to produce large quantities of standardized parts. Controlling these mass production lines needs deep knowledge, hard experience, and the required related tools as well. The use of modern methods and techniques to produce a large quantity of products within productive manufacturing processes provides improvements in manufacturing costs and product quality. In order to serve these purposes, this book aims to reflect on the advanced manufacturing systems of different alloys in production with related components and automation technologies. Additionally, it focuses on mass production processes designed according to Industry 4.0 considering different kinds of quality and improvement works in mass production systems for high productive and sustainable manufacturing. This book may be interesting to researchers, industrial employees, or any other partners who work for better quality manufacturing at any stage of the mass production processes.

We wanted to write a book that made it easier to learn Siemens Step 7 programming. The book includes a link to download a trial version of Siemens Step 7 (TIA Portal) software. The second edition has two additional chapters. There is a step-by-step chapter on creating a project to ease the learning curve. We wanted the book to be practical, and also have breadth and depth of coverage. There are many practical explanations and examples to illustrate and ease learning. The book covers various models of Siemens PLCs including S7-300, S7-1200, S7-400, and S7-1500. The coverage of project organization provides the basis for a good understanding of programming and project organization. The book covers ladder logic and Function Block Diagram (FBD) programming. Linear and modular programming are covered to provide the basis for an understanding of how an S7 project is organized and how it functions. There is in-depth coverage of ladder logic, timers, counters, math, special instructions, function blocks, and technology objects. Wiring and use of I/O modules for various PLC models is covered. Sinking/sourcing, and the wiring of digital and

analog modules are covered. There are also practical examples of the use and application of analog modules and their resolution. There is also a chapter that features a step-by-step coverage on how to create a working HMI application. The setup and application of Technology objects for PID and motion control are also covered. There are extensive questions and exercises for each chapter to guide and aid learning. The book includes answers to selected chapter questions and programming exercises. The book is in color.

The SIMATIC S7-1500 programmable logic controller (PLC) sets standards in productivity and efficiency. By its system performance and with PROFINET as the standard interface, it ensures short system response times and a maximum of flexibility and networkability for demanding automation tasks in the entire production industry and in applications for medium-sized to high-end machines. The engineering software STEP 7 Professional operates inside TIA Portal, a user interface that is designed for intuitive operation. Functionality includes all aspects of automation: from the configuration of the controllers via programming in the IEC languages LAD, FBD, STL, and SCL up to the program test. In the book, the hardware components of the automation system S7-1500 are presented including the description of their configuration and parameterization. A comprehensive introduction into STEP 7 Professional V14 illustrates the basics of programming and troubleshooting. Beginners learn the basics of automation with Simatic S7-1500, users switching from other controllers will receive the relevant knowledge.

SIMATIC is the worldwide established automation system for implementing industrial control systems for machines, manufacturing plants and industrial processes. Relevant open-loop and closed-loop control tasks are formulated in various programming languages with the programming software STEP 7. Now in its sixth edition, this book gives an introduction into the latest version of engineering software STEP 7 (basic version) . It describes elements and applications of text-oriented programming languages statement list (STL) and structured control language (SCL) for use with both SIMATIC S7-300 and SIMATIC S7-400, including the new applications with PROFINET and for communication over industrial Ethernet. It is aimed at all users of SIMATIC S7 controllers. First-time users are introduced to the field of programmable controllers, while advanced users learn about specific applications of the SIMATIC S7 automation system. All programming examples found in the book - and even a few extra examples - are available at the download area of the publisher's website.

This book presents 94 papers from the 2nd International Conference of Reliable Information and Communication Technology 2017 (IRICT 2017), held in Johor, Malaysia, on April 23–24, 2017. Focusing on the latest ICT innovations for data engineering, the book presents several hot research topics, including advances in big data analysis techniques and applications; mobile networks; applications and usability; reliable communication systems; advances in computer vision,

