UNIT 22: PROGRAMMABLE LOGIC CONTROLLERS

Unit code: A/601/1625 **QCF level: 4** **Credit value: 15**

OUTCOME 1

This tutorial covers all of outcome 1. The material is quite suitable for anyone wishing to study this interesting subject and does not require a lot of mathematical knowledge. Obviously, access to suitable computer software such as Pneusim Pro™ or Bytronics™ simulation software will be a great help. You do need to have a reasonable knowledge of computer technology and a good background understanding of industrial processes.

SYLLABUS

1. Understand the design and operational characteristics of a PLC system

Design characteristics: unitary; modular; rack-mounted

Input and output devices: mechanical switches; non-mechanical digital sources; transducers; relays

Communication links: twisted pair; coaxial; fibre-optic; networks

Internal architecture: central processor unit (CPU); arithmetic logic unit (ALU); storage devices; memory opto-isolators; input and output units; flags; shift; registers

Operational characteristics: scanning; performing logic operations; continuous updating mass input/output (I/O) copying

Learning outcomes **On successful completion of this unit a learner will:**	**Assessment criteria for pass** **The learner can:**
LO1 Understand the design and operational characteristics of a PLC system	1.1 evaluate the design characteristics of typical programmable logic devices 1.2 describe different types of input and output devices 1.3 evaluate the different types of communication link used in programmable logic control systems 1.4 describe the internal architecture and operational characteristics of the CPU of a typical programmable logic device

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6. COMMUNICATING
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   - Coaxial Cable
   - Fibre Optic

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Unit 22 Programmable Logic Controllers Unit Code A 601

Ian Pickup

Unit 22 Programmable Logic Controllers Unit Code A 601:

Troubleshooting Techniques for Microprocessor-controlled Video Equipment Robert L. Goodman,1987 **Official Gazette of the United States Patent Office** United States. Patent Office,1973-10 **Official Gazette of the United States Patent and Trademark Office** ,1998 Official Gazette of the United States Patent and Trademark Office United States. Patent and Trademark Office,1998 **Civil Works Annual Research & Development Summary** ,1977

Computer Organization and Architecture William Stallings,2010 KEY BENEFIT Learn the fundamentals of processor and computer design from the newest edition of this award winning text KEY TOPICS Introduction Computer Evolution and Performance A Top Level View of Computer Function and Interconnection Cache Memory Internal Memory Technology External Memory I O Operating System Support Computer Arithmetic Instruction Sets Characteristics and Functions Instruction Sets Addressing Modes and Formats CPU Structure and Function RISCs Instruction Level Parallelism and Superscalar Processors Control Unit Operation Microprogrammed Control Parallel Processing Multicore Architecture Online Chapters Number Systems Digital Logic Assembly Language Assemblers and Compilers The IA 64 Architecture MARKET Ideal for professionals in computer science computer engineering and electrical engineering Digital Systems Ronald J. Tocci,1988 Tocci and Widmer use a block diagram approach to basic logic operations enabling readers to have a firm understanding of logic principles before they study the electrical characteristics of the logic ICs KEY TOPICS For each new device or circuit the authors describe the principle of the operation give thorough examples and then show its actual application An excellent reference on modern digital systems *Unique 3-in-1 Research & Development Directory* ,1986

Electronic Design ,1993 Electronics & Wireless World ,1986 Computer Organization and the MC68000 Panos E. Livadas,Christopher Ward,1993 Presenting topics in a complete and detailed fashion from the ground up this new text offers a thorough yet brief introduction to the entire body of fundamental material in computer architecture and assembly language It discusses computer organization at the gate level the register level the system level and the network level and explores assembly language programming in terms of computer system basics For computer programmers **Commerce Business Daily** ,2001-08 *Invitation to Computer Science* G. Michael Schneider,Judith L. Gersting,2006 This new edition of Invitation to Computer Science follows the breadth first guidelines recommended by CC2001 to teach computer science topics from the ground up The authors begin by showing that computer science is the study of algorithms the central theme of the book then move up the next five levels of the hierarchy hardware virtual machine software applications and ethics Utilizing rich pedagogy and a consistently engaging writing style Schneider and Gersting provide students with a solid grounding in theoretical concepts as well as important applications of computing and information technology A laboratory manual and accompanying software is available as an optional bundle with this text **Management Information Systems** Kenneth C. Laudon,1998 Management Information Systems contains a wealth of pedagogical features to facilitate

student comprehension which aid in review and reinforce key concepts as well as promoting problem solving skills

Design of Analog-digital VLSI Circuits for Telecommunications and Signal Processing José Franca,Yannis Tsividis,1994 Virtual Manufacturing presents a novel concept of combining human computer interfaces with virtual reality for discrete and continuous manufacturing systems The authors address the relevant concepts of manufacturing engineering virtual reality and computer science and engineering before embarking on a description of the methodology for building augmented reality for manufacturing processes and manufacturing systems Virtual Manufacturing is centered on the description of the development of augmented reality models for a range of processes based on CNC PLC SCADA mechatronics and on embedded systems Further discussions address the use of augmented reality for developing augmented reality models to control contemporary manufacturing systems and to acquire micro and macro level decision parameters for managers to boost profitability of their manufacturing systems Guiding readers through the building of their own virtual factory software Virtual Manufacturing comes with access to online files and software that will enable readers to create a virtual factory operate it and experiment with it This is a valuable source of information with a useful toolkit for anyone interested in virtual manufacturing including advanced undergraduate students postgraduate students and researchers **Computer Systems Design and Architecture** Vincent P. Heuring,Harry Frederick Jordan,1997 This text serves as an introduction to and a survey of the common commercial architectures It was created with a strong electrical and computer engineering perspective including current topics such as pipelined processor design memory hierarchy and in **Title Listing of Power Reactor Docket Information** ,1977 **Abstract Journal** ,1972 *Electrical Engineering* Allan R. Hambley,2011 For undergraduate introductory or survey courses in electrical engineering ELECTRICAL ENGINEERING PRINCIPLES AND APPLICATIONS 5 ehelps students learn electrical engineering fundamentals with minimal frustration Its goals are to present basic concepts in a general setting to show students how the principles of electrical engineering apply to specific problems in their own fields and to enhance the overall learning process Circuit analysis digital systems electronics and electromechanics are covered A wide variety of pedagogical features stimulate student interest and engender awareness of the material s relevance to their chosen profession **Studio Sound and Broadcast Engineering** ,1989

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