

This edition is based on the 22nd German edition of "Tabellenbuch Elektrotechnik" a leading compendium in German-speaking countries. The English edition addresses professionals in the various fields of electronics such as power and building engineering, field engineering, automation systems, machinery, drive systems, components and other electronic systems. This book is intended to

- prepare professionals for an activity in an international environment and
- help to make the world's leading work processes and standards known outside of the German-speaking region.

Despite the harmonization of the most important European standards, local regulations may differ slightly from German standards under certain circumstances, which means that where safety matters are concerned, the user has to check whether any other local regulations exist.

The book is divided into the following main sections focusing on the specified subjects:

- **Section M: mathematics, physics, theory of circuits, components** Formula symbols, units and quantities, mathematical symbols, exponents, unit prefixes. Force, moment of force, motion rules, work, power, heat, charge, voltage, current, resistance, electric and magnetic field, alternating quantities. Circuits of *R*, *L*, *C*, three-phase current, harmonics.
Semiconductor resistors, diodes, FET, IGBT, bipolar transistors, thyristors.
- **Section TM: technical documentation, measuring** General technical drawing. Circuit diagrams, logic sequence control diagrams, preparing documentation, structure of operating instructions. Measuring instruments and systems, pictographs for measuring, measurement in electrical installations.
- **Section EI: electrical installations** Working in electrical installations, laying of cables, installation circuits, building management and system engineering, residential building installations. Calculation of cables and wires, lighting engineering.
- **Section SE: safety, energy supply** First aid at the workplace, personal protective equipment, signs, symbols and colours for accident prevention, current hazards, protective measures, distributing systems. Types of power stations, transformers, overhead power cables, buried cables, household appliances.
- **Section IC: information and communication technology systems** Number systems, codes, Boolean algebra, flip-flops, D/A converters, A/D converters, personal computer PC, operating system Windows, IT networks, components for data networks, ethernet, wireless LAN, ASI bus system, interbus, PROFIBUS, identification systems, connection to the telephone network, internet, aerial systems, satellite systems, broadband communication systems.
- **Section AC: automation, drive and control systems** Base circuits of amplifiers, rectifiers, triggering circuits for semiconductors, switch-mode power supplies, multivibrators, control relays, programmable logic controllers PLC, programming languages for PLCs, control engineering, electromagnetic contactors, motor protection, automatic control engineering, three-phase motors, single-phase A.C. motors, D.C. motors, drive systems.
- **Section MC: materials, connection, joining and bonding** Periodic table, specific material values, steel standardisation, magnetic materials, insulators, cables and wires, buried cables, connectors, ISO threads, screws, bolts and nuts.
- **Section CE: the company and its environment, environmental technology, annex** Organisational structures of companies, teamwork, job planning, cost accounting and key numbers. Projects, skills of electrical specialists, realisation of projects. Environmental terms, hazardous materials, handling of electronic waste products. Standards, subject index, internet addresses.

The publisher and authors would be grateful for any suggestions and constructive comments.

Fields of learning and relevant sections in this book

Field	Description of the field of learning	Main sections in this book, additionally relevant sections
Overview of the fields of learning for electricians (selection)		
1	Analysing electrotechnical systems and testing their functions	Section M: theory of circuits, components Section TM: technical documentation, measuring
2	Designing and realising electrical installations	Section EI: electrical installations Section TM: technical documentation
3	Analysing and implementing control systems	Section AC: control systems Section M: theory of circuits, components Section TM: technical documentation
4	Implementing IT systems	Section IC: information and communication technology systems Section TM: technical documentation
5	Ensuring power supply and safety of electrical equipment	Section SE: safety, energy supply Section TM: technical documentation, measuring Section MC: materials, connecting, joining and bonding Section CE: the company and its environment
6	Analysing installations and testing their safety	Section SE: safety, energy supply Section AC: automation and drive systems
7	Programming and implementing plant control systems	Section AC: control systems Section IC: information and communication technology systems
8	Selecting and integrating drive systems	Section AC: automation, drive and control systems Section TM: technical documentation Section SE: safety, energy supply
9	Integrating control and communication systems	Section AC: control systems Section IC: information and communication technology systems Section TM: technical documentation, measuring
10	Commissioning and turning over automation systems	Section AC: automation and drive systems Section CE: the company and its environment Section TM: technical documentation, measuring
11	Maintaining and optimising automation systems	Section AC: automation and drive systems Section EI: electrical installations Section SE: safety, energy supply Section CE: environmental technology Section TM: technical documentation, measuring
12 13	Designing automation systems Implementing automation systems	Section AC: automation systems Section EI: electrical installations Section SE: safety, energy supply Section CE: environmental technology Section MC: materials, connecting, joining and bonding
Overview of the fields of learning for electrical tasks in mechatronics		
1	Analysing functional relationships in mechatronic systems	Section TM: technical documentation Section MC: materials, connecting, joining and bonding
3	Installing electrical equipment under safety aspects	Section SE: safety, energy supply Section EI: electrical installations
4	Examining power and information flows in electrical components	Section AC: automation systems Section MC: materials, connecting, joining and bonding
5	Communicating via data processing systems	Section IC: information and communication technology systems
8	Designing and implementing mechatronic subsystems	Section TM: technical documentation, measuring Section AC: automation and drive systems