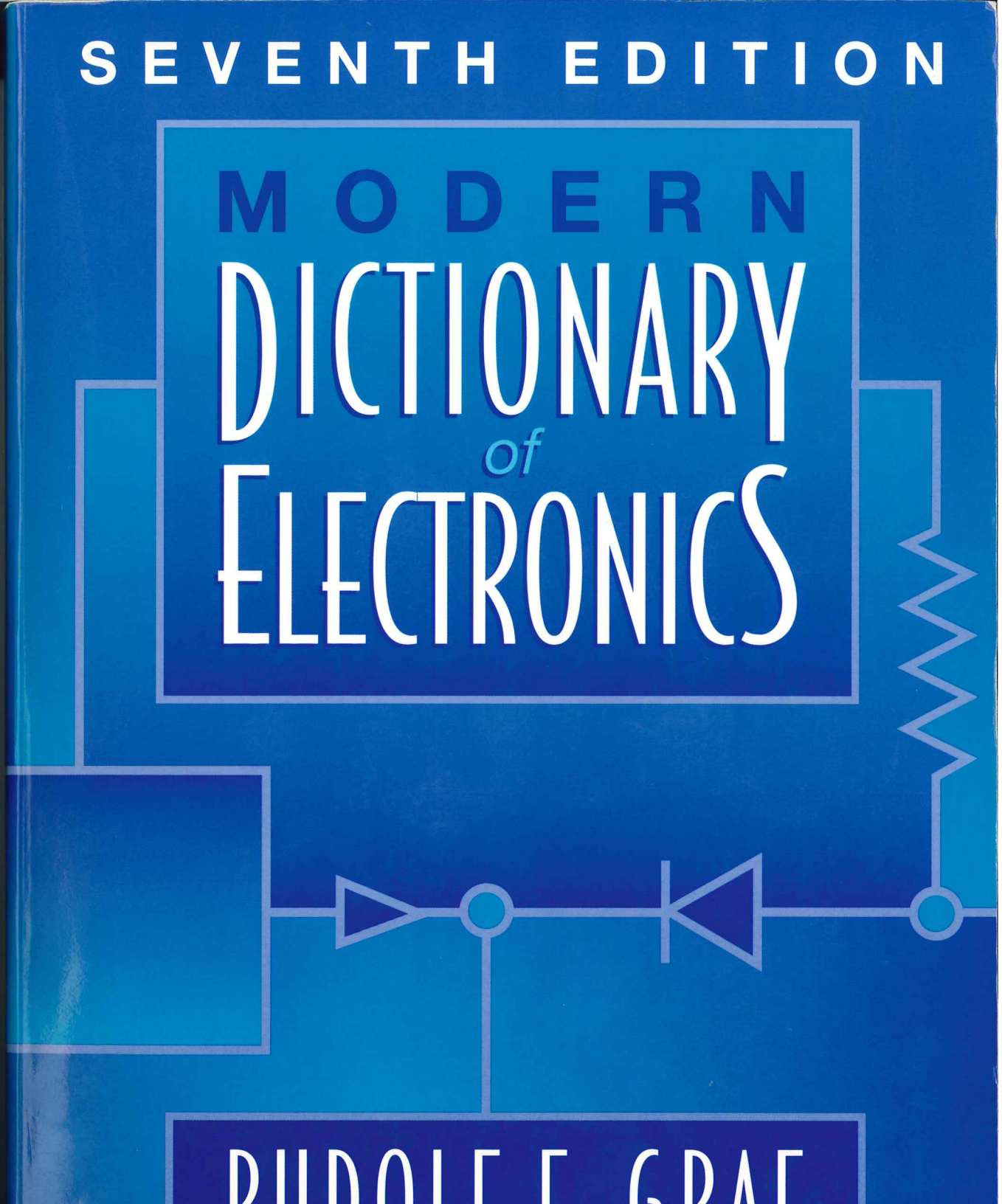
SEVENTH EDITION

MODERN DICTIONARY of ELECTRONICS



RUDOLF F. GRAF

MODERN DICTIONARY of ELECTRONICS

SEVENTH EDITION

REVISED AND UPDATED

Newnes is an imprint of Butterworth-Heinemann.

A member of the Reed Elsevier Group.

Recognizing the importance of preserving what has been written, Butterworth-Heinemann prints its books on acid-free paper whenever possible.

Butterworth-Heinemann supports the efforts of American Forests and the Global ReLeaf program in its campaign for the betterment of trees, forests, and our environment.

Library of Congress Cataloging-in-Publication Data

Graf, Rudolf F.
Modern dictionary of electronics / Rudolf F. Graf. — 7th ed., revised and updated.
p. cm.
ISBN 0-7506-9866-7 (alk. paper)
1. Electronics — Dictionaries. I. Title
TK7804.G67 1999
621.381'03 — dc21 99-17889
CIP

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library.

The publisher offers special discounts on bulk orders of this book.
For information, please contact:
Manager of Special Sales
Butterworth-Heinemann
225 Wildwood Avenue
Woburn, MA 01801-2041
Tel: 781-904-2500
Fax: 781-904-2620

broken out of the wafer. Electrical contact is made to the chip bonding pads so that defective circuits can be marked to eliminate them from further processing. Only low-current dc tests can be carried out by probing. 3. A testing technique that uses finely tipped probes to make electrical connections to a sample chip.

problem check — A test or tests used to aid in obtaining the correct machine solution to a problem.

problem description — In information processing, a statement of a problem. The statement may include a description of the method of solution.

problem language — The language a computer programmer uses in stating the definition of a problem.

problem-oriented language — In a computer, a source language suited to the description of a specific class of problems.

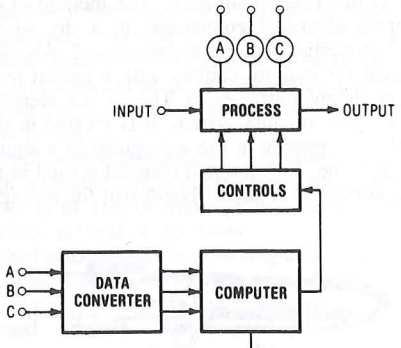
problem-solving language — A language that can be used to specify a complete solution to a problem.

procedure — Also called an algorithm. 1. In a computer, the course of action taken in solving a problem. 2. A precise step-by-step method for effecting a solution to a problem.

procedure-oriented language — 1. A programming language in which the operations to be performed are all executable and their sequence is specified by the user. This term applies to most familiar programming languages. 2. A programming language designed for the convenient expression of procedures used in the solution of a wide class of problems, e.g., FORTRAN, COBOL, APL, and C.

process — 1. Any operation or sequence of operations involving a change of energy state, composition, dimension, or other property that may be defined with respect to a datum. The term *process* is used in this standard to apply to all variables other than instrument signals. 2. The basic unit of computation within an operating system. Also termed a software process to distinguish it from an abstract process, which is the task the software process implements.

process control — 1. Automatic control of continuous operations, contrasted with numerical control, which provides automatic control of discrete operations. 2. The regulation or manipulation of variables influencing the conduct of a process in such a way as to obtain a product of desired quality and quantity in an efficient manner.



processing — Additional handling, manipulation, consolidation, compositing, etc., of information to change it from one format to another or to convert it to a manageable and/or intelligible form.

processing section — The portion of a computer that does the actual changing of input into output. This includes the arithmetic and logic sections.

processor — 1. In hardware, a data processor. 2. In software, a computer program that includes the compiling, assembling, translating, and related functions for a particular programming language, including logic, memory, arithmetic, and control. 3. A unit in the programmable controller that scans all the inputs and outputs in a predetermined order. The processor monitors the status of the inputs and outputs in response to the user-programmed instructions in memory, and it energizes or deenergizes outputs as a result of the logical comparisons made through these instructions. 4. A computer or part of a computer capable of receiving data, manipulating it, and supplying results.

processor status word — Abbreviated PSW. A special-purpose CPU register that contains the status of the most recent instruction execution result, trap bit, and interrupt priority.

producer's reliability risk — The risk faced by the producer (usually set at 10 percent) that a product will be rejected by a reliability-acceptance test even though the product is actually equal to or better than a specified value of reliability.

product detector — A demodulator whose output is the product of the input signal voltage and the signal voltage of a local oscillator operating at the input frequency.

production lot — A group of (electronic) parts manufactured during the same period from the same basic raw materials, processed under the same specifications and procedures, produced with the same equipment, and identified by the documentation defined in the manufacturer's reliability assurance program through all significant manufacturing operations, including final assembly operations. Final assembly operation is considered the last major assembly operation, such as casing, hermetic sealing, or lead attachment, rather than painting or marking.

production sampling tests — Those tests normally made by either the vendor or the purchaser on a portion of a production lot for the purpose of determining the general performance level.

production tests — Those tests normally made on 100 percent of the items in a production lot by the vendor and normally on a sampling basis by the purchaser.

product modulator — A modulator whose output is substantially equal to the carrier times the modulating wave.

professional channel — Subcarrier channel in FM broadcasting. Professional channels are usually 6.5 times the frequency of the pilot carrier, or they may be interspersed between the stereo position and 102 kHz, if there is no SAP (second audio program) conflict.

professional engineer — An engineer whose education and experience qualify him or her to be responsible for important engineering work, and who is registered as a professional engineer by a state authority.

profile chart — A vertical cross-sectional drawing

written in a special language or code, to be carried out in sequence by a computer or other programmable device. 4. To design, write, and test such a set of coded instructions. 5. A series of actions proposed in order to achieve a certain result. 6. In a calculator, a sequence of detailed instructions for the operations necessary to solve a problem. Programmable electronic calculators can "learn" the steps of a problem so that, after the first sequence of entries, only the variable numbers need be entered on the keyboard without manual activation of control keys. 7. The statement of an algorithm in some well-defined language. Thus, a computer program represents an algorithm, although the algorithm itself is a mental concept that exists independently of any representation. 8. A set of coded instructions that direct a computer to perform some specific function, yield the solution to some specific problem, or control a machine or process. 9. A sequence of instructions that will execute a predetermined sequence of operations. 10. An organized set of instructions used to control operations of an electronic switching system. 11. A sequence of user-specified instructions that result in the execution of an algorithm. Programs are essentially written at three levels: (*a*) binary (can be directly executed by the MPU), (*b*) assembly language (symbolic representation of the binary), and (*c*) high-level language (such as BASIC; requires a compiler or interpreter). 12. A meaningful assembly of encoded instructions and data formats and data values internal to the program. 13. A sequence of audio signals alone, or audio and video signals, transmitted for entertainment or information.

program amplifier — *See* line amplifier.

program assembly — Also called translation. A process that translates a symbolic program into a machine-language program before the working program is executed. Several sections or different programs can also be integrated during this process. *See also* assembler.

program break — The length of a program; the first location not used by a program (before relocation); the relocation constant for the following program (after relocation).

program circuit — A telephone circuit that has been equalized to handle a wider range of frequencies than ordinary speech signals require. In this way, music can be transmitted over telephone wires.

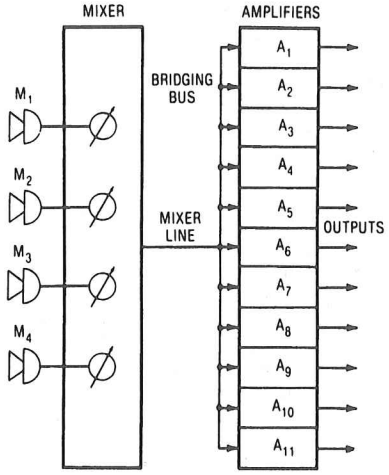
program control — A control system that automatically holds or changes its target value on the basis of time, to follow a prescribed program for the process.

program counter — A CPU register that specifies the address of the next instruction to be fetched and executed. Normally it is incremented automatically each time an instruction is fetched. *See also* program register.

program-distribution amplifiers — A group of amplifiers fed by a bridging bus from a single source. Each amplifier then feeds a separate line or other service.

program element — The part of a central computer system that performs the sequence of instructions scheduled by the programmer.

program failure alarm — In broadcasting stations, a relay circuit that gives a visual and aural alarm when



Program-distribution amplifiers.

program instruction — A group of letters, symbols, or numbers that direct a computer to perform an operation. (The instruction may also include one or more addresses.)

program level — The measure of the program signal in an audio system. It is expressed in volume units (VU).

program library — A collection of available computer programs and routines.

program linkage — In a computer, efficient use of all registers and development of subroutines so that there is smooth, economical transition from one program segment to another, and memory capacity is conserved.

program loop — A series of computer instructions that are repeated until a terminal condition is achieved.

programmable — That characteristic of a device that makes it capable of accepting data to alter the state of its internal circuitry to perform a specific task(s).

programmable calculator — 1. A calculator whose operation is controlled by programs stored in its memory. 2. Electronic calculator capable of performing preset sequences of computations. 3. One that can learn a repetitive series of operations; that is, can be programmed by various means to handle a series of steps so that only variable information need be entered into the calculator.

programmable communications processor — A digital computer that has been specifically programmed to perform one or more control and/or processing functions in a data communications network. As a self-contained system, it may or may not include communications line multiplexers, line adapters, a computer system interface, and online peripherals. It always includes a specific set of user-modifiable software for the communications function.

programmable controller — Abbreviated PC. 1. A control machine based on solid-state digital logic and built of computer subsystems, and primarily intended to take the place of electromechanical relay panels in applications