

**MODERN
DICTIONARY
of
ELECTRONICS**

SEVENTH EDITION

REVISED AND UPDATED

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Boston Oxford Auckland Johannesburg Melbourne New Delhi

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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.

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10 9 8 7 6 5 4 3 2 1

Typeset by Laser Words, Madras, India
Printed in the United States of America

REF.
TK
7804
G67
1999 - Oct. 01

digital panel meter—Abbreviated DPM. 1. A compact electronic measuring system capable of converting an electrical variable into an unambiguous, accurate numerical reading. Consists of a solid-state analog-to-digital converter and a logic-driven numerical display that can provide readings with accuracies of 0.1 to 0.005 percent of full scale, without the need for eye-straining interpolation. 2. A meter with digital-numerical readout, capable of indicating a range of values from zero to rated maximum, in increments of one least-significant digit.

digital phase shifter—A device that provides a signal phase shift by the application of a control pulse. A reversal of phase shift requires a control pulse of opposite polarity.

digital plotter—An output unit that graphs data via an automatically controlled pen. Data is normally plotted as a series of incremental steps.

digital position transducer—A device that converts motion or position into digital information.

digital programmable delay line—See active delay line.

digital radio—1. Microwave radio in which one or more properties (amplitude, frequency, and phase) of the rf carrier are quantized by the modulating signal. 2. Radio whose instantaneous rf carrier can assume one of a discrete set of amplitude levels, frequency shifts, or phase shifts as a result of the modulating signal. 3. Radio in which the rf carrier, or even the baseband signal, is quantized by means of a modem. In such a radio the rf carrier is still quantized, but baseband or intermediate-frequency filtering can be used to provide some bandwidth control and thereby reduce rf filtering requirements. 4. Any radio that transmits a signal whose informational content is, in whole or in part, digital in format.

digital readout indicator—An indicator that reads directly in numerical form, as opposed to an analog indicator needle and scale.

digital recording—A technique for recording information as discrete points onto magnetic recording media.

digital rotary transducer—A rotating device utilizing an optical sensor that produces a serial binary output as a result of shaft rotation.

digital set top—Also referred to generically as a set-top unit (STU). Television set-top units that accept digital video as well as analog (traditional) video. Some digital set-top units enable interactivity and therefore support shopping, banking, games, etc.

digital signal—1. An electrical signal with two states—on or off, high or low, positive or negative—such as could be obtained from a telegraph key or two-position toggle switch. *Digital* normally means binary or two-state. 2. Representation of information by a set of discrete values in accordance with a prescribed law. These values are represented by numbers.

digital signals—1. Discrete or discontinuous signals whose various states are discrete intervals apart. 2. Signals made up of discontinuous pulses whose information is contained in their durations, periods, and/or amplitudes.

digital signature—1. A numerical representation of a set of logic states, typically used to describe the logic-state history at one device under test output pin during the complete test program. 2. A personal authentication method based on encryption and secret authorization codes used for "signing" electronic documents.

digital simulation—See simulation.

digital speech communications—Transmission of voice signals in digitized or binary form.

digital status contact—A logical (on/off) input used mainly to sense the status of remote equipment in process control systems.

digital storage oscilloscope—A special oscilloscope that adapts analog monitoring and recording systems to the capture and analysis of all types of one-shot physical phenomena.

digital switch—1. A means to interconnect two or more circuits whose information is represented in digital form, using a time-divided network consisting of nonlinear elements. 2. An automatic switching center capable of switching digital signals. It may be a circuit switch or a message switch.

digital switching—Switching of messages digitally by use of integrated electronic circuits for logic and memory, rather than by electromechanical switches.

digital synthesizer—A means of generating several different frequencies without using separate oscillators governed by crystals specially ground for each frequency. A digital synthesizer uses only one reference crystal, a phase-locked loop, and a digital counter to generate a large number of stable frequencies. These circuits are used to reduce dependence on individual crystals, which are relatively expensive.

digital telephone dialer—An automatic telephone dialer that uses a digital code.

digital television—Abbreviated DTV. 1. A television system in which reduction or elimination of picture redundancy is obtained by transmitting only the information needed to define motion in the picture, as represented by changes in areas of continuous white or black. 2. An umbrella term used to describe the digital television system adopted by the FCC in December 1996.

digital thermometer—Electronic temperature-measuring device that reads and/or prints out numerically.

digital-to-analog conversion—The generation of analog (usually variable-voltage) signals in response to a digital code.

digital-to-analog converter—Abbreviated DAC, dac, or d/a converter. 1. A computing device that changes digital quantities into physical motion or into a voltage (i.e., a number output into turns of a potentiometer). 2. A unit or device that converts a digital signal into a voltage or current whose magnitude is proportional to the numeric value of the digital signal. For example:

Digital Input	Analog Output
00101 (binary 5)	2 volts
01010 (binary 10)	4 volts
10100 (binary 20)	8 volts

3. A circuit that accepts the discrete, binary outputs of computers and changes them into continuous analog quantities. In general, DACs convert mathematical results into usable electrical quantities. Digital-to-analog converters are used to generate and modulate waveforms, stimulate devices under test, drive motors, or display information. They have applications in process and industrial control systems, cathode-ray-tube displays, and digitally programmed power supplies. Most DACs consist of three major blocks: a precision reference, a set of resistors forming a ladder network, and switches that connect or disconnect the resistor ladder and the reference. Some DACs also include an output amplifier that buffers the current from the ladder and interfaces it to the circuits at the DAC's output. 4. An interface that converts data in a digital form to data in analog form. Used to permit analog output from a digital computer.