

WILEY  
ELECTRICAL



ELECTRONICS  
ENGINEERING  
DICTIONARY



STEVEN M. KAPLAN

Copyright © 2004 by John Wiley & Sons, Inc. All rights reserved.

Published by John Wiley & Sons, Inc., Hoboken, New Jersey.  
Published simultaneously in Canada.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400, fax 978-646-8600, or on the web at [www.copyright.com](http://www.copyright.com). Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008.

**Limit of Liability/Disclaimer of Warranty:** While the publisher and author have used their best efforts in preparing this book, they make no representation or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional where appropriate. Neither the publisher nor author shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

For general information on our other products and services please contact our Customer Care Department within the U.S. at 877-762-2974, outside the U.S. at 317-572-3993 or fax 317-572-4002.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print, however, may not be available in electronic format.

*Library of Congress Cataloging-in-Publication Data is available.*

Kaplan, Steven M.

Wiley Electrical and Electronics Engineering Dictionary

ISBN 0-471-40224-9

Printed in the United States of America.

10 9 8 7 6 5 4 3 2



switch, or relay. Also called **electric contact** (2). 4. The establishment of a communication. 5. In radars, the initial detection of a scanned object.

**contact arc** An arc that forms between electric contacts when a circuit is opened.

**contact arcing** The formation of a **contact arc**.

**contact area** The surface area shared by electric contacts when a circuit is closed.

**contact blade** A flat moving conductor used as an electric contact.

**contact bounce** An undesired condition in which there is a spontaneous opening, or the intermittent opening or closing of contacts, when such contacts are moved to the open or closed position. Also called **bounce** (2).

**contact button** A button used as an electric contact.

**contact chatter** The continuous, rapid, and undesired opening and closing of electric contacts. May be caused, for instance, by contact bounce. Also called **chatter** (2).

**contact clip** A clip which grasps a **contact blade**, to close a circuit.

**contact electromotive force** Same as **contact emf**.

**contact emf** A potential difference that is developed between contacts that are made of two dissimilar materials. This potential difference may be a few tenths of a volt. Also known as **contact electromotive force**, **contact potential difference**, **contact potential**, or **Volta effect**.

**contact erosion** In electric contacts, the gradual loss of material due to sparks, arcs, and the such. The addition of cadmium to an alloy used in contacts may help reduce such erosion. Also called **electrical erosion**.

**contact follow** The additional distance that contacts travel together, after their initial contact. Also called **contact overtravel**.

**contact force** 1. The force holding contacts together. 2. The force a moving contact exerts on a stationary contact.

**contact gap** The maximum distance between contacts, when in the open position. Also called **contact separation**.

**Contact Image Sensor** A image sensor with limited resolution utilized in scanners which are smaller and less expensive than those utilizing CCDs. Its abbreviation is **CIS**.

**contact material** A material that can serve as an electric contact. Such materials may be metals such as copper, silver, gold, or palladium, or an alloy based on these or other suitable metals. Contact materials should have high thermal and electric conductivities, minimum sticking tendencies, and high resistance to corrosion, among other characteristics.

**contact microphone** A microphone, such as a throat microphone, which picks up vibrations by being in direct contact with the body producing them. Such microphones may be used, for instance, when extraneous noise is a problem.

**contact noise** A disturbance, due to fluctuating resistance, produced at the point where two metals or a metal and a semiconductor are joined.

**contact overtravel** Same as **contact follow**.

**contact piston** A piston, which as it slides, maintains contact with the inner walls of a waveguide at all times. Also called **contact plunger**.

**contact plunger** Same as **contact piston**.

**contact potential** Same as **contact emf**.

**contact potential difference** Same as **contact emf**.

**contact pressure** The pressure holding contacts together.

**contact protection** The use of a **contact protector**.

**contact protector** A component, device, or system utilized to suppress the arc that forms between electric contacts when a

circuit is opened. A capacitor, for instance, may be used for this purpose.

**contact rectifier** A rectifier which utilizes one or more metal disks coated with a semiconductor layer. This layer may consist of selenium, copper oxide, or another suitable semiconductor. The rectification occurs as a result of the greater conductivity across the contact in one direction than the other. Also called **semiconductor rectifier** (1), **metallic-disk rectifier**, **dry rectifier**, or **dry-disk rectifier**.

**contact resistance** The resistance between two contacts when a circuit is closed. This resistance is very small, usually a fraction of an ohm.

**contact sensor** A device which detects objects through physical contact with them. These sensors may be used in robots, for example, to determine the location, identity, and orientation of parts to be assembled.

**contact separation** Same as **contact gap**.

**contact spark** A spark that forms between electric contacts when a circuit is opened.

**contact sparking** The formation of a **contact spark**.

**contact wire** 1. A thin and flexible wire utilized to make electric contact. Used, for instance, to make electric contact on the surface of a semiconductor. 2. A wire utilized to make electric contact.

**contactless smart card** A smart card, such as a proximity card, which does not have to come into contact with the device reading it.

**contactless smart card reader** A reader, such as a proximity card reader, utilized to detect data contained in **contactless smart cards**.

**contactor** 1. A heavy-duty relay utilized to control and/or switch electric circuits, such as power circuits. Also called **power relay** (2). 2. In a control system, a device utilized to connect and disconnect a component, circuit, device, piece of equipment, mechanism, or system from a source of power.

**contaminant** An undesired material or substance that can adversely affect the properties of a component, circuit, device, piece of equipment, system, material, or medium.

**content** Information, especially that which is available online, which may be any combination of text, audio, video, files, or the like.

**content-addressable memory** Computer memory which is accessed by content rather than by address. It is often used in memory-management units, and comparison logic is included with each bit of storage. Its acronym is **CAM**. Also known as **content-addressable storage**, **active memory**, **active storage**, **associative storage**, or **associative memory**.

**content-addressable storage** Same as **content-addressable memory**.

**content aggregator** An entity that gathers information from multiple Web sites and provides said content to others. Such content, for instance, can help keep users more time at a the collector's site, might be offered as a premium service, or may be sold to content providers.

**content filter** A program or utility which seeks to detect advertising and other bothersome or undesirable content before its loaded onto a Web page being accessed. Such a program, for instance, can filter Web page content, protect privacy, prevent pop-up ads from appearing, avert banner ads, eliminate certain JavaScript, stop animated GIFs, turn off ActiveX, disable Web bugs, and so on. Also called **Web filter**, **Web content filter**, **Internet filter**, or **blocking software**.

**content provider** An entity that provides information content for the Internet, or for software-based products, such as CD-ROMs. Such information may be any combination of text,



**task swapping** The act of changing from one task (2) to another by copying or saving the data of one program, then loading another program.

**task switching** The act of changing from one task (2) to another. For instance, the switching from a word-processing program to a Web browser, with both programs running before and after the switch. Also called **context switching**.

**taskbar** A toolbar which displays the applications which are currently running, in addition to providing access to other applications which may have a small icon present. A user simply clicks with the mouse, or its equivalent, to make selections. There may also be other information present, such as the time and date, status of a modem, and so on. A taskbar may be adjusted in size, and is usually located at the bottom of a computer screen, but can be placed elsewhere. Also spelled **task bar**.

**taut-band meter** A meter, such as certain galvanometers, whose moving element is suspended and kept taut. For instance, such a meter may incorporate a coil whose movements or twisting are correlated to its output readings.

**Tb** 1. Chemical symbol for **terbium**. 2. Abbreviation of **terabit**.

**TB** Abbreviation of **terabyte**.

**Tbit** Abbreviation of **terabit**.

**Tbps** Abbreviation of **terabits per second**.

**TBps** Abbreviation of **terabytes per second**.

**Tbyte** Abbreviation of **terabyte**.

**Tc** Chemical symbol for **technetium**.

**TC** Abbreviation of **temperature coefficient**.

**TCG** Abbreviation of **time-code generator**.

**TCM** Abbreviation of **Trellis-Coded Modulation**.

**TCO** Abbreviation of **total cost of ownership**.

**TCP** Abbreviation of **Transmission Control Protocol**. Within the **TCP/IP** protocol, the protocol which handles the task of delivering the data. TCP keeps track of the packets that a given message is divided into, to ensure proper routing, and that the entire message is properly reassembled. TCP works at the transport-layer within the OSI model. Also called **TCP protocol**.

**TCP/IP** Abbreviation of **Transmission Control Protocol over Internet Protocol**. A set of protocols which enable different types of computer systems to communicate via different types of computer networks. TCP works at the transport-layer within the OSI model, while IP does so at the network layer. The TCP/IP suite may include other protocols, such as UDP, or RTSP. It is currently the most widely used protocol for delivery of data over networks, including the Internet. Also called **TCP/IP protocol**.

**TCP/IP protocol** Same as **TCP/IP**.

**TCP/IP stack** A group of protocols working together within **TCP/IP**. Such a stack, in addition to TCP and IP protocols, may include DHCP, UDP, FTP, RTSP, and so on.

**TCP protocol** Same as **TCP**.

**TCS** 1. Abbreviation of **trusted computer system**. 2. Abbreviation of **transmission convergence sublayer**.

**TCXO** 1. Abbreviation of **temperature-compensated crystal oscillator**. 2. Abbreviation of **temperature-controlled crystal oscillator**.

**TD-SCDMA** Abbreviation of **time-division synchronous code division multiple access**. A technology combining TDMA and CDMA in a 3G technology.

**TDD** 1. Abbreviation of **Telecommunications Device for the Deaf**. 2. Abbreviation of **time-division duplexing**. 3. Abbreviation of **time-division duplex**.

**TDES** Abbreviation of **Triple DES**.

**TDM** 1. Abbreviation of **time-division multiplexing**. 2. Abbreviation of **time-division multiplex**. 3. Abbreviation of **time-division multiplexer**.

**TDMA** Abbreviation of **time-division multiple access**.

**TDR** 1. Abbreviation of **time-domain reflectometry**. 2. Abbreviation of **time-domain reflectometer**. 3. Abbreviation of **time-delay relay**.

**TDS** 1. Abbreviation of **time-division switching**. 2. Abbreviation of **time-delay spectrometry**.

**Te** Chemical symbol for **tellurium**.

**TE** Abbreviation of **terminal equipment**.

**TE mode** Abbreviation of **transverse electric mode**.

**TE wave** Abbreviation of **transverse electric wave**.

**TEA laser** Abbreviation of **transversely-excited atmosphere laser**.

**teach box** A device which is utilized to program mechanical motions into computers, such as robot controllers. Used, for instance, for subsequent task execution by programmable robots.

**teach pendant** A handheld control panel utilized to guide a robot through the steps required to complete a task. It is connected to the robot by means of a suspended cable. All motions are recorded by the robot for future reference.

**teamware** Software designed to facilitate groups of people, often in different locations, to work together on one more projects. Such software includes emailing, scheduling, file transferring, application sharing, conferencing, the use of a whiteboard, and so on. Also called **groupware**, or **work-group software**.

**tear down** In communications, to end a physical or logical connection, such as that utilized for a telephone call or network access. To **setup** (3) is to establish such a connection.

**tear-off menu** In a GUI, a menu which can be moved, and possibly resized. Used, for instance, for optimal positioning of tools when switching frequently between a tool palette and an image being edited. Also spelled **tearoff menu**.

**tearing** In TV, a form of distortion in which groups of horizontal lines are displaced in an irregular manner, resembling the ripping of a fabric. It is caused by improper horizontal sync.

**tearoff menu** Same as **tear-off menu**.

**tebi-** A binary prefix meaning  $2^{40}$ , or 1,099,511,627,776. For example, a **tebibyte** is equal to  $2^{40}$ , or 1,099,511,627,776 bytes. This prefix is utilized to refer to only binary quantities, such bits and bytes. Its abbreviation is **Ti-**.

**tebibyte**  $2^{40}$ , or 1,099,511,627,776 bytes. Its abbreviation is **TiB**.

**tech support** Abbreviation of **technical support**.

**technetium** A silver-gray radioactive metal whose atomic number is 43. It has close to 30 known isotopes, all unstable, and is used in nuclear medicine, tracer studies, lasers, and superconductors. Its chemical symbol is **Tc**.

**technical support** The technical help a provider of hardware, software, network services, or the like, is supposed to provide to customers. Its abbreviation is **tech support**.

**technobabble** Terminology which is specialized to a given field, such as computers or communications, and which is usually not understood by those not sufficiently familiar with said field. Such terms are often utilized improperly to confuse, intimidate, marginalize, or otherwise make a person uncomfortable.

**technological** Pertaining to, incorporating, affected by, or arising from **technology**.

**technology** 1. The application of science, engineering, and other areas of expertise to the creation and improvement of that which is utilized for commerce and/or industry. 2. A specific technological method, technique, use, or approach