

MODERN
DICTIONARY
of
ELECTRONICS

Rudolf F. Graf

*With a specially written chapter for
the guidance of the English reader
by W. Oliver (G3XT)*

FOULSHAM-SAMS

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While the present book is mainly concerned with general electronic technical terms, it also includes a good many specialised ones relating to computers. As, however, the number of computer terms is truly enormous, these need a book to themselves, and indeed they have one in a companion volume of the Foulsham-Sams series entitled "Computer Dictionary and Handbook" by Charles J. Sippl.

"Modern Dictionary of Electronics" contains many thousands of definitions, ranging from rather abstruse terms such as "adiabatic demagnetisation" and "antiferromagnetic resonance" to technical slang such as "puff" (described as the "British abbreviation for picofarad") and "mike".

This book is of American origin; but it contains many typical British electronic terms as well as those first introduced in the United States. Of the latter, more and more are becoming widely adopted in Britain and other countries outside the States. Words such as antenna, ground, tube, etc., have caught on here; but certain other American terms, such as binding-post, have not.

The use of different terms for the same device is sometimes rather inexplicable. For instance, spring clips with toothed edges, to grip wires, car-battery terminals, etc., are known as alligator clips in the States and crocodile clips in Britain.

Some terms tend to change their meaning as time goes on. "Power pack" is an example. Years ago this usually meant a mains unit, to which the definition given in this volume applies. But in these days of transistor sets, a great many dry batteries (such as the 9-volt ones) are described by British manufacturers as "power packs" and in at least one range the initials of this term are incorporated in the model-numbers denoting the different types of transistor battery—e.g., PP3, PP6, PP9, etc.

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Somehow the term “power pack” really seems more appropriate to a compact package of battery-power than to a mains unit comprising a collection of components usually including a mains transformer, a rectifier, a smoothing choke or heavy-duty resistor and a pair of electrolytic capacitors. Therefore the term “power supply unit” (abbreviated to p.s.u.) has gained favour of recent years as an alternative to “power pack” where assemblies like the foregoing are concerned.

The different voltage supplies separated out to feed the filaments or heaters of valves and cathode-ray tubes; to put a high positive potential on the anodes, screens, etc.; and to apply a bias—usually negative—to the grids, are known as l.t., h.t., and g.b. supplies respectively, in Britain. The initials stand for low-tension, high-tension and grid-bias. But in the United States the low-tension is called A-supply, the high-tension B and the grid-bias C. Thus “B+” is the same as our “HT+” or high-tension positive.

In the States, however, the term “high tension” is reserved mainly for the definition given in this dictionary—i.e., “lethal voltages on the order of thousands of volts”—whereas we have been in the habit of describing any anode supply in a radio set (even if it is only 90 volts or so) as “high” tension.

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This kind of spelling can lead to some confusion in the case of words such as “metre” and “meter”. American spelling makes no distinction between the unit of measurement and the instruments used for measuring. So in an American book, a reference to “two meters” could refer to a wavelength of two metres, or equally well to a couple of instruments such as a voltmeter and milliammeter. Only the context can guide you as to intended meaning.

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cations under United States regulations, and that these may well differ quite considerably from those of our own Ministry of Posts and Telecommunication, the radio and t-v licencing authority over here.

While radio regulations, particularly in regard to such obviously-international matters as frequency-allocation, are mainly based on fundamental agreement between the different countries of the world, there are often quite wide variations in practical details.

"Phonograph", the American equivalent of "gramophone", is the nearest version to our term "radiogram" meaning a radio gramophone. The term "radiogram" is applied in the States to what we should call a radio-telegram, or more broadly, to any message sent via radio telegraphy.

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On both sides of the Atlantic, a number of technical terms tend to confuse beginners because similar terms are applied to quite different devices; or one device is known by two or three quite different names.

For example, colour code and colour coder, or encoder, are two totally different things; but a beginner might think they were closely connected. Again, the term "capacitor" is used throughout the States and by the majority of technical writers in Britain; but a good many commercial firms, and a few writers, are inclined to cling to the term "condenser" in advertisements, catalogues, etc.

The hundreds of line drawings in this book are mostly applicable to British electronics, as they are to American; but there are at least one or two exceptions. An example is the drawing of a test pattern above the definition of that term. It depicts a typical American version of a t-v test-card, which is (superficially, at any rate) quite different from the test-cards used by BBC and ITV trans-

matters though it serves similar purposes in aiding receiver adjustment.

In the schematic symbols depicted at the end of the book, you will find versions normally used in American circuit diagrams (or "schematics" as they are generally called in the States). The versions of these symbols as used in British publications often differ in detail, though the general appearance is roughly similar. The American symbol for an electrolytic capacitor is an example of one which differs considerably from the British counterpart.

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As new technologies evolve, fresh terminology must be developed to communicate, describe, and define the heretofore unknown concepts, components, and techniques. Thus, continual updating of a work such as this dictionary is necessary so that anyone who is involved in the world of electronics has the power to communicate with those about him and to grasp new concepts as they emerge. This latest edition contains definitions of new terms that have come into existence in the last few years, as well as additional or revised meanings for existing terms. These changes—more than 3000 in all—are the result of our expanding technology and represent a true measure of our progress.

No such book is the work of one man alone. As for previous editions, industry sources provided help in making the definitions of certain terms truly reflective of their current use. In particular, I want to express sincere gratitude to my good friend, George J. Whalen, for his invaluable comments and suggestions.

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How to Use This Dictionary

This MODERN DICTIONARY OF ELECTRONICS follows the standards accepted by prominent lexicographers. All terms of more than one word are treated as one word. For example, "bridged-T network" appears between "bridge circuit" and "bridge duplex system." Abbreviations are also treated alphabetically; the initials "ARRL" follow the term "arrester" rather than appearing at the beginning of the A's.

For ease in quickly locating a specific term, catchwords for the first and last entries on each page are shown at the top of the page.

Where more than one definition exists for a term, the different meanings are arranged numerically. This method, however, does not necessarily imply a preferred order of meaning.

Illustrations have been positioned with the terms they depict and are clearly captioned so they can be immediately associated with the proper definition. When a term has more than one meaning, the number of the corresponding definition is included in the caption.

Moderate cross-referencing has been used as an aid in locating terms which you might look for in more than one place. For example, when looking up "Esaki diode" you'll be referred to "tunnel diode." However, occasionally you may look for a term and not find it. In such instances, always think of the term in its most logical form; e.g., you will find "acoustic resonator" in the A's and not in the R's. In other words, when looking up the definition for a specific device, such as a "dipole antenna," refer to the modifier "dipole" rather than to "antenna."

A unique feature is the *Pronunciation Guide* beginning after the definitions. This Guide shows syllabic division and pronunciations, based on accepted industry usage, for over 1100 commonly mispronounced words. Because the language is in constant flux, pronunciations and spellings acceptable five years ago may be obsolete today. Witness the evolution of the word "ampere." Originally it was pronounced "AHMpair," the French pronunciation. In this country, accepted usage simplified the term to "AMpeer" (just as

"Schmidt" became "Smith"). Today the accepted pronunciation is "AMper."

A completely revised list of semiconductor symbols and abbreviations is on pages 680 through 685; schematic symbols are shown on pages 686 and 687; and a table on page 688 lists the letters of the Greek alphabet, along with technical terms for which these letters are used as symbols.

Since it follows the most authoritative standards of the industry, this dictionary will serve as an excellent guide on spelling, hyphenation, abbreviation, capitalization, etc.

It is hoped you will find the MODERN DICTIONARY OF ELECTRONICS helpful, informative, and satisfactory in every way. Should you care to pass along any comments or suggestions which come to mind as a result of its use, we will be most happy to hear from you.

A

A—1. Abbreviation for angstrom unit, used in expressing wavelength of light. Its length is 10^{-8} centimeter. 2. Chemical symbol for argon, an inert gas used in some electron tubes. 3. Symbol for area of a plane surface. 4. Symbol for ampere.

a—Abbreviation for atto (10^{-18}).

A- (**A-minus** or **A-negative**)—Sometimes called F-. Negative terminal of an A-battery or negative polarity of other sources of filament voltage. Denotes the terminal to which the negative side of the filament-voltage source should be connected.

A+ (**A-plus** or **A-positive**)—Sometimes called F+. Positive terminal of an A-battery or positive polarity of other sources of filament voltage. The terminal to which the positive side of the filament voltage source should be connected.

ab—The prefix attached to names of practical electric units to indicate the corresponding unit in the cgs (centimeter gram second) electromagnetic systems—e.g., abampere, abvolt, abcoulomb.

abac—See Alignment Chart.

abampere—Centimeter-gram-second electromagnetic unit of current. The current which, when flowing through a wire one centimeter long bent into an arc with a radius of one centimeter, produces a magnetic field intensity of one oersted. One abampere is equal to 10 amperes.

A-battery—Source of energy which heats the filaments of vacuum tubes in battery-operated equipment.

abbreviated dialing—A system using special-grade circuits that require fewer than the usual number of dial pulses to connect two or more subscribers.

abc—Abbreviation for automatic bass compensation, a circuit used in some equipment to increase the amplitude of the bass notes to make them appear more natural at low volume settings.

abcoulomb—Centimeter-gram-second electromagnetic unit of electrical quantity. The quantity of electricity passing any point in an electrical circuit in one second when the current is one abampere. One abcoulomb is equal to 10 coulombs.

aberration—In lenses a defect that produces inexact focusing. Aberration may also occur in electron optical systems, causing a halo around the light spot.

abfarad—Centimeter-gram-second electromagnetic unit of capacitance. The capacitance of a capacitor when a charge of one abcoulomb produces a difference of potential of one abvolt between its plates. One abfarad is equal to 10^9 farads.

abhenry—Centimeter-gram-second electromagnetic unit of inductance. The inductance in a circuit in which an electromotive force of one abvolt is induced by a current chang-

ing at the rate of one abampere per second. One abhenry is equal to 10^9 henrys.

abmho—Centimeter-gram-second electromagnetic unit of conductance. A conductor or circuit has a conductance of one abmho when a difference of potential of one abvolt between its terminals will cause a current of one abampere to flow through the conductor. One abmho is equal to 10^9 mho.

abnormal glow—In a glow tube, a current discharge of such magnitude that the cathode area is entirely surrounded by a glow. A further increase in current results in a rise in its density and a drop in voltage.

abnormal propagation—The phenomenon of unstable or changing atmospheric and/or ionospheric conditions acting upon transmitted radio waves. Such waves are prevented from following their normal path through space, causing difficulties and disruptions of communications.

abnormal reflections—See Sporadic Reflections.

abohm—Centimeter-gram-second electromagnetic unit of resistance. The resistance of a conductor when, with an unvarying current of one abampere flowing through it, the potential difference between the ends of the conductor is one abvolt. One abohm is equal to 10^{-9} ohm.

abort—To cut short or break off (an action, operation, or procedure) with an aircraft, guided missile, or the like—especially because of equipment failure. An abort may occur at any point from start of countdown or takeoff to the destination. An abort can be caused by human technical or meteorological errors, miscalculation, or malfunctions.

AB power pack—Assembly in a single unit of the A- and B-batteries of a battery-operated circuit. Also, a unit that supplies the necessary A and B voltages from an ac source of power.

abrasion machine—A laboratory device for determining the abrasive resistance of wire or cable. The two standard types of machines are the squirrel cage with square steel bars and the abrasive grit types.

abrasion resistance—A measure of the ability of a wire or wire covering to resist damage due to mechanical causes. Usually expressed as inches of abrasive tape travel.

abscissa—Horizontal, or X-, axis on a chart or graph.

absence-of-ground searching selector—In dial telephone systems, an automatic switch that rotates, or rises vertically and rotates, in search of an ungrounded contact.

absolute address—1. An address used to specify the location in storage of a word in a computer program, not its position in the program. 2. A binary number assigned permanently as the address of a storage location in a computer.