



3 0402 00230 2919

00

THE  
AUTHORITATIVE  
DICTIONARY  
OF IEEE STANDARDS TERMS  
SEVENTH EDITION



Published by  
Standards Information Network  
IEEE Press



Trademarks and disclaimers

*IEEE believes the information in this publication is accurate as of its publication date; such information is subject to change without notice. IEEE is not responsible for any inadvertent errors.*

*Other tradenames and trademarks in this document are those of their respective owners.*

*The Institute of Electrical and Electronics Engineering, Inc.  
3 Park Avenue, New York, NY, 10016-5997, USA*

*Copyright © 2000 by the Institute of Electrical and Electronics Engineers, Inc. All rights reserved. Published December 2000. Printed in the United States of America.*

*No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.*

*To order IEEE Press publications, call 1-800-678-IEEE.*

*Print: ISBN 0-7381-2601-2*

*SP1122*

*See other standards and standards-related product listings at: <http://standards.ieee.org/>*

*The publisher believes that the information and guidance given in this work serve as an enhancement to users, all parties must rely upon their own skill and judgement when making use of it. The publisher does not assume any liability to anyone for any loss or damage caused by any error or omission in the work, whether such error or omission is the result of negligence or any other cause. Any and all such liability is disclaimed.*

*This work is published with the understanding that the IEEE is supplying information through this publication, not attempting to render engineering or other professional services. If such services are required, the assistance of an appropriate professional should be sought. The IEEE is not responsible for the statements and opinions advanced in this publication.*

Library of Congress Cataloging-in-Publication Data

IEEE 100 : the authoritative dictionary of IEEE standards terms.—7th ed.  
p. cm.

ISBN 0-7381-2601-2 (paperback : alk. paper)

1. Electric engineering—Dictionaries. 2. Electronics—Dictionaries. 3. Computer engineering—Dictionaries. 4. Electric engineering—Acronyms. 5. Electronics—Acronyms. 6. Computer engineering—Acronyms. I. Institute of Electrical and Electronics Engineers.

TK9 .I28 2000  
621.3'03—dc21

00-050601

to studies and/or effects that occur in organisms. (T&D/PE) 539-1990  
 actions described in 3.9.1.1 of IEEE Std that searching for shell functions and expressed. *See also:* execute.

(C/PA) 9945-2-1993  
 portion of an Integral Process that is ie.

(C/SE) 1074.1-1995  
 used to distinguish one directory outstanding operations.

1993w, 1224.2-1993w, 1327.2-1993w, 1326.2-1993w

The specific element identifier (EID) number. (SCC32) 1455-1999

lephone switching systems) A reverse-measured-time direct distance dialing secretary number. (COM) 312-1977w  
 nput or output or both.

(C) [20], [85]  
 s. (SUB/PE) C37.1-1994

ontroller; integrated optical circuit output channel.

utput circuit.

it-output controller.

arged atom or radical. (IA) [59]  
 molecule, molecular cluster, or aerosol f one or more electrons has acquired a

te: The inclusion of aerosols (particles) s consistent with historical usage. The

all ion" and "charged aerosol" is en- (T&D/PE) 539-1990, 1227-1990

s) The thermodynamic concentration, tration corrected for the deviation from ions. *Note:* The activity of a single ion

ver, be measured thermodynamically. (EEC/PE) [119]

t positive or negative charge of an ion, le of the electron charge.

(T&D/PE) 539-1990

orage tubes) Dynamic decay caused orage surface. *See also:* charge-storage

(ED) 158-1962w

ies of ion) The concentration equal to ons, or of moles or equivalent of those nit volume of an electrolyte.

(EEC/PE) [119]

t The portion of ion current resulting e to the electric field.

(T&D/PE) 539-1990

t The portion of ion current resulting fluid dynamic forces, such as wind.

(T&D/PE) 539-1990

ent that determines monopolar space- easuring the charge collected from a

(T&D/PE) 539-1990, 1227-1990

f electric charge resulting from the m- (T&D/PE) 539-1990

e (fiber optics) A method of fabricating waveguide by an ion exchange process- ble method; graded index profile; chem- technique.

(Std100) 812-1984w

ar to an electron gun but in which the ions. Example: proton gun. *See also:*

(ED) [45], [84]

electron tube) A hot cathode that is onic bombardment of the emitting sur-

(ED) 161-1971w, [45]

ube An electron tube containing an

(ED) 161-1971w

ion implantation (A) (germanium gamma-ray detectors) (charged-particle detectors) A process in which a beam of energetic ions incident upon a solid results in the imbedding of those ions into the material. (B) A process in which a beam of energetic ions incident upon a solid results in the implantation of those ions into the material.

(NPS) 325-1996, 300-1988

ion-implanted contact A detector contact consisting of a junction produced by the process of ion implantation. *See also:* ion implantation.

(NPS) 325-1996, 300-1988r

ionization (I) (A) A breakdown that occurs in parts of a dielectric when the electric stress in those parts exceeds a critical value without initiating a complete breakdown of the insulation system. *Note:* Ionization can occur both on internal and external parts of a device. It is a source of radio noise and can damage insulation. (B) The process by which an atom or molecule receives enough energy (by collision with electrons, photons, etc.) to split it into one or more free electrons and a positive ion. Ionization is a special case of charging.

(PE/IA/T&D/PL/APP) [8], [79], 539-1990

(2) (A) (outdoor apparatus bushings) The formation of limited avalanches of electrons developed in insulation due to an electric field. (B) (outdoor apparatus bushings) Ionization current is the result of capacitive discharges in an insulating medium due to electron avalanches under the influence of an electric field. *Note:* The occurrence of such currents may cause radio noise and/or damage to insulation.

(PE/TR) 21-1976

(3) (corona measurement) Any process by which neutral molecules or atoms dissociate to form positively and negatively charged particles.

(MAG/ET) 436-1977s

ionization current The electric current resulting from the movement of electric charges in an ionized medium, under the influence of an applied electric field.

(SPD/PE) C62.11-1999

ionization extinction voltage (cable) (corona level) The minimum value of falling root-mean-square voltage that sustains electric discharge within the vacuum or gas-filled spaces in the cable construction or insulation.

(PE) [4]

ionization factor (power distribution, underground cables) (dielectric) The difference between percent power factors at two specified values of electric stress. The lower of the two stresses is usually so selected that the effect of the ionization on power factor at this stress is negligible.

(PE) [4]

ionization-gauge tube An electron tube designed for the measurement of low gas pressure and utilizing the relationship between gas pressure and ionization current.

(ED) [45]

ionization measurement The measurement of the electric current resulting from the movement of electric charges in an ionized medium under the influence of the prescribed electric field.

(PE/TR) 21-1976

ionization or corona detector *See:* discharge detector.

ionization or corona inception voltage *See:* discharge inception voltage.

ionization or corona probe *See:* discharge probe.

ionization smoke detector (fire protection devices) A device which has a small amount of radioactive material which ionizes the air in the sensing chamber, thus rendering it conductive and permitting a current flow through the air between two charged electrodes. This gives the sensing chamber an effective electrical conductance. When smoke particles enter the ionization area, they decrease the conductance of the air by attaching themselves to the ions, causing a reduction in mobility. When the conductance is less than the predetermined level, the detector circuit responds.

(NFPA) [16]

ionization time (gas tube) The time interval between the initiation of conditions for and the establishment of conduction at some stated value of tube voltage drop. *Note:* To be exact the ionization time of a gas tube should be presented as a family of curves relating such factors as condensed-mercury temperature, anode and grid currents, anode and grid voltages, and regulation of the grid current.

(ED) 161-1971w

ionization vacuum gauge A vacuum gauge that depends for its operation on the current of positive ions produced in the gas by electrons that are accelerated between a hot cathode and another electrode in the evacuated space. *Note:* It is ordinarily used to cover a pressure range of  $10^{-4}$  to  $10^{-10}$  conventional millimeters of mercury. *See also:* instrument.

(EEC/PE) [119]

ionization voltage A high-frequency voltage appearing at the terminals of an arrester, generated by all sources, but particularly by ionization current within the arrester, when a power-frequency voltage is applied across the terminals.

(SPD/PE) C62.11-1999

ionizing event (gas-filled radiation counter tube) Any interaction by which one or more ions are produced.

(ED) 161-1971w

ionizing radiation (I) (A) (air) Particles or photons of sufficient energy to produce ionization in their passage through air. (B) (air) Particles that are capable of nuclear interactions with the release of sufficient energy to produce ionization in air.

(NPS) 175-1960

(2) Particles or photons of sufficient energy to produce ionization in interactions with matter. (NI/NPS) 309-1999

ion migration A movement of ions in an electrolyte as a result of the application of an electric potential. *See also:* ion.

(EEC/PE) [119]

ion mobility (1) The theoretical drift speed of a single, isolated ion in a liquid or gas, per unit electric field strength. The preferred unit is  $m^2/Vs$ ; another commonly used unit is  $cm^2/Vs$ . Ion mobility depends on the ionic species. In air, several ionic species can exist simultaneously.

(T&D/PE) 539-1990

(2) The drift speed of an ion in a liquid or gas per unit electric-field strength. The preferred unit is  $m^2/Vs$ ; another commonly used unit is  $cm^2/Vs$ .

(T&D/PE) 1227-1990r

ionogram A record showing the group path delay of ionospheric echoes as a function of frequency.

(AP/PROP) 211-1997

ionosonde A swept-frequency or stepped frequency instrument that transmits radio waves vertically or obliquely to the ionosphere and uses the echoes to form an ionogram.

(AP/PROP) 211-1997

ionosphere (1) (data transmission) That part of the earth's outer atmosphere where ions and free electrons are normally present in quantities sufficient to affect propagation of radio waves.

(PE) 599-1985w

(2) That part of a planetary atmosphere where ions and free electrons are present in quantities sufficient to affect the propagation of radio waves.

(AP/PROP) 211-1997

ionosphere disturbance A variation in the state of ionization of the ionosphere beyond the normally observed random day-to-day variation from average values for the location, date, and time of day under consideration. *Note:* Since it is difficult to draw the line between normal and abnormal variations, this definition must be understood in a qualitative sense. *See also:* radiation.

(EEC/PE) [119]

ionosphere-height error (electronic navigation) The systematic component of the total ionospheric error due to the difference in geometrical configuration between ground paths and ionospheric paths. *See also:* navigation.

(AES/RS) 686-1982s, [42]

ionospheric error (electronic navigation) The total systematic and random error resulting from the reception of the navigational signal via ionospheric reflections: this error may be due to variations in transmission paths, nonuniform height of the ionosphere, and nonuniform propagation within the ionosphere. *See also:* navigation.

(AES/RS) 686-1982s, [42]

ionospheric absorption The loss of energy from an electromagnetic wave caused by collisions, primarily between electrons and neutral species and ions in the ionosphere.

(AP/PROP) 211-1997

ionospheric mode of propagation Representation of a transmission path by the number of hops between the end points of the path, the ionospheric layers producing the ionospheric