

Glossary of

Electrotechnical, power, telecommunication, electronics, lighting and colour terms —

Part 3: Terms particular to
telecommunications and electronics —

Group 08: Acoustics and
electroacoustics terminology

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- Electronic Engineering Association
- Institute of Physics
- Institution of Electrical Engineers
- Ministry of Defence
- Power Generation Association (BEAMA Ltd.)
- Radio and Electronics Technical Press
- Telecommunication Engineering and Manufacturing Association (TEMA)

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- Association of Sound and Communications Engineers Limited
- British Radio and Electronic Equipment Manufacturers' Association
- British Telecommunications plc
- Health and Safety Executive
- Institute of Acoustics
- Institute of Sound and Vibration Research
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- University of Exeter

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¹⁾ In preparation.

Foreword

This Group of Part 3 of BS 4727, prepared under the direction of the General Electrotechnical Engineering Standards Committee, contains terms and definitions relating to acoustics and electroacoustics. The terms and definitions given in this British Standard are technically identical with those given in the English text of the advance edition of Chapter 801:1984 of the International Electrotechnical Vocabulary, published by the International Electrotechnical Commission (IEC).

BS 4727 combines into one glossary the subjects previously covered by BS 204 “*Glossary of terms used in telecommunication (including radio) and electronics*”, BS 205 “*Glossary of terms used in electrical engineering*”, BS 233 “*Glossary of terms used in illumination and photometry*”, BS 661 “*Glossary of acoustical terms*” and BS 1611 “*Glossary of colour terms used in science and in industry*”. These five glossaries have now been withdrawn.

The glossary is divided into four main Parts, each of which is further subdivided into Groups. Each Group will comprise the terms and definitions used in a particular branch of electrical engineering and will be issued individually as soon as it is completed. This arrangement makes it possible to add new Groups or revise existing Groups at any time without affecting the remainder of the glossary.

The five main Parts of the glossary are as follows.

- *Part 1: Terms common to power, telecommunications and electronics;*
- *Part 2: Terms particular to power engineering;*
- *Part 3: Terms particular to telecommunications and electronics;*
- *Part 4: Terms particular to lighting and colour;*
- *Part 5: Terms particular to electromedical equipment.*

Fundamental and general terms common to power, telecommunications and electronics respectively form the first two Groups of Part 1. General terms particular to Part 2 and Part 3 similarly form the first Groups of their respective Parts. The specialist Groups contain only the terms and definitions relating to their subject.

As far as has been practicable all terms and definitions established in current usage and falling within the scope of this glossary have been included. Experience has shown that it is rarely possible to replace, or even to modify, a well established term no matter what the logical or aesthetic shortcomings of that term may be. Current usage has therefore been accepted as the authority for terms and their meanings except where there has been a very good reason for doing otherwise, e.g. where terms have been considered to be fundamentally wrong, ambiguous, superfluous or in need of standardization. Where two or more synonymous terms are in use, those which are deprecated are omitted from the body of the text but are entered in the alphabetical index with a cross-reference to the standard term. In cases where it was felt that the time was not yet right to deprecate a synonym, preferred terms are given first and other terms are printed in less prominent type to indicate the intention to deprecate them in the course of time. Where synonyms are considered of equal value they are shown in the same type.

Where terms are used with somewhat different meanings in different branches of electrical engineering, appropriate definitions are given in the Groups of the glossary corresponding to these branches. Such a definition, when taken out of the context of its Group, should always be quoted with a preamble indicating its proper context.

It is to be noted that the given definition of a term represents the generally accepted meaning of that term. Under no circumstances should it be regarded as taking the place of a specification.

An effort has been made to arrange the terms in a logical order proceeding from the general to the specific and from the whole to the part and placing allied terms in proximity. Each term has assigned to it a Part number (one digit) and a Group number of two digits followed by a space and four digits, the first digit of which represents the section, the second digit the subsection and the last two digits the place within the subsection. The International Electrotechnical Vocabulary employs a different numbering system and for convenience the IEV number is given in parentheses after the BS number for each term.

A general view of the arrangement of the Group in the glossary can be obtained from the guide to the glossary. An alphabetical index of the terms of the Group is provided at the end to facilitate reference to particular terms. For simplicity, only the last four digits of a term's number are quoted in the index. It is recommended that the user of any Group of the glossary should consider the Group in association with the Groups covering general or fundamental terms within the Part, for Parts 2 and 3, and also together with Groups 01 and 02 of Part 1.

In this glossary parentheses () enclose words or phrases that are not part of the term or definition and can be omitted without affecting the meaning.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to vi, pages 1 to 30, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Guide to the glossary

Part 1 Terms common to power, telecommunications and electronics

Group 01 Fundamental terminology

Group 02 Electrical and magnetic devices terminology

Group 03 Relay terminology

Group 04 Measurement terminology

Group 05 Semiconductor terminology

Group 06 Electronic tube terminology

Group 07 Magnetism terminology

Group 08 Piezo-electric device terminology

Group 09 Radio interference terminology

Group Integrated electronic circuit terminology²⁾

Titles to any further groups will be added in due course.

Part 2 Terms particular to power engineering

Group 01 General power terminology

Group 02 Static converter terminology

Group 03 Rotating machinery terminology

Group 04 Transformer terminology

Group 05 Voltage fluctuation terminology

Group 06 Switchgear and controlgear terminology (including fuse terminology)

Group 07 Tariffs terminology

Group 08 Power cable terminology

Group 09 Transducer terminology

Group Power systems terminology²⁾

Group Systems operation terminology²⁾

Group Traction terminology²⁾

Titles to any further groups will be added in due course.

Part 3 Terms particular to telecommunications and electronics

Group 01 General telecommunication and electronics terminology

Group 02 Telephony terminology

Group 03 Telegraphy, including facsimile terminology

Group 04 Broadcasting and television terminology

Group 05 Propagation and media terminology

Group 06 Radio location and navigation terminology

Group 07 Radiocommunication terminology

Group 08 Acoustics and electroacoustics terminology

Group 09 Waveguide terminology

Group 10 Recording and reproduction of sound and video terminology

Group 11 Space radiocommunications terminology

Titles to any further groups will be added in due course.

Part 4 Terms particular to lighting and colour

²⁾ Not yet published, as at 31 December 1985.

Group 01 Radiation and photometry terminology

Group 02 Vision and colour terminology

Group 03 Lighting technology terminology

Titles to any further groups will be added in due course.

Part 5 Terms particular to electromedical equipment

Group 01 Radiology and radiological physics terminology

Titles to any further groups will be added in due course.

308 1 (801-01) General terms

No.	Term	Definition
308 1001 (801-01-01)	acoustical oscillation; acoustic vibration; sound	Movement of particles in an elastic medium about an equilibrium position
308 1002 (801-01-02)	audible sound	1. Acoustic oscillation of such a character as to be capable of exciting the sensation of hearing. 2. Sensation of hearing excited by an acoustic oscillation (vibration).
308 1003 (801-01-03)	infrasound	Acoustic oscillation whose frequency is below the low-frequency limit of audible sound (about 16 Hz).
308 1004 (801-01-04)	ultrasound	Acoustic oscillation whose frequency is above the high-frequency limit of audible sound (about 16 kHz).
308 1005 (801-01-05)	pure sound; pure tone	Sinusoidal acoustic oscillation.
308 1006 (801-01-06)	complex sound	Sound that is not a simple oscillation.
308 1007 (801-01-07)	warble tone	Sound whose frequency varies periodically about a mean value.
308 1008 (801-01-08)	noise	1. Erratic or statistically random oscillation. 2. Disagreeable or undesired sound or other disturbance.
308 1009 (801-01-09)	random noise	Oscillation due to the aggregate of a large number of elementary disturbances with random occurrence in time.
308 1010 (801-01-10)	white noise	Noise whose power spectral density is essentially independent of frequency.
308 1011 (801-01-11)	pink noise	Noise whose power spectral density is inversely proportional to frequency.
308 1012 (801-01-12)	ambient noise	Encompassing sound (at a given place), being usually a composite of sounds from many sources near and far.
308 1013 (801-01-13)	background noise	Total of interference from all sources in a system used for the production, transmission, detection, measurement, or recording of a signal.
308 1014 (801-01-14)	reverberation	The sound that persists in an enclosed space, as a result of repeated reflection or scattering, after the source of the sound has stopped.
308 1015 (801-01-15)	sound spectrum	Representation of the magnitudes (and sometimes of the phases) of the components of a complex sound as a function of frequency.
308 1016 (801-01-16)	line spectrum	Sound spectrum containing only discrete frequency components.
308 1017 (801-01-17)	continuous spectrum	Sound spectrum whose components are continuously distributed over a given frequency range.

No.	Term	Definition
308 1018 (801-01-18)	static pressure	<i>At a point in a medium.</i> The pressure that would exist at that point in the absence of sound waves.
308 1019 (801-01-19)	instantaneous sound pressure	<i>At a point in a medium.</i> Difference between the pressure existing at the instant considered and the static pressure.
308 1020 (801-01-20)	sound pressure	Root-mean-square of instantaneous sound pressures over a given time interval, unless specified otherwise.
308 1021 (801-01-21)	peak sound pressure	Greatest absolute instantaneous sound pressure during a given time interval.
308 1022 (801-01-22)	reference sound pressure	Pressure conventionally chosen equal to 20 μPa .
308 1023 (801-01-23)	particle	Portion of a medium whose volume has dimensions small compared to the wavelength of the sound.
308 1024 (801-01-24)	instantaneous particle displacement	<i>In an elastic medium.</i> Vector whose extremity is the position of the particle at a given instant, and whose origin is at the equilibrium position of the particle.
308 1025 (801-01-25)	particle displacement	Root-mean-square of instantaneous particle displacement over a given time interval, unless otherwise specified.
308 1026 (801-01-26)	peak particle displacement	Greatest instantaneous particle displacement during a given time interval.
308 1027 (801-01-27)	instantaneous particle velocity	Derivative with respect to time, of the instantaneous particle displacement.
308 1028 (801-01-28)	particle velocity	Root-mean-square of instantaneous particle velocity, over a given time interval, unless otherwise specified.
308 1029 (801-01-29)	peak particle velocity	Greatest instantaneous particle velocity during a given time interval.
308 1030 (801-01-30)	volume velocity	Integral, over a vibration surface, of the product of the component of the particle velocity normal to the surface and the differential surface area.
308 1031 (801-01-31)	instantaneous particle acceleration	The time derivative of instantaneous particle velocity.
308 1032 (801-01-32)	simple sound source; monopole	Source that radiates sound equally in all directions in a free field.
308 1033 (801-01-33)	point sound source	Source that radiates sound as if from a single point.
308 1034 (801-01-34)	strength of a simple sound source	Maximum instantaneous volume velocity produced by a simple source small compared with wavelength, emitting a wave with sinusoidal variation with time.
308 1035 (801-01-35)	sound power of a source	Total sound energy radiated by the source in a specified frequency band over a certain time interval, divided by the interval.
308 1036 (801-01-36)	sound energy flux; sound power through a surface element	Time-average product of the in-phase components of the instantaneous sound pressure and the volume velocity through the surface element considered.
308 1037 (801-01-37)	sound power density; sound intensity; sound energy flux density	Sound energy flux in a specified direction and sense through an area perpendicular to that direction, divided by the area.

No.	Term	Definition
308 1038 (801-01-38)	instantaneous potential sound energy density	Half the quotient of the square of the instantaneous sound pressure by the modulus of elasticity of the medium.
308 1039 (801-01-39)	instantaneous kinetic sound energy density	Half the product of the density of the medium by the square of the velocity of a particle in the said medium.
308 1040 (801-01-40)	sound energy density; total energy density	Sum of instantaneous potential and kinetic energy densities.
308 1041 (801-01-41)	acoustic radiation pressure	Unidirectional steady pressure exerted on a surface by an acoustic wave.
308 1042 (801-01-42)	spectral density; spectrum density	Limit, as the bandwidth approaches zero, of the mean square value of a field quantity divided by bandwidth. The kind of field quantity must be specified, such as sound pressure, particle velocity, particle acceleration.
308 1043 (801-01-43)	power spectral density; power spectrum density	Limit, as the bandwidth approaches zero, of sound power divided by bandwidth.
308 1044 (801-01-44)	time constant	Time required for the amplitude of that component of a field quantity which varies exponentially with time, (i.e. less any constant component), to change by the factor $1/e = 0.3679$ from an initial amplitude.
308 1045 (801-01-45)	stimulus; excitation	External force, or other input, applied to a system.
308 1046 (801-01-46)	response	<i>Of a device or system.</i> The motion, or other output, that results from a stimulus (excitation) under specified conditions. The kinds of input and output being utilized must be indicated.
308 1047 (801-01-47)	distortion	Undesired change of waveform. NOTE Distortion may result from: a) non-linear relation between input and output; b) non-uniform transmission at different frequencies; c) phase shift not proportional to frequency.

308 2 (801-02) Levels

No.	Term	Definition
308 2001 (801-02-01)	level	Logarithm of the ratio of a given quantity to a reference quantity of the same kind. The base of the logarithm, the reference quantity, and the kind of level must be indicated. NOTE 1 The kind of level is indicated by use of a compound term such as sound power level or sound pressure level. NOTE 2 The value of the reference quantity remains unchanged, whether the chosen quantity is peak, root-mean-square, or otherwise. NOTE 3 The base of the logarithm is indicated by use of a unit of level associated with that base.
308 2002 (801-02-02)	bel	Unit of level of a quantity proportional to power when the base of the logarithm is ten. Also, the unit of level of a field quantity when the base of the logarithm is the square root of ten. NOTE Examples of power-like quantities are sound power and sound energy. Examples of field quantities are sound pressure and voltage.

No.	Term	Definition
308 2003 (801-02-03)	decibel	One tenth of the bel. NOTE 1 The decibel is more often used than the bel as a unit of level. NOTE 2 The decibel can be defined as a unit of level of a power-like quantity when the base of the logarithm is the tenth root of ten. Also, the decibel is the unit of level of a field quantity when the base of the logarithm is the twentieth root of ten.
308 2004 (801-02-04)	neper	Unit of level of a field quantity when the base of the logarithm is $e = 2.718...$ Also, unit of level of a power-like quantity when the logarithm is to the base the square of e which is equal to 7.389... NOTE 1 The decineper is one-tenth of a neper. NOTE 2 One neper equals 8.686... decibels.
308 2005 (801-02-05)	sound power level	Logarithm of the ratio of a given sound power to the reference sound power. Power level in decibels is ten times the logarithm to the base ten of the ratio. NOTE Unless otherwise specified the reference sound power is 1 pW.
308 2006 (801-02-06)	sound intensity level; sound-energy flux density level	Logarithm of the ratio of a given intensity of sound in a stated direction to the reference sound intensity. Intensity level in decibels is ten times the logarithm to the base ten of the ratio. NOTE Unless otherwise specified, the reference sound intensity is 1 pW/m².
308 2007 (801-02-07)	sound pressure level	Logarithm of the ratio of a given sound pressure to the reference sound pressure. Sound pressure level in decibels is 20 times the logarithm to the base ten of the ratio. NOTE 1 Unless otherwise specified, the reference sound pressure is 20 µPa for airborne sound and 1 µPa for sound in media other than air. NOTE 2 Unless otherwise specified, the sound pressures are understood to be expressed in root-mean-square values (see definition 308 1020).
308 2008 (801-02-08)	particle velocity level	Logarithm of the ratio of a given velocity to the reference velocity. Velocity level in decibels is 20 times the logarithm to the base ten of the ratio. NOTE 1 Unless otherwise specified, the reference velocity is 1 nm/s. NOTE 2 Unless otherwise specified, the velocities are understood to be expressed in root-mean-square values.
308 2009 (801-02-09)	(vibratory) acceleration level	Logarithm of the ratio of a given (vibratory) acceleration to the reference acceleration. Acceleration level in decibels is 20 times the logarithm to the base ten of the ratio. NOTE 1 Unless otherwise specified, the reference acceleration is 1 µm/s². NOTE 2 Unless otherwise specified, the accelerations are understood to be expressed in root-mean-square values.
308 2010 (801-02-10)	peak level	Maximum instantaneous level of stated kind that occurs during a stated time interval.
308 2011 (801-02-11)	time average sound pressure level; equivalent continuous sound pressure level	Logarithm of the ratio of a given root-mean-square sound pressure, during a stated time interval, to the reference sound pressure. Average sound pressure level in decibels is 20 times the logarithm to the base ten of that ratio. NOTE Unless otherwise specified, the reference sound pressure for airborne sound is 20 µPa.