

Glossary of

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

**Part 1: Terms common to power,
telecommunications and electronics —**

Group 01: Fundamental terminology

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Foreword

This Group of Part 1 of this British Standard glossary, prepared under the direction of the General Electrotechnical Engineering Standards Committee, contains terms and definitions relating to fundamental concepts. It supersedes BS 4727-1:Group 01:1971 “*Fundamental concepts*” which is withdrawn. The terms and definitions are technically identical with the corresponding terms appearing in the following chapters of the International Electrotechnical Vocabulary, except that the IEV definition of “electrode”, term 101 2203 (111-02-03), has been omitted because it is not acceptable in the UK.

Chapter 101 Mathematics

Chapter 111 Physics and chemistry

Chapter 121 Electromagnetism

Chapter 131 Electric and magnetic circuits

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*” and BS 1611 “*Glossary of colour terms used in science and in industry*”. These four glossaries have now been withdrawn.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 four 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.*

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 iv, pages 1 to 44, 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 . Radiological terminology^a
- Group . Integrated electronic circuit terminology^a

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 terminology^a
- Group . Systems operation terminology^a
- Group . Traction terminology^a

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, radio and television terminology
- Group 05. Propagation and media terminology
- Group 06. Radio location and navigation terminology
- Group 07. Radiocommunication terminology
- Group 08. Electro-acoustics terminology^a
- Group 09. Waveguide terminology
- Group 10. Recording and reproduction of sound and video terminology

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

Part 4. Terms particular to lighting and colour

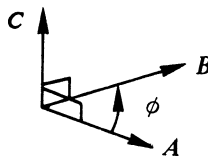
- Group 01. Radiation and photometry terminology
- Group 02. Vision and colour terminology
- Group 03. Lighting technology terminology

^a Not yet published, as at July 1983.

101 1 (101) Mathematics

101 11 (101-01) Concepts related to fields

NOTE The following definitions relate to physical quantities defined in section 101 21. Knowledge is assumed of the elementary concepts of the complex plane, complex number ($c = a + jb = |c|e^{j\phi}$), affix, modulus [$|c| = \sqrt{(a^2+b^2)}$] argument [$\phi = \arctan(b/a)$], a vector in a vector space and in three-dimensional space, matrix, tensor, etc.

No.	Term	Definition
101 1101 (101-01-01)	scalar quantity	A quantity characterized in a given system of units by a single number, either real or complex.
101 1102 (101-01-02)	vector quantity	A quantity characterized in an n dimensional space by n scalar quantities in a given order.
101 1103 (101-01-03)	component of a vector quantity	Each of the n scalar quantities that characterize the vector quantity.
101 1104 (101-01-04)	scalar product	Of one vector quantity A by another B . A scalar quantity P defined: a) using cartesian co-ordinates, in an n-dimensional euclidian space, by the sum of the products of each component a_i of the first quantity and the corresponding component b_i of the second. $P = \mathbf{A} \cdot \mathbf{B} = \sum_{i=1}^n a_i b_i$ b) in a three-dimensional space, by the product of the magnitudes of the two quantities and the cosine of the angle ϕ between them. $P = \mathbf{A} \cdot \mathbf{B} = \mathbf{A} \mathbf{B} \cos \phi$
101 1105 (101-01-05)	vector product	Of one vector quantity A by another B . A vector quantity C = $\mathbf{A} \times \mathbf{B}$ that, in a three-dimensional space, is perpendicular to the plane formed by the two quantities, and whose magnitude is: $ \mathbf{C} = \mathbf{A} \mathbf{B} \sin \phi$ Its direction is such that the three vectors in the order A, B, C form a positively oriented trihedron. 
101 1106 (101-01-06)	line integral	An integral along a directed path whose differential element is a product of a scalar or vector quantity and the vector line element. NOTE This integral may be a scalar or a vector quantity according to the kind of product.
101 1107 (101-01-07)	scalar line integral	Of a vector quantity. A line integral whose differential element is the scalar product of the quantity and the vector line element.
101 1108 (101-01-08)	circulation	A scalar line integral along a closed path.
101 1109 (101-01-09)	surface integral	An integral over a directed surface whose differential element is a product of a scalar or vector quantity and the vector surface element. NOTE This integral may be a scalar or a vector quantity according to the kind of product.

No.	Term	Definition
101 1110 (101-01-10)	flux of a vector quantity	<i>Across a surface.</i> A surface integral whose differential element is the scalar product of the quantity and the vector surface element.
101 1111 (101-01-11)	volume integral	An integral over a volume whose differential element is the product of a scalar or a vector quantity and the volume element.
101 1112 (101-01-12)	field	A (physical) quantity defined at all points in a region. By extension, the region in which the distribution exists.
101 1113 (101-01-13)	gradient	<i>Of a scalar field.</i> A vector quantity normal to a surface of constant value of the field, having a magnitude equal to the derivative of the field in the normal direction and being directed in the sense of increasing value of the field. $\text{grad } f = \nabla f = \frac{\partial f}{\partial n} \mathbf{n}$
101 1114 (101-01-14)	(scalar) potential	<i>Of a vector field.</i> When it exists, the negative of the scalar field whose gradient is the given vector field.
101 1115 (101-01-15)	equipotential	Applies to a set of points all of which have the same potential.
101 1116 (101-01-16)	divergence	<i>Of a vector field.</i> The scalar quantity equal to the limit of the flux which emerges from a closed surface, divided by the volume contained by the surface when all its dimensions become infinitesimal. $\text{div } \mathbf{f} = \nabla \cdot \mathbf{f} = \lim_{\tau \rightarrow 0} \frac{\int \mathbf{n} \cdot \mathbf{f} \, dA}{\int d\tau}$
101 1117 (101-01-17)	curl; rotation	<i>Of a vector field.</i> A vector quantity equal to the limit of the integral over a closed surface of the vector product of the surface element and the vector field divided by the volume contained by the surface when all its dimensions become infinitesimal. $\text{rot } \mathbf{f} = \nabla \times \mathbf{f} = \lim_{\tau \rightarrow 0} \frac{\int \mathbf{n} \times \mathbf{f} \, dA}{\int d\tau}$
101 1118 (101-01-18)	vector potential	<i>Of a vector field.</i> When it exists, a vector field whose curl is the given field.
101 1119 (101-01-19)	Laplacian	<i>Of a scalar field.</i> A scalar quantity equal to the divergence of the gradient of the scalar field. $\Delta f = \nabla^2 f = \text{div grad } f$
101 1120 (101-01-20)	Laplacian	<i>Of a vector field.</i> A vector quantity equal to the gradient of the divergence of the vector field minus the curl of the curl of this vector field. $\Delta \mathbf{f} = \nabla^2 \mathbf{f} = \text{grad div } \mathbf{f} - \text{rot rot } \mathbf{f}$
101 1121 (101-01-21)	zero divergence field	A vector field of zero divergence.
101 1122 (101-01-22)	irrotational field	A vector field of zero curl.
101 1123 (101-01-23)	field line	A line whose tangent, at every point, is parallel to the field vector at that point.

101 12 (101-02) Concepts related to data handling

No.	Term	Definition
101 1201 (101-02-01)	signal	A time-dependent physical quantity representing information.
101 1202 (101-02-02)	code	A set of rules establishing a correspondence between data and their representation in discrete form.
101 1203 (101-02-03)	analogue system	A system permitting the representation of physical quantities by means of continuously variable values of physical quantities of another system.
101 1204 (101-02-04)	digital system	A system permitting the representation of physical quantities by means of discrete values of physical quantities of another system.
101 1205 (101-02-05)	hybrid system	A system comprising analogue and digital subsystems.
101 1206 (101-02-06)	logic system	A system with a finite number of inputs and outputs each of which can take only one state of a finite set at one time, the states of the outputs being a function of the states of the inputs.

101 13 (101-03) Concepts related to distribution and integral transformation

No.	Term	Definition
101 1301 (101-03-01)	unit ramp	A continuous function, zero for all negative values of the independent variable and increasing linearly for all positive values, the increase being one unit for every unit of the independent variable.
101 1302 (101-03-02)	(Heaviside) unit step	A function, zero for all negative values of the independent variable and equal to unity for all positive values.
101 1303 (101-03-03)	signum	A function equal to -1 for all negative values of the independent variable, $+1$ for all positive values and 0 for the zero value.
101 1304 (101-03-04)	unit pulse; Dirac function	A distribution (generalized function) $\delta(t)$ that can be considered as the limit of a positive function, equal to zero outside a small interval around the origin and the integral of which remains equal to unity when this interval goes to zero. NOTE 1 The unit pulse can be considered as the derivative of the unit step. NOTE 2 The Dirac function can be used to express the value, for $t_0 \in [t_1, t_2]$, of a function $f(t)$, continuous and single-valued for $t \in [t_1, t_2]$. $f(t_0) = \int_{t_1}^{t_2} \delta(t-t_0) \cdot f(t) \cdot dt$
101 1305 (101-03-05)	unit doublet	A distribution (generalized function) that can be considered as the derivative $\delta'(t)$ of the unit pulse. NOTE In the same conditions of above: $f'(t_0) = - \int_{t_1}^{t_2} \delta'(t-t_0) f(t) dt$
101 1306 (101-03-06)	Fourier series	<i>Of a periodic function.</i> A series of terms representing the function, consisting of its mean value and sinusoidal terms having frequencies that are integral multiples of the frequency of the function, the multiple constituting the order of the term.
101 1307 (101-03-07)	Fourier transform	The transform of a function $f(t)$ to a function $F(j\omega)$ of the real variable ω , given by: $F(j\omega) = \int_{-\infty}^{+\infty} f(t)e^{-j\omega t} dt$

No.	Term	Definition
101 1308 (101-03-08)	Fourier integral; inverse Fourier transform	The representation of a function $f(t)$ by an integral of the form: $f(t) = \frac{1}{2\pi} \int_{-\infty}^{+\infty} F(j\omega) e^{j\omega t} d\omega$
101 1309 (101-03-09)	Laplace transform	The transform of a function $f(t)$ to a function $F(s)$ of complex variable s , given by: $F(s) = \int_0^{+\infty} f(t) e^{-st} dt$
101 1310 (101-03-10)	inverse Laplace transform	The representation of a function $f(t)$ by an integral of the form: $f(t) = \frac{1}{2\pi j} \int_{\sigma-j\infty}^{\sigma+j\infty} F(s) e^{st} ds$ where $\sigma \geq \sigma_0$, the abscissa of convergence of $F(s)$.

101 14 (101-04) Concepts related to time-dependent quantities

NOTE Adjectives defined in this section are applicable to quantities and phenomena.

No.	Term	Definition
101 1401 (101-04-01)	steady state	The state of a system in which the characteristic parameters remain constant. NOTE For example, characteristic parameters of a sinusoidal quantity are r.m.s. value, frequency and initial phase.
101 1402 (101-04-02)	transient	Characterizes a change from one steady state to another.
101 1403 (101-04-03)	oscillating	Alternately increasing and decreasing.
101 1404 (101-04-04)	periodic	Identically recurring at equal intervals of the independent variable.
101 1405 (101-04-05)	aperiodic	Transient and non-oscillating.
101 1406 (101-04-06)	synchronous	Repetitive, coincidental in time with a specified phenomenon or quantity.
101 1407 (101-04-07)	oscillation	A physical phenomenon characterized by one or more oscillating quantities.
101 1408 (101-04-08)	damped oscillation	An oscillation whose successive peak to valley values decrease to zero.
101 1409 (101-04-09)	forced oscillation	An oscillation produced by an external excitation.
101 1410 (101-04-10)	free oscillation	A damped oscillation produced solely by energy previously stored in a system.
101 1411 (101-04-11)	resonance	A phenomenon appearing in an oscillating system, in which the period of a forced oscillation is very close to that of a free oscillation.
101 1412 (101-04-12)	relaxation oscillation	An oscillation where energy is accumulated relatively slowly in one element of a system and transferred rapidly to another.
101 1413 (101-04-13)	cycle	The complete range of states or of values through which a phenomenon or a set of quantities passes in a given repeatable order.
101 1414 (101-04-14)	period	The smallest repetitive difference between two values of the independent variable at which the values of a periodic quantity are identically repeated.

No.	Term	Definition
101 1415 (101-04-15)	frequency	The reciprocal of the period.
101 1416 (101-04-16)	angular frequency	The product of the frequency of a sinusoidal quantity and the factor 2π rad.
101 1417 (101-04-17)	pulsed quantity	A quantity that has zero value during a relatively long time compared to the time when it has non-zero values.
101 1418 (101-04-18)	pulse	An abrupt variation of short duration of a physical quantity followed by a rapid return to the initial state.
101 1419 (101-04-19)	instantaneous value	The value, at a given instant, of a time-dependent variable quantity.
101 1420 (101-04-20)	peak value	The greatest value of a time-dependent quantity during a specified time interval. ^a
101 1421 (101-04-21)	valley value	The least value of a time-dependent quantity during a specified time interval. ^a
101 1422 (101-04-22)	peak-to-valley value	The difference between the peak and valley values during a specified time interval. ^a
101 1423 (101-04-23)	mean value	The arithmetic mean of the instantaneous values of a quantity taken over a specified time interval. ^a
101 1424 (101-04-24)	root-mean-square value; r.m.s. value	The square root of the mean of the squares of the instantaneous values of a quantity taken over a specified time interval. ^a
101 1425 (101-04-25)	amplitude	The peak value of a sinusoidal quantity.
101 1426 (101-04-26)	phase	The argument $\omega t + \alpha$ of a sinusoidal quantity $A \cos(\omega t + \alpha)$ or $A \sin(\omega t + \alpha)$. NOTE Term α is called <i>phase-angle</i> .
101 1427 (101-04-27)	phase difference	<i>Of one sinusoidal quantity with respect to another of the same period.</i> For two quantities $A \cos(\omega t + \alpha)$ and $B \cos(\omega t + \beta)$, the phase angle $\alpha - \beta \pm 2k\pi$ (where k is an integer), of absolute value not greater than π .
101 1428 (101-04-28)	(phase) lead	The phase difference of the first quantity with respect to the second.
101 1429 (101-04-29)	(phase) lag	The phase difference of the second quantity with respect to the first.
101 1430 (101-04-30)	in phase	Applies to two sinusoidal quantities of the same frequency having zero phase difference.
101 1431 (101-04-31)	in quadrature	Applies to two sinusoidal quantities of the same frequency having a phase difference of $\pm \pi/2$ rad.
101 1432 (101-04-32)	in opposition	Applies to two sinusoidal quantities of the same frequency having a phase difference equal to π rad.
101 1433 (101-04-33)	alternating	Applies to a periodic quantity of mean value zero.
101 1434 (101-04-34)	pulsating	Applies to a periodic quantity of non-zero mean value.
101 1435 (101-04-35)	positive [negative] half-wave	The instantaneous values of an alternating quantity for that part of the period during which they have a positive [negative] sign; by extension, this concept is applied to a pulsating quantity.
101 1436 (101-04-36)	rippled; having a ripple	Applies to a pulsating quantity having always the same sign. The ratio of the peak-to-valley value to the mean value is generally much smaller than 1.

^a For a periodic quantity, the time interval equal to a period.

No.	Term	Definition
101 1437 (101-04-37)	rectified value	<i>Of a periodic quantity.</i> The arithmetic mean of the absolute values of the quantity.
101 1438 (101-04-38)	fundamental (component)	The component of order 1 of the Fourier series of a periodic quantity.
101 1439 (101-04-39)	harmonic (component)	A component of order greater than 1 of the Fourier series of a periodic quantity.
101 1440 (101-04-40)	harmonic number; harmonic order	The integral number given by the ratio of the frequency of a harmonic to the fundamental frequency.
101 1441 (101-04-41)	sub-harmonic	A periodic quantity varying at a frequency that is an integral sub-multiple of a frequency of excitation.
101 1442 (101-04-42)	harmonic content	The quantity obtained by subtracting the fundamental component from an alternating quantity.
101 1443 (101-04-43)	(total) harmonic distortion	The ratio of the r.m.s. value of the harmonic content to the r.m.s. value of the alternating quantity.
101 1444 (101-04-44)	form factor	The ratio of the r.m.s. value to the rectified value of a periodic quantity.
101 1445 (101-04-45)	peak factor	The ratio of the peak value to the r.m.s. value of a periodic quantity.
101 1446 (101-04-46)	frequency band	The range of frequencies within a specified interval.
101 1447 (101-04-47)	beat	A periodic variation in the amplitude of an oscillation resulting from the superposition of two periodic oscillations of slightly different frequencies.
101 1448 (101-04-48)	beat frequency	The difference between the frequencies of the two beating oscillations.
101 1449 (101-04-49)	phasor	A complex quantity $\underline{A} = A \cdot e^{j\alpha}$ or $\hat{A} = \hat{A} \cdot e^{j\alpha}$ whose argument is equal to the phase angle and whose modulus is equal either to the r.m.s. value A , or to the amplitude $\hat{A}$ of a sinusoidal quantity $a = A \cdot \sqrt{2} \cos(\omega t + \alpha) = \hat{A} \cdot \cos(\omega t + \alpha).$
101 1450 (101-04-50)	complexor	A complex quantity equal to the quotient of two phasors representing two sinusoidal quantities of the same frequency.
101 1451 (101-04-51)	complex angular frequency	A complex quantity $s = \sigma + j\omega$ associated with a quantity represented by $a = \hat{A} \cdot e^{\sigma t} \cos(\omega t + \alpha).$
101 1452 (101-04-52)	noise	Any undesired signal; by extension any unwanted disturbance within a useful frequency band.
101 1453 (101-04-53)	random	Governed by the laws of chance, unpredictable, non-deterministic.
101 1454 (101-04-54)	stationary random noise	A random disturbance with time-invariant statistical properties.
101 1455 (101-04-55)	stationary noise	A disturbance having time-invariant properties.
101 1456 (101-04-56)	ergodic noise	A random noise with identical time and statistical mean values.
101 1457 (101-04-57)	spectrum	The distribution of a quantity as a function of frequency or of wave length.

No.	Term	Definition
101 1458 (101-04-58)	power spectrum	The distribution of the power of a signal as a function of frequency, equal to the Fourier transform of the autocorrelation function in the case of a stationary random signal of finite power.
101 1459 (101-04-59)	correlation function	<i>Of two signals.</i> A function $f(t)$ which is a measure of the similarity of two signals $f_1(t)$ and $f_2(t)$, defined by: $f(t) = \int_{-\infty}^{+\infty} f_1(\tau) \cdot f_2(t + \tau) \cdot d\tau$ NOTE The Fourier transform of $f(t)$ is equal to the product of the conjugate of the Fourier transform of $f_1(t)$ and the Fourier transform of $f_2(t)$ $F(j\omega) = F_1^* (j\omega) \cdot F_2 (j\omega)$
101 1460 (101-04-60)	autocorrelation function	The correlation function of a signal with a time-delayed replica of the same signal.
101 1461 (101-04-61)	crosscorrelation function	A correlation function between two different signals.
101 1462 (101-04-62)	probability distribution; cumulative distribution	A function of a random variable expressing the probability that its value is less than a given value.
101 1463 (101-04-63)	probability density	The derivative of the probability distribution.
101 1464 (101-04-64)	Gaussian process	A random process with a Gaussian probability distribution.
101 1465 (101-04-65)	sampled signal	A succession of pulses whose values are proportional to the instantaneous values of the signal at the time of each pulse.
101 1466 (101-04-66)	Z-transform	The Laplace transform of a periodically sampled signal with change of variable $Z = e^{Ts}$ where T is the sampling period.
101 1467 (101-04-67)	variance	<i>Of n samples.</i> The product of $n/(n - 1)$ and the arithmetic mean of the squares of the deviations from the arithmetic mean.
101 1468 (101-04-68)	standard deviation	The positive square root of the variance.

101 15 (101-05) Concepts related to waves

No.	Term	Definition
101 1501 (101-05-01)	(travelling) wave	A modification of the physical state of a medium, propagated as a result of a local action.
101 1502 (101-05-02)	local value	<i>Of a wave.</i> At a given point, the time-dependent value of a quantity varying with time and position.
101 1503 (101-05-03)	instantaneous value	<i>Of a wave.</i> At a given time, the space-dependent value of a quantity varying with time and position.
101 1504 (101-05-04)	waveform	A representation of the local or the instantaneous value of a function defining the wave.
101 1505 (101-05-05)	plane wave	A wave such that the corresponding physical quantities are uniform in any plane perpendicular to the direction of propagation.
101 1506 (101-05-06)	longitudinal wave	A wave characterized by a vector parallel to the direction of propagation.
101 1507 (101-05-07)	transverse wave	A wave characterized by vectors perpendicular to the direction of propagation.

No.	Term	Definition
101 1508 (101-05-08)	wavelength	The shortest distance, in the direction of propagation, between two successive points of a periodic wave in which the oscillation has the same phase.
101 1509 (101-05-09)	repetency; wave number	The reciprocal of the wavelength.
101 1510 (101-05-10)	phase velocity	The quotient of the frequency by the repetency.
101 1511 (101-05-11)	dispersive medium	A medium in which the phase velocity depends on frequency.
101 1512 (101-05-12)	group velocity	The derivative of the frequency with respect to the repetency.
101 1513 (101-05-13)	forward wave	A wave in which the group and phase velocities have the same sign.
101 1514 (101-05-14)	backward wave	A wave in which group and phase velocities have opposite signs.
101 1515 (101-05-15)	diffracted wave	A wave caused by the scattering of an incident wave upon an obstacle.
101 1516 (101-05-16)	refracted wave	A wave produced in a medium by an incident wave coming from an adjacent medium.
101 1517 (101-05-17)	reflected wave	A wave produced in a medium by a wave in that medium incident upon its interface with another medium.
101 1518 (101-05-18)	standing wave	A modification of the physical state of a medium that can be represented by a product of a function of time and a function of position.
101 1519 (101-05-19)	node	In a space where a standing wave exists, a point or a locus at which the amplitude of a specified quantity has minimum value.
101 1520 (101-05-20)	antinode	In a space where a standing wave exists, a point or a locus at which the amplitude of a specified quantity has maximum value.
101 1521 (101-05-21)	coherence	The phenomenon related to the existence of a correlation between the phases of two waves or between the values of the phases of one wave at two instants.

101 16 (101-06) Concepts related to information theory

See BS 3527-16.

101 2 (111) Physics and chemistry

101 21 (111-01) Physical concepts

NOTE 1 In the following definitions, "body" is used in its most general sense including the solid, liquid and gaseous forms of a given sample of matter.

NOTE 2 The phrase "quantity A per unit of quantity B" means the limit of the quotient of quantity ΔA by quantity ΔB , i.e. $\lim_{\Delta B \rightarrow 0} (\Delta A / \Delta B)$.

NOTE 3 In every branch of physics it is necessary to accept a minimum number of axiomatic concepts. In section 101 21, mass and electric charge are introduced axiomatically.

No.	Term	Definition
101 2101 (111-01-01)	inertia	That property of matter by virtue of which any material body continues in its existing state of movement or rest, in the absence of an external force.
101 2102 (111-01-02)	mass	A fundamental quantity axiomatically designed to describe inertia and gravitation. Symbol: m
101 2103 (111-01-03)	(linear) momentum	1. For a particle, a vector quantity equal to the product of its mass and its velocity. 2. For a body, the vector sum of the momenta of its constituent particles. Symbol: p
101 2104 (111-01-04)	(mechanical) force	A vector quantity equal to the time derivative of the linear momentum. Symbol: F NOTE When the mass is constant, the force is equal to the product of the mass of a body and its vector acceleration.
101 2105 (111-01-05)	moment of inertia	<i>About an axis.</i> For a body, the sum of the products of the mass of each particle and the square of its distance from a given axis. Symbol: I ; $I = \Sigma (m_i r_i^2)$
101 2106 (111-01-06)	angular momentum; moment of momentum	1. For a particle in motion, a quantity equal to the vector product of the radius vector and the linear momentum. 2. For a body in motion, the vector sum of the angular momenta of its constituent particles. NOTE The angular momentum of a rigid body rotating around a fixed axis is equal to the product of the moment of inertia and the angular velocity vector.
101 2107 (111-01-07)	moment of a force	<i>At a point.</i> At a point A, the quantity given by the vector product of the vector $\overline{AB}$ by the force $\overline{F}$ applied at the point B. Symbol: M
101 2108 (111-01-08)	torque	<i>About a point.</i> The sum of the moments of a set of forces about a point. Symbol: T NOTE If the resultant of the forces is zero, the torque is independent of the point chosen.
101 2109 (111-01-09)	work	A quantity equal to the scalar product of a force and the corresponding displacement vector. Symbol: W
101 2110 (111-01-10)	energy	A quantity characterizing the ability of a physical system to do work. Symbol: E NOTE Energy exists in different forms transformable one into the other: examples are mechanical, electromagnetic, chemical, thermal, nuclear, etc.
101 2111 (111-01-11)	power	The time rate of transferring or transforming energy, or of doing work. Symbol: P
101 2112 (111-01-12)	stress	The force per unit area acting upon a body which tends to change the dimensions of the latter.
101 2113 (111-01-13)	strain	Deformation produced in a body as the result of stress.

No.	Term	Definition
101 2114 (111-01-14)	pressure	<i>In a fluid.</i> A type of stress, characterized by its uniformity in all directions. Symbol: p
101 2115 (111-01-15)	thermal energy; heat energy	The internal kinetic energy of a body, related to the disordered motions of its constituents. Symbol: Q
101 2116 (111-01-16)	(thermodynamic) temperature	A state variable proportional to the thermal energy of a given body at equilibrium. Symbol: T
101 2117 (111-01-17)	internal energy	The function of state equal to the sum of the work and the thermal energy that would be delivered by a body during cooling to the thermodynamic temperature of zero kelvin. Symbol: U
101 2118 (111-01-18)	enthalpy	A function of state equal to the sum of the internal energy of a body and the product of its pressure and its volume. Symbol: H ; $H = U + pV$
101 2119 (111-01-19)	entropy	A function of state whose differential during a reversible transformation is: $dS = \delta Q/T$ where δQ is the thermal energy supplied to the physical system by the external environment at thermodynamic temperature T . Symbol: S NOTE Entropy is related to the degree of disorder of a physical system.
101 2120 (111-01-20)	quantum	The smallest amount of a physical quantity that can be associated with a given phenomenon, when the observable quantity is restricted to a discrete set of values.
101 2121 (111-01-21)	photon	A quantum of electromagnetic energy $h\nu$ with come particle-like characteristics, where h is the Planck constant and ν the frequency of radiation.
101 2122 (111-01-22)	phonon	A quantum of mechanical vibratory energy with particle-like characteristics.
101 2123 (111-01-23)	electric charge	A fundamental quantity axiomatically defined to describe certain experimentally observed interactions. Symbol: Q
101 2124 (111-01-24)	elementary (electric) charge	The magnitude of the quantum of electric charge (0.160219×10^{-18} C). Symbol: e
101 2125 (111-01-25)	atom	The smallest particle into which a chemical element can be divided while retaining its chemical properties.
101 2126 (111-01-26)	nucleus	The central part of an atom having a positive charge and nearly all the mass of the atom.
101 2127 (111-01-27)	electron	A stable elementary particle with one negative elementary charge and a rest mass of 0.91095×10^{-30} kg. NOTE The term electron is sometimes used loosely to include both electrons and positrons.
101 2128 (111-01-28)	positron	An elementary particle with practically the same mass as the electron but with a positive elementary charge.