

Glossary of

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

Part 3: Terms particular to
telecommunications and electronics —

Group 06: Radio location and
navigation terminology

Co-operating organizations

The Electrical Industry Standards Committee and the Telecommunication Industry Standards Committee under whose supervision this British Standard was prepared consists of representatives from the following Government departments and scientific and industrial organizations:

Associated Offices' Technical Committee	Engineering Equipment Users' Association
Association of Consulting Engineers*	Institution of Electrical Engineers*
Association of Manufacturers of Domestic Electrical Appliances	Institution of Electronic and Radio Engineers*
Association of Mining Electrical and Mechanical Engineers	Institution of Production Engineers
Association of Supervisory and Executive Engineers	Lighting Industry Federation Limited*
British Broadcasting Corporation*	Ministry of Defence*
British Electrical and Allied Manufacturers' Association*	Ministry of Defence, Army Department
British Radio Equipment Manufacturers' Association*	Ministry of Defence, Navy Department*
British Radio Valve Manufacturers' Association*	Ministry of Public Building and Works*
British Radio Valve Manufacturers' Association*	Ministry of Technology*
British Railways Board*	Municipal Passenger Transport Association (Incorporated)
Cable and Wireless Limited	National Inspection Council for Electrical Installation Contracting
Crown Agents for Oversea Governments and Administrations	National Physical Laboratory (Ministry of Technology)
Department of Employment and Productivity	Oil Companies Materials Association
Electric Cable Makers' Confederation	Post Office*
Electrical Contractors' Association (Incorporated)	Public Transport Association (Incorporated)
Electrical Contractors' Association of Scotland	Radio and Electronic Component Manufacturers' Federation
Electrical Research Association	Relay Services Association of Great Britain
Electricity Council, the Central Electricity Generating Board and the Area Boards in England and Wales*	Science Research Council — Radio and Space Research Station*
Electronic Engineering Association*	Scientific Instrument Manufacturers' Association
Electronic Valve and Semi-conductor Manufacturers' Association*	Society of British Aerospace Companies
	South of Scotland Electricity Board
	Telecommunication Engineering and Manufacturing Association*

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Institute of Physics and the Physical Society	Telephone Manufacturers' Technical Development Committee
Radio and Electronics Technical Press	

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Foreword

This Group of Part 3 of this British Standard Glossary, prepared under the authority of the Electrical Industry Standards Committee and the Telecommunication Industry Standards Committee, contains terms and definitions relating to radio location and navigation and supersedes Subsection 77, “*Radiolocation and radio-navigation*”, of BS 204¹⁾.

The terms and definitions are in close agreement with the corresponding terms in the latest edition of the International Electrotechnical Vocabulary prepared by the International Electrotechnical Commission (IEC).

In this new glossary a number of significant changes have been introduced. It has been decided to combine into one glossary the subjects previously covered by BS 204, BS 205²⁾, BS 233³⁾, and BS 1611⁴⁾ glossaries. 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.*

As groups of terms within the new framework are published, the corresponding parts of the British Standard glossaries mentioned above will be withdrawn. Ultimately the new glossary will replace these standards completely and they will then be withdrawn.

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, as, for example, 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.

¹⁾ BS 204, “*Glossary of terms used in telecommunication (including radio) and electronics*”.

²⁾ BS 205, “*Glossary of terms used in electrical engineering*”.

³⁾ BS 233, “*Glossary of terms used in illumination and photometry*”.

⁴⁾ BS 1611, “*Glossary of colour terms used in science and industry*”.

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 within a subsection or section of the group. 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.

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 round brackets () enclose words or phrases which are not part of the term or definition and can be omitted without affecting the meaning.

Square brackets [] enclose words which may replace a preceding part of an expression. The limiting sign ┐ indicates, if necessary, how many of the preceding words are replaced.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 22 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 concepts
- Group 02. General technological terminology
- Group 03. Relay terminology
- Group . Measurement terminology^a
- Group . Semiconductor terminology^a
- Group . Electronic tube terminology^a
- Group . Magnetism terminology^a
- Group . Radiological terminology^a
- Group . Radio interference 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 convertor terminology
- Group 03. Rotating machinery terminology
- Group 04. Transformer terminology^a
- Group 05. Voltage fluctuation terminology^a
- Group . Power switchgear terminology^a
- Group . Power systems terminology^a
- Group . Systems operation terminology^a
- Group . Traction terminology^a
- Group . Tariffs 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

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

^a Not yet published, as at August, 1971.

306 1 General

No.	Term	Definition
306 1001	radiolocation	Determination of relative direction, position or motion of an object, or its detection, by means of the propagation characteristics of radio waves. NOTE The characteristics generally employed are those of approximate constant velocity and/or rectilinearity.
306 1002	radio warning; radio detection	The detection of the presence of an object by radiolocation without precise determination of its position. NOTE This function of radio is rarely used apart from others but must be separately defined.
306 1003	radio-Doppler	The direct determination of the radial component of the relative velocity of an object by an observed radio-frequency change due to such velocity.
306 1004	radio-goniometry	Radiolocation in which the direction of a distant object is determined by means of its radio emissions, whether independent, reflected, or automatically retransmitted on the same or other wavelengths.
306 1005	direction finding	The operation of determining the bearing of a transmitter, or its angle of elevation, or both, by observation of its own independent transmissions.
306 1006	radio range-finding	Radiolocation in which the distance of an object is determined by means of its radio emissions, whether independent, reflected, or automatically retransmitted on the same or other wavelengths.
306 1007	angular resolution	<i>Of a direction finder or radar equipment.</i> The ability to distinguish between two objects solely by the measurement of angles; generally expressed in terms of the minimum angle by which the objects must be spaced to be separately distinguishable.
306 1008	range resolution; range discrimination	<i>In radar.</i> As between specified objects in the same direction. The range-separation between them necessary to ensure that the echo from one is distinguishable from that from the other.
306 1009	volumetric coverage; volume coverage; coverage	<i>In the air.</i> That region of space within which a radio-navigation equipment, or group of such equipments, provides a usable signal.
306 1010	coverage area	The area of intersection of a given horizontal plane with the volumetric coverage.
306 1011	vertical coverage	<i>In a given vertical plane.</i> The area over which the navigation aid provides a usable signal.
306 1012	coverage diagram	The contour enclosing the vertical coverage or coverage area.

306 2 Direction finding

306 2001	relative bearing; direct bearing; bearing	<i>Of a given point P from the point of observation O (or of a directed straight line OP).</i> The angle between a reference direction in the horizontal plane at O and the projection of OP on this plane. NOTE 1 The sign convention should be specified, i.e. whether clockwise is positive as in normal navigational usage. NOTE 2 In navigational usage, the term “relative bearing” is limited to bearings related to the ship’s head.
306 2002	true bearing; azimuth	The bearing for which the reference direction at the point of observation is true north. It is measured in degrees (0 to 360) clockwise from true north.

No.	Term	Definition
306 2003	long-path bearing	<i>Of a distant point.</i> The angle differing from the bearing of the point by 180° . NOTE This term is used in connection with propagation around the earth by way of the longer arc of the great circle containing the transmitter and receiver.
306 2004	short-path bearing	<i>Of a distant point.</i> A term used for the bearing of a distant point when it is desired to distinguish it from the long-path bearing.
306 2005	reciprocal bearing	1. <i>Of a distant point.</i> The angle differing from the bearing of the point by 180° . 2. <i>As observed on a direction finder in which 180° ambiguity exists.</i> The reading of the bearing scale differing by approximately 180° from the direct bearing. 3. <i>As used by cartographers.</i> The bearing of the observer's station from the distant station. NOTE Bearings obtained by observing the directional content of directional beacon transmissions (without recourse to a direction finder) at the observing point, are "reciprocal bearings" in the sense of 3. In these cases the bearing may differ from that defined in 1, except at short distances.
306 2006	magnetic bearing	The bearing for which the reference direction at the point of observation is magnetic north. It is measured in degrees (0 to 360) clockwise from magnetic north.
306 2007	angle of elevation; angle of sight	The angle between the line joining the object and the observer and the projection of this line on the horizontal plane passing through the observer. The angle is counted as positive when the object is above that horizontal plane, and vice versa.
306 2008	observed bearing	The reading of the bearing scale of the direction finder.
306 2009	error in bearing	The angular difference, expressed algebraically, between the observed bearing and the corresponding true bearing. NOTE This error is in general the sum of two terms, a systematic error that can be corrected, and a random error.
306 2010	bearing correction	The total of those corrections associated with a given instrument and a given site which are determinable by a calibration process. A correction which is <i>added</i> to an observed bearing is taken as <i>positive</i> .
306 2011	corrected bearing	The bearing obtained when the bearing correction has been applied to the observed bearing.
306 2012	instrumental error	In the reception of a single plane wave, an error due to the properties of the direction finder. NOTE Polarization error other than that due to specific features of the site (e.g. inclined conductors) is a form of instrumental error.
306 2013	pointer centring error	Instrumental error due to a fault in the centring of the needle or other angle indicator.
306 2014	spacing error	An instrumental error, other than polarization error, due to the variation with frequency of the spacing of the aerials in wavelengths.
306 2015	residual spacing error	The spacing error, for angles of elevation other than zero, after correcting for the spacing error at zero angle of elevation.
306 2016	site error	An error due to some feature or features of a direction-finding site.
306 2017	site error susceptibility	Some specified quantitative description of the susceptibility of a given class of direction finder to site error.
306 2018	re-radiation error	A form of site error caused by re-radiation from features such as telephone wires, communication aerials and mast stays. NOTE This error can sometimes be allowed for in calibration, provided that the calibration takes account of frequency changes.

No.	Term	Definition
306 2019	loop alignment error	Error due to the inaccurate alignment of the loop aerial system with respect to the datum line. Usually in aircraft and ships inaccurate alignment with respect to the fore and aft line.
306 2020	field alignment error	A form of site error caused by the direction finder aerial system not being mounted on the centre line of the ship or aircraft, or caused by non-symmetry in the structure of the vessel.
306 2021	semicircular [quadrantal] [octantal] error	An instrumental error which disappears twice [four times] [eight times] per complete rotation of a goniometer.
306 2022	semicircular [quadrantal] [octantal] component of error	That sinusoidal component of the error/true bearing curve taken over the full 360° range of bearing, which shows two [four] [eight] zeros.
306 2023	error curve	A curve applicable to a particular direction finder and which shows the systematic installation errors as a function of some specified variable. NOTE Use is commonly made of a family of such error curves as a function of true bearing with frequency as the parameter.
306 2024	correction curve	A curve applicable to a particular direction finder and which shows the correction required to the observed bearing, as a function of that bearing, to eliminate the systematic installation errors.
306 2025	bearing calibration	<i>Of a direction finder.</i> The determination of bearing corrections by observation on one or more transmitters of known bearings.
306 2026	polarization error	<i>In bearing.</i> An error, in an observed bearing, which arises from the state of polarization of the received waves.
306 2027	total polarization error	<i>In bearing, and for a specified direction of incidence and a specified ratio of the amplitudes of the vertically and horizontally polarized components of the incident wave.</i> The maximum value of the polarization error with respect to variation of the phase difference between the vertically and horizontally polarized components. NOTE The term is applicable only to direction finders designed for operation with vertically polarized waves only, or with horizontally polarized waves only.
306 2028	aeroplane effect	A type of error which may occur in the observed bearing of a transmitter carried by an aircraft. It is a form of polarization error and varies with the aspect of the aircraft as viewed from the direction finder.
306 2029	night effect; night error	A polarization error caused by variations in polarization exhibited throughout the night at certain frequencies resulting from the reception of waves reflected from the ionosphere.
306 2030	standard-wave error	The total polarization error produced by a plane wave incident at an angle of elevation of 45° and having equal vertically and horizontally polarized components. NOTE As a criterion of performance the term is not appropriate to direction finders employing elevated aerial systems.
306 2031	propagation error	An error caused by a deformation or deviation of the wave front as a result of propagation phenomena.
306 2032	ionospheric-path error	An error in bearing due wholly to some feature or features of the ionosphere, e.g. reflection from a tilted layer, or scattering.
306 2033	lateral deviation	The deviation of a ray from the great-circle plane containing the point of observation and the transmitter. NOTE Such deviation can occur, for example, as a result of reflection from a tilted ionospheric layer.