

Glossary of

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

Part 3: Terms particular to
telecommunications and electronics —

Group 03: Telegraphy, facsimile and
data communication

Committees responsible for this British Standard

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- Association of Consulting Engineers
- British Broadcasting Corporation
- British Cable Makers' Confederation
- EEA (the Association of the Electronics, Telecommunications and Business Equipment Industries)
- Electricity Association
- Institute of Physics
- Institution of Electrical Engineers
- Institution of Incorporated Executive Engineers
- Sound and Communication Industries Federation

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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
Guide to the glossary	iv
721-01 Forms of telecommunications using discrete signals	1
721-02 Discretely-timed and digital signals, signal elements	2
721-03 Transmission using discretely-timed or digital signals	4
721-04 Transmission channels and methods	6
721-05 Direct current transmission	8
721-06 Carrier transmission, multiplexing	9
721-07 Transmission performance, distortion in time	11
721-08 Errors and error control	13
721-09 Codes and alphabets	17
721-10 Function controls and function signals	18
721-11 Transmission channels and processes	21
721-12 Telegraph and data transmission equipments	25
721-13 Facsimile equipments and services	29
721-14 Facsimile operation characteristics	30
721-15 Defects and distortion in facsimile reproduction	33
721-16 Telegraph and data networks	34
721-17 Telegraph and data switching, signalling	36
721-18 Telegraph operation and services	41
721-19 Data transmission operation and services	45
Index	48

Foreword

This Group of BS 4727-3, prepared under the direction of the General Electrotechnical Engineering Standards Committee, contains terms and definitions relating to telegraphy, facsimile and data communication. The terms and definitions are technically identical with the corresponding terms appearing in IEC 50(721):1991 “*International Electrotechnical Vocabulary Chapter 721: Telegraphy, facsimile and data communication*”, published by the International Electrotechnical Commission (IEC). This standard supersedes BS 4727-3:Group 03:1971 which is withdrawn.

The glossary is divided into five Parts, each of which is 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 review existing Groups at any time without affecting the remainder of the glossary.

The five 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 form Groups 01 and 02 of Part 1. Group 01 of Part 3 contains general terms. The specialist Groups (e.g. Groups 03 to 13 of Part 1) 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 meaning 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 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 if possible 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.

As far as possible the terms are arranged in a logical order proceeding from the general to the specific and from the whole to the part and allied terms are placed close together.

In earlier editions of BS 4727, a special numbering system was used, however, to facilitate publication of future editions of BS 4727, only the International Electrotechnical Vocabulary numbering system is used. Where terms are used in other Parts of the glossary, their additional reference number is given in brackets in medium type.

A general view of the position of the Group in the glossary can be obtained from the guide to the glossary. An alphabetical index of the terms of each Group is provided at the end of each group to facilitate reference to particular terms. 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 and 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.

Square brackets [] enclose words which may replace a preceding part of an expression.

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 vi, pages 1 to 63 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 Magnetic materials and components

Group 08 Piezoelectric devices for frequency control and selection

Group 09 Electromagnetic compatibility

Group 10 Insulating solids, liquids and gases

Group 11 Printed circuits

Group 12 Insulators

Group 13 Electromechanical components for electronic equipment

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

Part 2 Terms particular to power engineering

Group 01 General power terminology (withdrawn)

Group 02 Power electronics terminology

Group 03 Rotating machinery terminology

Group 04 Power transformers and reactors

Group 05 Voltage fluctuation terminology

Group 06 Switchgear and controlgear terminology (including fuse terminology)

Group 07 Tariffs terminology

Group 08 Electric cable terminology

Group 09 Transducer terminology

Group 10 Industrial electroheating terminology

Group 11 Generation, transmission and distribution of electricity terminology

Group 12 Telecontrol

Group 13 Electrical apparatus for explosive atmospheres

Group 14 Power capacitors

Group 15 Overhead lines

Group 16 Instrument transformers

Group 17 Secondary cells and batteries

Group 18 Electric traction

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, facsimile and data communication

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 Acoustics and electro-acoustics terminology

Group 09 Transmission lines and waveguides

Group 10 Recording and reproduction of sound and video terminology

Group 11 Space radiocommunications terminology

Group 12 Telecommunications channels and networks

Group 13 Optical fibre communication

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

Part 4 Terms particular to lighting and colour (withdrawn)

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.

No.	Term	Definition
721-01 Forms of telecommunication using discrete signals		
721-01-01 (701-01-14)	teleprocessing	The association of telecommunication and data processing techniques to process information at a distance.
721-01-02 (701-01-11)	data	Information represented in a manner suitable for automatic processing.
721-01-03 (701-01-12)	data communication data transmission (deprecated in this sense)	A form of telecommunication intended for the transfer of information between <i>data</i> processing equipment.
721-01-04 (701-01-13)	data transmission	The conveying of <i>data</i> from one place to another by telecommunication.
721-01-05 (701-01-16)	telematics (services)	Telecommunication services supplementing conventional telegraphic or telephonic services generally using <i>teleprocessing</i> techniques to permit a user to receive or send public or private information, or to effect operations such as file consultation, reservations, commercial or banking transactions. Examples of telematics services: facsimile, teletex, videography, telewriting. NOTE Telematics services do not include broadcasting of sound or television programmes.
721-01-06 (701-01-07)	telegraphy	A form of <i>telecommunication</i> in which the transmitted <i>information</i> is intended to be recorded on arrival as a graphic document; the transmitted information may sometimes be presented in an alternative form or may be stored for subsequent use. NOTE A graphic document records information in a permanent form and is capable of being filed and consulted; for example it may take the form of written or printed matter or of a fixed image. NOTE This is the definition given in the Constitution of the International Telecommunication Union (Nice 1989). NOTE Telegraphy includes neither <i>television</i> nor <i>videography</i> .
721-01-07	alphabetic telegraphy; character telegraphy	<i>Telegraphy</i> applicable to texts, where coded signals are used, each signal or group of <i>signal elements</i> corresponding to a <i>character</i> such as a letter, a figure or a punctuation mark.
721-01-08 (701-01-10)	telewriting; teleautography	A form of telecommunication for the purpose of transmitting graphical information as it is being manually written or drawn and for simultaneously generating a reproduction at the distant terminal either on a screen or in some other form.
721-01-09 (701-01-09)	facsimile; telecopy	A form of telecommunication for the reproduction at a distance of graphic documents in the form of other graphic documents geometrically similar to the original.
721-01-10	document facsimile black and white facsimile	<i>Facsimile</i> in which the original document is reproduced with two optical density levels.
721-01-11	picture facsimile	<i>Facsimile</i> in which the reproduction may present graded tonal densities.
721-01-12	phototelecopy; phototelegraphy	<i>Picture facsimile</i> using a photographic process for the reproduction.

No.	Term	Definition
721-01-13	telegraph service	A service for the transmission of information by <i>telegraphy</i> . Examples of telegraph services: telegram service, radiotelegram service, facsimile service, phototelegraphy service, telex service and leased telegraph circuit service.
721-01-14	telegram service; public telegram service	The <i>telegraph service</i> offered to the public for the transmission of <i>telegrams</i> and their delivery to the addressees.
721-01-15 (701-01-08)	telex (service)	A <i>telegraph service</i> enabling subscribers to communicate directly and temporarily with each other by means of <i>start-stop apparatus</i> and telecommunication circuits of the public networks.
721-01-16	supertelex (service); high speed telex	A <i>telex service</i> working faster than the standard rate of 50 bauds.
721-01-17 (701-01-20)	teletex (service)	A <i>telematics</i> service for text transmission offering additional facilities to the <i>telex service</i> , in particular further typewriter functions and remote text processing facilities. NOTE The terms "teletex" and "teletext" refer to two different concepts.

721-02 to 721-08 Discrete signals and transmission using discrete signals

721-02 Discretely-timed and digital signals, signal elements

721-02-01 (702-04-04)	discretely-timed signal; discrete signal	A signal composed of successive elements in time, each element having one or more characteristic quantities which can convey information, for example its duration, its position in time, its waveform, its magnitude.
721-02-02 (702-04-05)	digital signal	A <i>discretely-timed signal</i> in which information is represented by a number of well-defined discrete values that one of its characteristic quantities may take in time.
721-02-03 (702-04-02)	analogue signal	A signal in which the characteristic quantity representing information may at any instant assume any values within a continuous interval. NOTE For example, an analogue signal may follow continuously the values of another physical quantity representing information.
721-02-04 (704-23-02)	sampling (of a signal)	The process of taking samples of a signal, usually at equal time intervals.
721-02-05 (702-04-07)	quantization (of a quantity)	A process in which a continuous range of possible values of a quantity is divided into a number of predetermined adjacent intervals and any value within a given interval is represented by a single predetermined value within the interval.
721-02-06 (702-05-01)	signal element	Each of the parts constituting a <i>discretely-timed signal</i> and distinguished from the others by one or more characteristics such as its duration, its relative position, its waveform, its magnitude.
721-02-07 (702-05-02)	digit	A member of a finite set of integers used to represent information. NOTE 1 A digit may be represented by a <i>signal element</i> . NOTE 2 In equipment used in digital transmission, a digit may be represented by a specified physical condition, e.g. a binary magnetic condition of a ferrite core.
721-02-08 (702-05-03)	binary digit; bit (abbreviation)	A member of a set of two elements commonly used to represent information. NOTE The terms <i>unit element</i> and <i>unit</i> used in telegraph transmission may not be used for the term bit.

No.	Term	Definition
721-02-09 (702-05-04)	binary figure	Either of the two figures 0 or 1 used in the binary numbering system.
721-02-10 (702-05-05)	n-ary digit	A member selected from a n-ary set.
721-02-11 (702-05-06)	n-bit byte (1)	An ordered set of a specified number of <i>binary digits</i> operated upon as an entity.
721-02-12 (702-05-07)	doublet (byte); 2-bit byte (USA)	An ordered set of two <i>binary digits</i> . NOTE The term dibit is deprecated in the sense of doublet.
721-02-13	triplet (byte); 3-bit byte (USA)	An ordered set of three <i>binary digits</i> . NOTE The term tribit is deprecated in the sense of triplet.
721-02-14	quartet (byte); 4-bit byte (USA)	An ordered set of four <i>binary digits</i> . NOTE The term quadribit is deprecated in the sense of quartet.
721-02-15	quintet (byte); 5-bit byte (USA)	An ordered set of five <i>binary digits</i> .
721-02-16	sextet (byte); 6-bit byte (USA)	An ordered set of six <i>binary digits</i> .
721-02-17	septet (byte); 7-bit byte (USA)	An ordered set of seven <i>binary digits</i> .
721-02-18 (702-05-09)	byte; octet; 8-bit byte	An ordered set of eight <i>binary digits</i> .
721-02-19	n-bit byte (2)	An ordered set of n <i>binary digits</i> .
721-02-20 (701-03-07)	code	A system of rules defining a one-to-one correspondence between information and its representation by <i>characters</i> , symbols or <i>signal elements</i> .
721-02-21 (702-05-16)	code conversion	The changing of the representation of information according to a given <i>code</i> into a representation of the same information according to another code. <i>Example:</i> Conversion of <i>character signals</i> or groups of character signals in one <i>telegraph code</i> into corresponding signals or group of signals in another code.
721-02-22 (702-05-21)	significant condition	Condition of a <i>signal element</i> defining the meaning of that signal element in accordance with a <i>code</i> .
721-02-23 (702-05-22)	number of significant conditions	Number of different <i>significant conditions</i> that a <i>signal element</i> can assume in accordance with a <i>code</i> .
721-02-24	two conditions	A qualifying term indicating that the <i>number of significant conditions</i> used is two.
721-02-25	three conditions	A qualifying term indicating that the <i>number of significant conditions</i> used is three.
721-02-26	four conditions	A qualifying term indicating that the <i>number of significant conditions</i> used is four.

No.	Term	Definition
721-02-27	change-over	A change from one <i>significant condition</i> to another in a <i>discretely-timed signal</i> .
721-02-28	transition	A transient phenomenon separating two successive <i>signal elements</i> having different <i>significant conditions</i> in a <i>discretely-timed signal</i> .
721-02-29	significant instant	The instant of change from one <i>significant condition</i> to another within a <i>discretely-timed signal</i> .
721-02-30	significant interval	Time interval between two consecutive <i>significant instants</i> .
721-02-31	theoretical duration of a significant interval	The exact duration prescribed by a <i>code</i> for a <i>significant interval</i> . NOTE In determining this duration, the standardized and, where necessary, the mean <i>modulation rate</i> has to be taken into account.
721-02-32	unit interval; signal element (USA)	The longest time interval such that the rated durations of the <i>significant intervals</i> of a signal are all whole multiples of the duration of this interval.
721-02-33	unit element	A <i>signal element</i> having a rated duration equal to the <i>unit interval</i> .

721-03 Transmission using discretely-timed or digital signals

721-03-01 (702-04-13)	isochronous	Qualifying a time varying phenomenon, a <i>time scale</i> or a signal the consecutive <i>significant instants</i> of which are separated by time intervals which all have the same rated duration or have rated durations equal to integral multiples of unit duration.
721-03-02 (702-04-15)	anisochronous	Qualifying a time varying phenomenon, a <i>time scale</i> or a signal the consecutive <i>significant instants</i> of which are separated by time intervals which are not all constrained to have the same rated duration or to have rated durations equal to a unit duration or to integral multiples of a unit duration.
721-03-03	start-stop signal	Signal constituted by a sequence of groups of <i>isochronous signal elements</i> , each group representing a <i>character</i> or a <i>block</i> and having a duration equal to the duration of an integral number of <i>unit intervals</i> and being separated from each other by time intervals of which the duration is not fixed.
721-03-04 (702-04-17)	synchronous	Qualifying two time-varying phenomena, <i>time scales</i> or signals characterized by corresponding <i>significant instants</i> which are separated by time intervals of a constant desired duration.
721-03-05	synchronous transmission	Transmission using <i>isochronous</i> signals in which the sending and receiving instruments are operating continuously in a constant time difference between homologous <i>significant instants</i> .
721-03-06	anisochronous transmission	A transmission such that between any two <i>significant instants</i> in the same <i>block</i> or <i>character</i> , there is always an integral number of <i>unit intervals</i> . Between two significant instants located in a different block or character, there is not always an integral number of unit intervals.
721-03-07	start-stop transmission	Transmission using <i>start-stop signals</i> in which each equal length group of <i>signal elements</i> representing a <i>character</i> or a <i>block</i> is preceded by a <i>start signal</i> and is followed by a <i>stop signal</i> .

No.	Term	Definition
721-03-08	digital transmission (of a discretely-timed signal)	Transmission of a <i>digital signal</i> representing a <i>discretely-timed signal</i> after <i>sampling</i> at a frequency greater than the converse of its minimum <i>significant interval</i> and <i>quantization</i> .
721-03-09 (705-05-10)	character	A member of a set of elements used by agreement, for the organization, representation or control of information. NOTE Characters may be letters, digits, punctuation marks or other symbols and, by extension, function controls such as space shift, carriage return or line feed contained in a message.
721-03-10	character signal	A set of <i>signal elements</i> representing a <i>character</i> .
721-03-11	block	A sequence of <i>digits</i> or <i>characters</i> formed for technical or logic reasons to be processed as an entity.
721-03-12	start-of-block signal	Signal which identifies the start of a <i>block</i> .
721-03-13	end-of-block signal	Signal which identifies the end of a <i>block</i> .
721-03-14	block signal	A set of <i>signal elements</i> representing a <i>block</i> .
721-03-15	start signal	In <i>start-stop transmission</i> , a signal preceding each group of <i>signal elements</i> which prepares the receiving device for the reception of the elements of the group.
721-03-16	start element	A <i>start signal</i> limited to one <i>signal element</i> generally having the duration of a <i>unit interval</i> .
721-03-17	stop signal	In <i>start-stop transmission</i> , a signal following each group of <i>signal elements</i> which prepares the receiving device for the reception of the subsequent <i>start signal</i> , or brings the device to rest.
721-03-18	stop element	A <i>stop signal</i> limited to one <i>signal element</i> having any duration equal to or greater than a specified minimum value.
721-03-19	A condition	The <i>significant condition</i> of a <i>start element</i> in <i>start-stop transmission</i> .
721-03-20	Z condition	The <i>significant condition</i> of a <i>stop element</i> in <i>start-stop transmission</i> .
721-03-21	equal length code	A <i>code</i> the <i>character signals</i> of which are composed of the same number of <i>unit elements</i> , each having the same duration.
721-03-22	n-unit code	<i>Equal-length code</i> according to which the <i>character signals</i> are composed of <i>n unit elements</i> .
721-03-23	code combination; code representation; code value	A combination of <i>n-unit elements</i> formed in accordance with an <i>n-unit code</i> which assigns a <i>significant condition</i> to each of the <i>unit elements</i> .
721-03-24	A element	In a <i>code combination</i> , a <i>unit element</i> to which is assigned the <i>A condition</i> .
721-03-25	Z element	In a <i>code combination</i> , a <i>unit element</i> to which is assigned the <i>Z condition</i> .
721-03-26	modulation rate	The reciprocal of the duration of the <i>unit interval</i> or of the shortest theoretical duration of the <i>signal element</i> .
721-03-27	baud (symb.: Bd)	The unit of <i>modulation rate</i> or the unit of transfer rate of <i>signal elements</i> of constant duration in a <i>discretely-timed</i> or <i>digital signal</i> ; the number of bauds is equal to the reciprocal of the duration in seconds of the shortest signal element or of the <i>unit interval</i> in such a signal. NOTE For example, if the duration of the unit interval is 20 ms, the modulation rate is 50 bauds.

No.	Term	Definition
721-03-28	speed conversion	The conversion of the <i>modulation rate</i> of a received signal to a different modulation rate suitable for the subsequent equipment.
721-03-29	actual transfer rate; transfer rate	The average number of <i>binary digits, characters</i> or <i>blocks</i> transferred per unit time between two points.
721-03-30	binary rate; signalling rate	The aggregate <i>transfer rate</i> of <i>signal elements</i> in a transmission link, expressed in normalized form in <i>binary digits</i> per second. NOTE 1 The signalling rate is given by $\sum_{i=1}^{1=m} \frac{1}{T_i} \log_2 n_i$ where m is the number of parallel transmission channels, T_i is the shortest theoretical duration of signal element for the i -th channel expressed in seconds, and n_i is the <i>number of significant conditions</i> of the modulation in the i -th channel. NOTE 2 The symbol of the unit of binary rate is bit/s.
721-03-31	effective transfer rate	The average number of <i>binary digits, characters</i> or <i>blocks</i> transferred per unit time between two points and accepted as valid at the reception point.

721-04 Transmission channels and methods

721-04-01 (701-02-02)	telephone-type channel	A transmission channel of characteristics suitable for the transmission of speech but which is used for the transmission of other signals.
721-04-02 (701-02-04)	telephone-type circuit	A pair of associated <i>telephone-type channels</i> permitting transmission in both directions between two points.
721-04-03	wideband channel	A transmission channel with a bandwidth greater than that of a telephone channel.
721-04-04	multiplex	Designating or pertaining to an installation in which a common transmission channel is divided into several separate tributary channels each capable of transmitting signals independently in the same direction.
721-04-05 (701-03-09)	multiplexing	A reversible process for assembling signals from several separate sources into a single composite signal for transmission over a common transmission channel; this process is equivalent to dividing the common channel into distinct channels for transmitting independent signals in the same direction.
721-04-06 (701-03-10)	demultiplexing	A process applied to a composite signal formed by <i>multiplexing</i> , for recovering the original independent signals, or group of these signals. NOTE Demultiplexing may be partial, for instance for extracting a primary group from a secondary group.
721-04-07	multiplexer	Equipment for effecting <i>multiplexing</i> .
721-04-08	demultiplexer	Equipment for effecting <i>demultiplexing</i> .
721-04-09	muldex; muldem	An assembly of a <i>multiplexer</i> and a <i>demultiplexer</i> operating in opposite directions of transmission in the same equipment.
721-04-10	multiplex signal; multiplexed signal	The composite signal produced by <i>multiplexing</i> several signals.

No.	Term	Definition
721-04-11	time division multiplexing; TDM (abbreviation)	<i>Multiplexing</i> in which a separate periodic time interval is allocated to each tributary channel in the common channel.
721-04-12	frequency division multiplexing; FDM (abbreviation)	<i>Multiplexing</i> in which a separate frequency band is allocated to each tributary channel in the common channel.
721-04-13	homogeneous multiplex	A <i>multiplex</i> system in which all the derived channels are at the same <i>binary rate</i> . NOTE Additional conditions can be added to qualify the binary rate condition.
721-04-14	heterogeneous multiplex	A <i>multiplex</i> system in which the derived channels do not all work at the same <i>binary rate</i> . NOTE Additional conditions can be added to qualify the binary rate condition.
721-04-15 (701-03-16)	simplex half duplex <i>deprecated</i>	Designating or pertaining to a method of operation in which information can be transmitted in either direction but not simultaneously, between two points.
721-04-16 (701-03-17)	duplex full duplex <i>deprecated</i>	Designating or pertaining to a method of operation in which information can be transmitted in both directions simultaneously between two points.
721-04-17	differential duplex	Designating or pertaining to a <i>duplex</i> system in which the currents divide in opposite directions so as to balance their effects in the receiving apparatus at the transmitting end, whereas the currents pass in the same direction and operate the apparatus at the receiving end.
721-04-18	bridge duplex	Designating or pertaining to a <i>duplex</i> system in which the neutrality of the receiving apparatus, at each end, to the currents sent from that end is secured by a balance of potentials based on the Wheatstone bridge principle.
721-04-19	incremental duplex	A <i>differential duplex</i> or a <i>bridge duplex</i> system in which, when both stations transmit simultaneously a similar <i>signal element</i> , the voltages applied to the line are additive.
721-04-20	opposition duplex	A <i>differential duplex</i> or a <i>bridge duplex</i> system in which, when both stations transmit simultaneously a similar <i>signal element</i> , the voltages applied to the line are in opposition.
721-04-21 (701-03-18)	unidirectional...	Pertaining to a link where the transfer of users' information is possible in one preassigned direction only. NOTE This term should not be used to describe the direction of call set-ups.
721-04-22 (701-03-19)	bidirectional	Pertaining to a link where the transfer of users' information is possible simultaneously in both directions between two points. NOTE 1 The transmission channel capacity and signalling rate are not necessarily the same in both directions. NOTE 2 This term should not be used to describe the direction of call set-ups.
721-04-23 (701-03-20)	one way...	Pertaining to an operational mode in which the call set-ups always occur in one direction. NOTE This term should not be used to describe the direction of transfer of users' information.
721-04-24 (701-03-21)	both way... two way...	Pertaining to an operational mode in which the call set-ups occur in both directions. NOTE 1 The amount of traffic flowing is not necessarily the same in both directions. NOTE 2 These terms should not be used to describe the direction of transfer of users' information.

No.	Term	Definition
721-04-25 (701-02-05)	(frequency) channel	Part of the frequency spectrum intended to be used for the transmission of signals and which may be defined by two specified limits, or by its centre frequency and the associated bandwidth, or by any equivalent indication. NOTE 1 A frequency channel may be time-shared in order to allow communication in both directions by <i>simplex</i> operation. NOTE 2 The use of the term “channel” to mean “telecommunication circuit” is deprecated.

721-05 Direct current transmission

721-05-01	direct current transmission	A form of transmission of <i>discretely-timed signals</i> where <i>significant conditions</i> are effected by applying to conductors voltages supplied from direct current sources.
721-05-02	single current transmission	<i>Direct current transmission</i> effected by applying voltages of the same polarity, producing currents of the same direction.
721-05-03	double current transmission	A form of <i>two-conditions direct current transmission</i> effected by applying two voltages in opposite polarity, producing currents in opposite directions.
721-05-04	on-off transmission	A <i>two-conditions single current transmission</i> where one <i>significant condition</i> is represented by applied zero voltage and no current in the circuit.
721-05-05	sub-telephone transmission composite transmission <i>deprecated</i>	A transmission on a telephone line using one or more <i>frequency channels</i> below that occupied by the telephone signals.
721-05-06	phantom circuit	An additional circuit derived from the conductors of two metallic circuits, with the two conductors of each metallic circuit effectively being used in parallel. <i>Example:</i> A telegraph circuit superposed on two telephone circuits.
721-05-07	earth-return phantom circuit	An additional circuit derived from the conductors of a metallic circuit, with these two conductors effectively being used in parallel, and with return through the earth or the sea between the end points. <i>Example:</i> A telegraph circuit superposed on a telephone circuit, with earth-return.
721-05-08	earth-return double phantom circuit	An additional earth-return circuit derived from two pairs of metallic conductors used in parallel.
721-05-09	double phantom circuit	An additional circuit derived from the conductors of two <i>phantom circuits</i> , with the four conductors of each phantom circuit effectively being used in parallel.
721-05-10	Desieter telegraph translation	A device providing on two conductors two transmission channels working independently in opposite directions with <i>direct current transmission</i> . NOTE The device has been designed to avoid the necessity of earth-return in telex urban networks.

No.	Term	Definition
721-06 Carrier transmission, multiplexing		
721-06-01	carrier transmission	Transmission of a signal resulting from the modulation of one or more carriers by one or several signals.
721-06-02	time division multiplex transmission	A transmission using a <i>time-division multiplexing</i> technique.
721-06-03	differential modulation	Modulation in which the <i>significant condition</i> for any <i>signal element</i> is dependent on that of the previous signal element.
721-06-04	modulation with a fixed reference	Modulation in which the <i>significant condition of each signal element</i> is determined by comparison to a preceding signal element chosen as a reference.
721-06-05	amplitude shift keying; amplitude shift modulation	Modulation in which each <i>significant condition</i> in a modulating <i>discretely-timed signal</i> is represented by a specified value of the amplitude of a carrier oscillation.
721-06-06	frequency shift keying; frequency shift modulation; frequency shift signalling; FSK (abbreviation)	Angle modulation in which the frequency of a periodic sinusoidal oscillation is varied between a set of discrete values, each value representing a <i>significant condition</i> of a modulating <i>discretely-timed signal</i> .
721-06-07	phase shift keying; phase shift modulation; phase shift signalling; PSK (abbreviation)	Angle modulation in which each <i>significant condition</i> in a modulating <i>discretely-timed signal</i> is represented by a specified phase of a periodic sinusoidal oscillation.
721-06-08	differential phase shift keying; DPSK (abbreviation)	Angle modulation in which each <i>significant condition</i> in a modulating <i>discretely-timed signal</i> is represented by a discrete change of phase of the modulated wave relative to the phase during the preceding <i>signal element</i> .
721-06-09	phase inversion modulation	<i>Phase shift modulation</i> in which the phase shift takes values differing by one half-period.
721-06-10	quadrature phase shift keying; quadrature phase modulation; QPSK (abbreviation)	<i>Phase shift keying</i> in which the phase shift takes four values differing by a multiple of 90 degrees.
721-06-11 (702-06-50)	modulation index (in frequency shift modulation)	In two-condition <i>frequency shift keying</i> , the ratio of the frequency shift in hertz to the <i>modulation rate</i> in <i>bauds</i> .
721-06-12 (702-06045)	coherent modulation	Modulation by a <i>discretely-timed signal</i> in which there is a predetermined relationship between the instants characterizing the carrier phase and the <i>significant instants</i> of the modulated signal. <i>Example:</i> A <i>phase inversion modulation</i> in which the phase is inverted when the carrier passes through zero.
721-06-13	super-telephone transmission; super-audio transmission	A form of transmission using an alternating current, or currents, having a frequency or frequencies above those in the telephone frequency channel, generally above 3 400 Hz.

No.	Term	Definition
721-06-14	interband transmission	A form of <i>carrier transmission</i> in which the transmission channel is in a narrow frequency band between two bands used to constitute telephone channels.
721-06-15	intraband transmission	A <i>carrier transmission</i> in a narrow band of frequencies appropriated inside the frequency band of a telephone channel to permit simultaneously a telephone transmission and a transmission by a <i>discretely-timed signal</i> .
721-06-16	speech + simplex (equipment); S + S (equipment)	Equipment for <i>intraband transmission</i> providing a <i>simplex</i> transmission by using <i>discretely-timed signals</i> and a single carrier frequency.
721-06-17	speech + duplex (equipment); S + D (equipment)	Equipment for <i>intraband transmission</i> providing a <i>duplex</i> transmission by using <i>discretely-timed signals</i> and two carrier frequencies.
721-06-18	bisector	<i>Synchronous</i> time-division multiplex equipment permitting the transmission of <i>character signals</i> corresponding to two <i>start-stop transmissions</i> of the same nominal <i>modulation rate</i> on a transmission channel for this same modulation rate so that the actual <i>character transfer rate</i> is thereby doubled.
721-06-19	first data multiplexer	Equipment that receives a number of <i>binary digit</i> trains at the same or different <i>binary rates</i> and combines these on a time division basis into a single stream of binary digits at a rate equivalent to that of a pulse code <i>multiplex</i> channel time-slot of a <i>multi-channel</i> PCM system.
721-06-20	second data multiplexer	Equipment that receives a number of <i>binary digit</i> trains from several <i>first data multiplexers</i> or a number of signals of equal <i>modulation rate</i> and combines these on a time division basis into a single stream of binary digits signalled at the digit rate of a primary digital group of a <i>multi-channel</i> PCM system.
721-06-21 (704-14-01)	frame	A repetitive set of consecutive time-slots constituting a complete cycle of a signal, a process, etc., in which the relative position of each time-slot in the cycle can be identified.
721-06-22 (704-14-14)	sub-frame	A fixed number of non-contiguous channel time-slots within a <i>frame</i> that together provide a digital channel having a specified digit rate higher than that of a single channel time-slot.
721-06-23 (704-14-03)	frame alignment	The state in which the <i>frame</i> generated by the receiving equipment has a desired constant phase relationship with the frame of the received signal, so that the individual time-slots in each frame can be uniquely identified.
721-06-24 (704-14-08)	frame alignment recovery time	The time that elapses between a valid <i>frame alignment</i> signal being available at the receiver terminal equipment and frame alignment being established. NOTE The frame alignment recovery time includes the time required for replicated verification of the validity of the frame alignment signal.

No.	Term	Definition
721-07 Transmission performance, distortion in time		
721-07-01	perfect (discrete) signal	A <i>discretely-timed signal</i> such that all <i>significant intervals</i> are associated with correct <i>significant conditions</i> and conform accurately to their theoretical durations determined by the <i>code</i> .
721-07-02	ideal instant	Instant with which a <i>significant instant</i> should coincide in certain conditions to be specified for each system.
721-07-03	time distortion; distortion in time; telegraph distortion	The undesired effect on a <i>discretely-timed signal</i> , when the <i>significant instants</i> do not coincide with the corresponding <i>ideal instants</i> .
721-07-04	incorrect (discrete) signal	A <i>discretely-timed signal</i> in which the <i>significant conditions</i> of one or more elements differ from the kind prescribed by the <i>code</i> .
721-07-05	degree of individual distortion (of a particular significant instant)	The ratio of the algebraic value of the displacement in time of a given <i>significant instant</i> from the corresponding <i>ideal instant</i> , to a specified <i>unit interval</i> . NOTE 1 By convention the displacement is considered positive when the significant instant occurs after the ideal instant, and conversely it is considered negative when it occurs before. NOTE 2 The degree of individual distortion is usually expressed as a percentage.
721-07-06	degree of isochronous distortion	The ratio of the algebraical difference between the highest and the lowest value of the <i>degree of individual distortion</i> referred to the mean duration of the <i>unit interval</i> for the <i>significant instants</i> of an <i>isochronous</i> signal during a specified time interval.
721-07-07	degree of start-stop distortion	The highest absolute value of the <i>degree of individual distortion</i> of the <i>significant instants</i> of a <i>start-stop signal</i> which is reached within a specified time interval.
721-07-08	degree of gross start-stop distortion	The <i>degree of start-stop distortion</i> determined when the assumed <i>unit interval</i> is exactly that appropriate to the nominal <i>modulation rate</i> . NOTE By convention the gross start-stop distortion may be considered positive when the <i>significant instant</i> occurs after the <i>ideal instant</i> and conversely, negative when it occurs before.
721-07-09	degree of synchronous start-stop distortion; degree of start-stop distortion at the actual mean modulation rate	The <i>degree of start-stop distortion</i> determined when the assumed unit interval is that appropriate to the actual mean <i>modulation rate</i> . NOTE In practice the degree of synchronous start-stop distortion is measured by adjusting the scanning rate of the distortion measuring set.
721-07-10	degree of standardized test distortion	The <i>degree of individual distortion</i> of the received signal measured during a specified period of time when the signal at the sending end is a perfect <i>discrete signal</i> and corresponds to a specified text.
721-07-11	inherent distortion (of a transmission channel)	The <i>time distortion</i> of a received signal at the output of a transmission channel when the signal at the input is a perfect <i>discrete signal</i> . NOTE 1 The inherent distortion includes all the distortions produced in the channel such as <i>bias distortion</i> , <i>characteristic distortion</i> and <i>fortuitous distortion</i> . NOTE 2 The concept of inherent distortion can be extended to the constituents such as a telegraph relay, <i>telegraph repeater</i> or exchange.
721-07-12	bias distortion	The <i>time distortion</i> affecting a <i>two-conditions discrete signal</i> when the mean <i>degrees of individual distortion</i> are different for the two directions of <i>change-over</i> at the <i>significant instants</i> .

No.	Term	Definition
721-07-13	degree of bias distortion	Ratio of the difference between the mean measured durations of <i>signal elements</i> of different values to the <i>unit interval</i> .
721-07-14	characteristic distortion	The <i>time distortion</i> caused by transients which are produced by the transmission of the signal in a transmission channel of specified characteristics.
721-07-15	fortuitous distortion	The <i>time distortion</i> resulting from random events affecting the channel or equipments and such that the <i>degree of individual distortion</i> at any <i>significant instant</i> is unpredictable.
721-07-16	cyclic distortion	A <i>time distortion</i> which is due to events having a periodic character such that the <i>degrees of individual distortion</i> themselves show a periodic character in the sequence of the <i>significant instants</i> .
721-07-17	conventional degree of distortion	The <i>degree of individual distortion</i> which has a very small specified probability of being exceeded over a prolonged period of time.
721-07-18	teledistortion	The <i>time distortion</i> of a specific signal at the input of a transmission channel estimated from observations made at the output of this channel.
721-07-19	transmitter distortion	The <i>time distortion</i> of a transmitter measured at the output under specified standard conditions.
721-07-20	degree of early anisochronous parallel distortion	In <i>parallel transmission</i> , the ratio to the <i>theoretical duration of the significant interval</i> of the maximum measured difference between this theoretical duration and the duration of the interval between the earliest of all <i>coherent significant instants</i> of a <i>character signal</i> and the earliest of all coherent significant instants of the following character signal.
721-07-21	degree of late anisochronous parallel distortion	In <i>parallel transmission</i> , the ratio to the <i>theoretical duration of the significant interval</i> of the maximum measured difference between the latest and the earliest <i>coherent significant instants</i> .
721-07-22	margin (of a receiver or other terminal)	The maximum value of a <i>degree of individual distortion</i> compatible with correct translation by a printer receiver or another terminal, when the signals arrive at the input under specified conditions.
721-07-23	net margin	The <i>margin</i> of a terminal, when the <i>modulation rate</i> at the input has its nominal value.
721-07-24	effective margin (of a given apparatus)	The <i>margin</i> measured on a specified receiver under actual operating conditions.
721-07-25	nominal margin (of a type of apparatus)	The minimum value specified for the <i>effective margin</i> of equipment of a given type when working under standard operating and adjustment conditions.
721-07-26	theoretical margin	The <i>margin</i> that could be evaluated from the manufacturing data of the equipment, assuming that it is working under perfect conditions.

No.	Term	Definition
721-07-27	margin (of a star-stop apparatus)	The maximum value of the <i>degree of gross start-stop distortion</i> compatible with the correct <i>translation</i> by a <i>start-stop apparatus</i> of all the <i>character signals</i> appearing either singly, or at the maximum rapidity corresponding to the standard modulation rate.
721-07-28	synchronous (start-stop) margin	The maximum value of the <i>margin</i> of a <i>start-stop apparatus</i> obtained by adjusting the <i>modulation rate</i> of the input signals to the most favourable value with respect to the time-base characteristics of the receiver.
721-07-29	margin of a synchronous receiver	The <i>margin</i> of a <i>synchronous</i> receiver determined by the <i>degree of isochronous distortion</i> .

721-08 Errors and error control

721-08-01	mutilation	A defect such that a <i>signal element</i> becomes changed from one <i>significant condition</i> to another.
721-08-02	erroneous digit	<i>Digit</i> which has been changed by a <i>mutilation</i> .
721-08-03	erroneous binary digit	<i>Binary digit</i> which has been changed by a <i>mutilation</i> .
721-08-04	erroneous character	A <i>character</i> in which there are one or more <i>erroneous digits</i> .
721-08-05	erroneous block	A <i>block</i> in which there are one or more <i>erroneous digits</i> .
721-08-06	single error	<i>Erroneous digit</i> preceded and followed by at least one correct <i>digit</i> .
721-08-07	double error	A group of two <i>erroneous digits</i> in the same <i>character</i> or <i>block</i> .
721-08-08	triple error	A group of three <i>erroneous digits</i> in the same <i>character</i> or <i>block</i> .
721-08-09	error burst	A group of <i>digits</i> in which two successive <i>erroneous digits</i> are always separated by a number of correct consecutive digits less than a specified number; the last erroneous digit in a group and the first erroneous digit in the following group are separated by a number of correct digits at least equal to the specified number.
721-08-10	error burst length	The number of <i>digits</i> in the sequence beginning at the first <i>erroneous digit</i> of an <i>error burst</i> and ending at the last erroneous digit.
721-08-11	digit error ratio	The ratio of the number of <i>erroneous digits</i> received to the total number of correct <i>digits</i> sent during homologous time intervals.
721-08-12	character error ratio	The ratio of the number of <i>erroneous characters</i> received to the total number of correct <i>characters</i> sent during homologous time intervals.
721-08-13	block error ratio	The ratio of the number of <i>erroneous blocks</i> received to the total number of correct <i>blocks</i> sent during homologous time intervals.
721-08-14 (702-07-40)	error control	Any method used to reduce the incidence of errors in the recording, processing or transfer of information.
721-08-15	block check	A process for <i>error control</i> according to which a check is made on the structure of data <i>blocks</i> according to given rules.
721-08-16	error detection	<i>Error control</i> making use of an appropriate code by which the presence of <i>mutilation</i> can be discovered at reception.

No.	Term	Definition
721-08-17	error detection without repetition	<i>Error detection</i> in which every <i>character</i> or <i>block</i> found to be erroneous at the receiving end is either removed from data retained with a possible indication at its removal or is retained with the indication of existence of an error.
721-08-18	loop checking; automatic collating	An <i>error control</i> method where received data are automatically retransmitted from the receiving end to the transmitting end and compared with the initial data stored at the transmitter.
721-08-19	echoplex	A method of <i>loop checking</i> by which each transmitted <i>character</i> is displayed <i>in-local</i> after its return from the distant station.
721-08-20	error correction	<i>Error control</i> with a view to correcting a significant proportion of errors, making use of either an <i>error correcting code</i> or an <i>error detecting code</i> or <i>loop-checking</i> with, in the last two cases, automatic repetition of the signals recognized as being erroneous.
721-08-21	error detecting and feedback system; ARQ (abbreviation)	<i>Error correction</i> using an <i>error detecting code</i> in which every <i>mutilation</i> discovered at the receiving end causes the sending to the transmitting end over the <i>return channel</i> of a <i>function signal</i> which orders the repetition of a fixed sequence of the last signals sent.
721-08-22	error correction by information feedback and repetition	<i>Error correction</i> using <i>loop checking</i> followed by an automatic repetition of the signal representing the <i>characters</i> or <i>blocks</i> recognized as erroneous.
721-08-23 (702-05-18)	redundant code	A <i>code</i> according to which a larger number of <i>characters</i> , symbols or <i>signal elements</i> than strictly necessary are used to represent information. <i>Example 1:</i> A five-unit code using all the characters of <i>International Telegraph Alphabet No. 2</i> is not redundant. <i>Example 2:</i> A seven-unit code such as <i>International Telegraph Alphabet No. 3</i> which uses only signals made of four elements of <i>A condition</i> and three elements of <i>Z condition</i> is redundant.
721-08-24	code word	A <i>code combination</i> recorded as valid in a <i>redundant code</i> .
721-08-25	Hamming distance	The number of <i>digit</i> positions in which the corresponding digits of two <i>n-bit bytes</i> of the same length are different.
721-08-26	error protection code	A <i>code</i> designed to permit <i>error detection</i> with or without <i>error correction</i> .
721-08-27	error detecting code	A <i>redundant code</i> in which the rules of construction are such that any error causing departures from this construction can be detected automatically.
721-08-28	error correcting code	An <i>error detecting code</i> which also permits the automatic correction of a proportion of the errors detected, without using a <i>backward channel</i> .
721-08-29	constant ratio code	An <i>error detecting code</i> which uses in each <i>character</i> or <i>function signal</i> an assigned number of elements of each type. NOTE A constant ratio <i>two-condition</i> <i>n</i> -unit code comprising <i>p</i> elements of <i>A condition</i> in <i>n</i> elements is designated by the expression “ <i>p</i> in <i>n</i> code”.
721-08-30	Van Duuren code	A seven unit <i>two-condition constant ratio code</i> used in <i>synchronous radiotelegraphy</i> and which uses in each <i>character signal</i> four elements of <i>A condition</i> . NOTE This code is defined by CCIR ^a Recommendation 342 and its alphabet is <i>International Telegraph Alphabet No. 3</i> .

^a International Consultative Radiocommunication Committee.