

Telecontrol equipment and systems

Part 1. General considerations

Section 1.3 Glossary

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Power Electrical Engineering Standards Policy Committee (PEL/-) to Technical Committee PEL/89, upon which the following bodies were represented:

- Association of Consulting Engineers
- BAMEMA (BEAMA)
- BEAMA Ltd.
- EEA (the Association of Electronics, Telecommunications and Business Equipment Industries)
- Electricity Supply Industry in United Kingdom
- GAMBICA (BEAMA Ltd.)
- North of Scotland Hydro-Electric Board
- Telecommunication Engineering and Manufacturing Association
- Transmission and Distribution Association (BEAMA Ltd.)

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Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Glossary	
Introduction	1
1 Scope	1
2 Object	1
3 General	2
4 List of terms	2

National foreword

This Section of BS 7404 has been prepared under the direction of the Power Electrical Engineering Standards Policy Committee and is identical with IEC Publication 870-1-3 : 1990 'Telecontrol equipment and systems Part 1 : General considerations Section 3 — Glossary', published by the International Electrotechnical Commission (IEC).

The international standard does not give the up-to-date relation between this Section of the IEC standard and the other published and envisaged Parts and Sections. Other Parts and Sections of this British Standard are as follows.

- Part 1 General considerations
 - Section 1.1 General principles
 - Section 1.2 Guide for specifications
 - Section 1.3 Glossary
 - Section 1.4¹⁾ Basic aspects of telecontrol data transmission
- Part 2 Operating conditions
 - Section 2.1 Specification for classes of environmental conditions and power supplies
 - Section 2.2²⁾ Specification for electromagnetic compatibility and erosive and corrosive influences
- Part 3 Specification for interfaces (electrical characteristics)
- Part 4 Specification for performance
- Part 5 Transmission protocols
 - Section 5.1 Specification for transmission frame formats
 - Section 5.2³⁾ Specification for transmission procedures
 - Section 5.3⁴⁾ Specification for structure of application data
 - Section 5.4⁵⁾ Specification for coding specifications of application data
- Part 6²⁾ Specification for telecontrol protocols compatible with ISO and CCITT standards

Cross-references

The Technical Committee has reviewed the provisions of IEC 50(371), IEC 50(351), Amendment No 1, IEC 954 and IEC 271A to which reference is made in the text and has decided that they are acceptable for use in conjunction with this British Standard.

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

¹⁾ Will be published after IEC 870-1-4 has been published.

²⁾ Not yet published, envisaged as future work by IEC.

³⁾ Will be published after IEC 870-5-2 has been published.

⁴⁾ Will be published after IEC 870-5-3 has been published.

⁵⁾ Will be published after IEC 870-5-4 has been published.

TELECONTROL EQUIPMENT AND SYSTEMS

Part 1: General considerations

Section Three - Glossary

INTRODUCTION

Standards and reports on telecontrol equipment and systems produced during the last few years by IEC Technical Committee No. 57 in different documents use a certain number of terms with specific meanings in telecontrol applications that are not yet defined in IEC Publication 50(371): International Electrotechnical Vocabulary (IEV), Chapter 371: Telecontrol (1984).

This report presents - in alphabetic order - these terms and their definitions and includes those terms that are already defined in IEV Chapter 371.

This report presents a comprehensive means of referring to terms with particular meaning in telecontrol systems and equipment that should also be used in future telecontrol documentation.

With respect to the current work on telecontrol documentation and the necessity of defining the new important terms, it should be emphasized that this report will be followed by addenda in due course.

1. Scope

This series of standards applies to telecontrol equipment and systems with coded bit serial data transmission for monitoring and control of geographically widespread processes.

2. Object

This report covers those terms which are specifically relevant to telecontrol techniques as well as other terms which are necessary for the understanding of telecontrol standards.

This report also gives, where applicable, references to other dictionaries of electrical and electronic terms.

Terms which are considered to be well known by readers of telecontrol standards are not included in this report. This applies particularly in the field of communications where such terms as, for example, "information" and "bit" are commonplace and well understood.

3. General

All terms are listed in alphabetic order. General telecontrol terms given in the IEC Chapter 371 are repeated with the reference to the IEC term number.

Other sources are identified by a figure in brackets after the definitions. The code is as follows:

- (1) American National Standards Institute - "IEEE Standard Dictionary of Electrical and Electronics Terms" (1984).
- (2) IEC Publication 50(351), Chapter 351: Automatic Control (1975) and Amendment No. 1 (1978).
- (3) Document IEC 721(CO)1216: Telegraphy and data communication (September 1983). [Future IEC Publication 50(721), in preparation.]
- (4) Standard ISO 2382: Data processing - Vocabulary:
 - Part 09: Data communication (1984).
 - Section 14: Reliability, maintenance and availability (1978).
- (5) FED-STD 1037 (1982).
- (6) IEC Publication 954: Process data highway, Types A and B (PROWAY A and B), for distributed process control systems (being printed).
- (7) IEC Publication 271A: First supplement to IEC Publication 271: List of basic terms, definitions and related mathematics for reliability (1978).

Terms which are common in other fields and used in telecontrol, and for which no definitions may exist within other recognized international vocabularies, are explained in terms of telecontrol requirements.

4. List of terms

Absolute chronology; time tagging

Method of transmission of changes-of-state so that transmitted information is accompanied by data giving the registered time at which the changes occurred, within the time resolution (IEV 371-05-02).

Acknowledgement see Positive acknowledgement; Negative acknowledgement

Acquisition time

The minimum time for correct detection and processing of change of state.

Address

Part of a message identifying the source or its destination.

Adjusting command

A command used to change the state of operational equipment having more than two states (IEV 371-03-10).

Alarm

Information for attracting attention to some abnormal state.

NOTE - A transition from a normal into an abnormal state causes a visual and/or audible warning which has to be acknowledged. A transition from an abnormal into a normal state usually causes a change of indication and, in some applications, also causes a visual and/or audible warning which has to be acknowledged.

Analog signal

Signal in the form of a continuously variable value.

Application functions

The application functions cover the special needs of the process to which a telecontrol system is applied.

The application functions are divided into "Basic functions" and "Extended processing functions".

Asynchronous telecontrol transmission see *Start-stop telecontrol transmission*

Asynchronous transmission

Data transmission in which the time of occurrence of the start of each character, or block of characters, is arbitrary; once started, the time of occurrence of each signal representing a bit within the character, or block, has the same relationship to significant instants of a fixed time base (4)*.

Automatic generation control (AGC) see *Load-frequency control*

* The numbers in parentheses refer to the references given in clause 3.

Auxiliary information

Information used in order to control the operation of a telecontrol system.

Availability

The availability of a unit or system characterizes its ability to perform its required function at any given moment.

Average transfer time

The average of the transfer time for every case of input of the primary signal with respect to the telecontrol system (IEV 371-08-18).

Balanced circuit; balanced line; balanced signal pair

A transmission line consisting of two conductors in the presence of ground, capable of being operated in such a way that, when the voltages of the two conductors at all transverse planes are equal in magnitude and opposite in polarity with respect to ground, the currents in the two conductors are equal in magnitude and opposite in direction (5).

Barrier device

A device for galvanic isolation of telecontrol equipment and the operational equipment (e.g. a relay, optocoupler or transformer).

Basic functions

Basic functions deal with all types of individual information from and to the operational equipment and the operator.

Baud (Bd)

The unit of modulation rate or the unit of transfer rate of signal elements of constant duration in a discretely-timed or digital signal; the number of bauds is equal to the reciprocal of the duration in seconds of the shortest signal element or of the unit interval in such a signal (3).

NOTE - For example, if the duration of the unit interval is 20 ms, the modulation rate is 50 Bd.

Binary state information

Monitored information of the status of operational equipment which is characterized by one of two states, for example, on/off (IEV 371-02-03).

Bit erasure probability

The probability that a received signal variable used to represent the value of a bit exceeds specified limits of tolerated signal quality.

Bit erasure rate

The ratio of the number of bits received with signals exceeding specified limits of tolerated signal quality to the total number of bits sent.

Bit error probability

The probability that a received bit will be inverted with respect to the corresponding bit sent (IEV 371-08-02).

Bit error rate

The ratio of the number of bits received inverted to the total number of bits sent (IEV 371-08-01).

Bit oriented data transmission see Code transparent data transmission

Bit rate

The speed at which bits are transmitted, usually expressed in bits per second [bits/s] (1).

Block

A sequence of bits transmitted as a unit, generally subdivided into fields of conveying information bits and error check bits.

Block code

A sequence of information bits completed by bits used for error detection or error correction.

Block error probability

The probability that a block be incorrectly received (IEV 371-08-04).

Block error rate

The ratio of the number of blocks incorrectly received to the total number of blocks sent (IEV 371-08-03).

Breaking capability

The current that a device is capable of breaking at a stated recovery voltage under prescribed conditions of use and behaviour (1).

Broadcast command

A command which is addressed to operational equipment at several or all outstations of a telecontrol network (IEV 371-03-16).

Byte

An ordered group of a fixed number of binary digits operated on as an entity (3).

NOTE - The word "byte" without qualification may be used as a synonym for octet.

Centralized absolute chronology

Transmission of change-of-state information with absolute chronology from different locations containing synchronized clocks (IEV 371-05-04).

NOTE - The resulting accuracy specification has to consider separating capability, absolute chronology and clock synchronization errors.

Change-of-state announcement

An announcement of a demand for the transmission of event information (IEV 371-04-03).

Channel

A single path for transmitting electric signals, usually in distinction from other parallel paths (1).

NOTE - The word "path" is to be interpreted in a broad sense to include separation by frequency division or time division. The term "channel" may signify either a one-way path, providing transmission in one direction only, or a two-way path, providing transmission in two directions.

Channel selecting system; common diagram system

A telecontrol system in which the control centre or master station selects any one of a number of outstations by switching the receiver and if necessary the command sender from one circuit to another (IEV 371-07-10).

Check command

A command for the purpose of ensuring that the telecontrol equipment is functioning correctly (IEV 371-04-08).

Check sequence; check sum

Part of a message used for error checking or error correcting purposes.

Code

A specified relation between two sets of characters.

Code transparent data transmission; bit oriented data transmission

Data transmission method that does not depend on bit sequence structures used by the data source.

Command

Information used to cause a change of state of operational equipment (IEV 371-03-01).

Command direction

The direction from the controlling location to the controlled process. This is normally the direction from the master station to the outstation.

Common alarm

The combination of all individual alarms into one alarm (IEV 371-02-14).

Common diagram system see Channel selecting system

Composite configuration see Hybrid configuration

Concentrator station

A station in a hierarchical telecontrol network at which the monitored information coming from outstations is concentrated for transmission to the master station and at which the command information is distributed to the outstations (IEV 371-06-02).