

Telecontrol equipment and systems

Part 5. Transmission protocols

Section 5.3 Specification for general structure of application data

The European Standard EN 60870-5-3 : 1992 has the status of a
British Standard

Matériels et systèmes de téléconduite
Partie 5. Protocoles de transmission
Section 5.3 Structure générale des données
d'application — Spécifications

Fernwirkeinrichtungen und Fernwirkssysteme
Teil 5. Übertragungsprotokoll
Hauptabschnitt 5.3 Allgemeine struktur der
Anwendungsdaten — Anforderungen

UDC 621.398

Cooperating organizations

The European Committee for Electrotechnical Standardization (CENELEC), under whose supervision this European Standard was prepared, comprises the national committees of the following countries:

Austria	Italy
Belgium	Luxembourg
Denmark	Netherlands
Finland	Norway
France	Portugal
Germany	Spain
Greece	Sweden
Iceland	Switzerland
Ireland	United Kingdom

This British Standard, having been prepared under the direction of the Power Electrical Engineering Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 December 1992

© BSI 1992

The following BSI references relate to the work on this standard:
Committee reference PEL/89
Draft for comment 89/27229 DC

ISBN 0 580 20455 3

Amendments issued since publication

Amd. No.	Date	Text affected

Contents

	Page
Cooperating organizations	Inside front cover
National foreword	i
Foreword	2
Text of EN 60870-5-3	3
National annex NA (informative) Committees responsible	Inside back cover
National annex NB (informative) Cross-references	Inside back cover

National foreword

This British Standard has been prepared under the direction of the Power Electrical Engineering Standards Policy Committee and is the English language version of EN 60870-5-3 : 1992 *Telecontrol equipment and systems Part 5 : Transmission protocols Section 3 : General structure of application data*, published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 870-5-3 : 1992, published by the International Electrotechnical Commission (IEC).

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

UDC 621.398

Descriptors: Teleprocessing, telecontrol, data, transmission, information, open system interconnection, data protocol, application layer, data structure

English version

Telecontrol equipment and systems
Part 5 : Transmission protocols
Section 3 : General structure of application data
(IEC 870-5-3 : 1992)

Matériels et systèmes de téléconduite
Partie 5: Protocoles de transmission
Section 3: Structure générale des données
d'application
(CEI 870-5-3 : 1992)

Fernwirkeinrichtungen und Fernwirkssysteme
Teil 5: Übertragungsprotokoll
Hauptabschnitt 3: Allgemeine Struktur der
Anwendungsdaten
(IEC 870-5-3 : 1992)

This European Standard was approved by CENELEC on 1992-06-16. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

© 1992 Copyright reserved to CENELEC members

Foreword

The text of document 57(CO)61, as prepared by IEC Technical Committee No. 57: Telecontrol, teleprotection and associated telecommunications for electric power systems, was submitted to the IEC-CENELEC parallel vote in October 1991.

The reference document was approved by CENELEC as EN 60870-5-3 on 16 June 1992.

The following dates were fixed:

- latest date of publication of (dop) 1993-09-01
an identical national standard
- latest date of withdrawal of (dow) 1993-09-01
conflicting national standards

Annexes designated 'normative' are part of the body of the standard. In this standard, annex ZA is normative.

CONTENTS

	Page
INTRODUCTION	4
Clause	
1 Scope and object	4
2 Normative references	5
3 Definitions	5
4 Relation to the ISO reference model	6
5 Structure of application data	7
5.1 APPLICATION SERVICE DATA UNIT	10
5.1.1 DATA UNIT IDENTIFIER	10
5.1.2 INFORMATION OBJECTS	11
5.1.3 Identification of INFORMATION OBJECTS	13
5.1.4 INFORMATION OBJECTS address schemes	14
5.1.5 SETS OF INFORMATION ELEMENTS	14
6 Guideline for constructing APPLICATION SERVICE DATA UNITS	15
6.1 First step: selection of field elements of DATA UNIT IDENTIFIER	16
6.2 Second step: Definition of lengths of field elements of DATA UNIT IDENTIFIER	16
6.3 Third step: Definition of data types of DATA UNIT IDENTIFIER	17
6.4 Fourth step: Definition of INFORMATION OBJECTS	18
6.5 Fifth step: Assignment of INFORMATION OBJECTS to TYPE IDENTIFICATION and definition of semantics	20
ANNEX ZA (normative) Other international publications quoted in this standard with the references of the relevant European publications	22

INTRODUCTION

This section of IEC 870-5 specifies generic standard structures for the application data field in telecontrol transmission frames.

TELECONTROL EQUIPMENT AND SYSTEMS

Part 5: Transmission protocols Section 3: General structure of application data

1 Scope and object

This section of IEC 870-5 applies to telecontrol equipment and systems with coded bit serial data transmission for monitoring and controlling geographically widespread processes.

This section specifies rules for structuring application data units in transmission frames of telecontrol systems. These rules are presented as generic standards that may be used to support a great variety of present and future telecontrol applications. The layout is designed to limit the organizational overhead for standard data acquisition and supervisory control tasks to a necessary minimum with possible extensions for special tasks. From this point of view, it is appropriate to admit application specific or system specific choices of data presentation, of address structures and of chaining mechanisms for information objects in a frame. The corresponding arrangements can be, in most cases, assumed to be known by the communicating stations and thus need not burden the transmission frame.

This section describes the general structure of application data without specifying details about information fields and their contents. It describes basic rules to specify application data units.

Definitions and coding specifications of individual information elements that are frequently used in telecontrol applications are defined in IEC 870-5-4.

Compatibility between devices of different suppliers can only be reached by defining complete application profiles.

A complete application profile consists of:

- the specification of the physical interface;
- a subset of IEC 870-5-1;
- a subset of IEC 870-5-2;
- the specification of the application data units, based on both, IEC 870-5-3 and IEC 870-5-4;
- the specification of the application functions based on IEC 870-5-5.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of IEC 870-5. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this section of IEC 870-5 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 50(371): 1984, *International Electrotechnical Vocabulary (IEV) – Chapter 371: Telecontrol*.

IEC 870-1-1: 1988, *Telecontrol equipment and systems – Part 1: General considerations – Section One: General principles*.

IEC 870-5-1: 1990, *Telecontrol equipment and systems – Part 5: Transmission protocols – Section One: Transmission frame formats*.

IEC 870-5-2: 1992, *Telecontrol equipment and systems – Part 5: Transmission protocols – Section 2: Link transmission procedures*.

IEC 870-5-4, *Telecontrol equipment and systems – Part 5: Transmission protocols – Section 4: Definition and coding of application information elements* (in preparation).

IEC 870-5-5, *Telecontrol equipment and systems – Part 5: Transmission protocols – Section 5: Basic application functions* (under consideration).

IEC 870-6, *Telecontrol equipment and systems – Part 6: Telecontrol protocols compatible with ISO and CCITT standards* (under consideration).

ISO 7498: 1984, *Information processing systems – Open Systems Interconnection – Basic Reference Model*.

ISO/IEC 8824: 1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1)*.

3 Definitions

For the purposes of this section of IEC 870-5, the following definitions apply:

3.1 data unit: Information entity that has a common cause of transmission.

3.2 data unit type: Information field at the beginning of an application data unit that identifies the type and the length of data unit and implicitly or explicitly specifies the structure of the application data unit and the structure, type and number of information objects.

3.3 Information object: A well-defined piece of information, definition or specification which requires a name in order to identify its use in an instance of communication (see 3.31 of ISO/IEC 8824).