AS 60870.5.3—1998
IEC 60870-5-3:1992

Australian Standard®

Telecontrol equipment and systems

Part 5.3: Transmission protocols—General structure of application data

[IEC title: Telecontrol equipment and systems, Part 5: Transmission protocols—Section 3: General structure of application data]

This Australian Standard was prepared by Committee IT/24, Supervisory Control and Data Acquisition. It was approved on behalf of the Council of Standards Australia on 5 January 1998 and published on 5 April 1998.

The following interests are represented on Committee IT/24:

Association of Consulting Engineers Australia

Australasian Railway Association

Australian Communications Authority

Australian Electrical and Electronic Manufacturers Association

Australian Fire Authorities Council

Australian Gas Association

Australian Pipeline Industry Association

Australian Security Industry Association

AUSTROADS

CIGRE AP35

Electricity Supply Association of Australia

Fire Protection Association of Australia

Institution of Engineers Australia

Telstra Corporation

Water Services Association of Australia

Review of Australian Standards. *To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.*

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 97153.

Australian Standard®

Telecontrol equipment and systems

Part 5.3: Transmission protocols—General structure of application data

First published as AS 60870.5.3—1998.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7337 1855 8

PREFACE

This Standard was prepared by the Standards Australia Committee IT/24, Supervisory Control and Data Acquisition.

The Standard is identical with and has been reproduced from IEC 60870-5-3:1992, *Telecontrol equipment and systems*, Part 5: *Transmission protocols*, Section 3: *General structure of application data*.

IEC has decided to apply a new numbering system, the 60000 series, to all its existing and future publications, including amendments to existing Standards. As a consequence, IEC has modified the bibliographic references in its databases to accord with the new numbering system. All IEC publications issued since the beginning of 1997 will carry references in terms of the 60000 series numbering. Publications printed earlier than 1997 will continue to carry the old series of numbers. For example, a reference to the IEC 60870 series of Standards will be to IEC 870 if the current edition of the Standard was printed prior to 1997.

This Standard is identical with a pre-1997 document therefore it uses the old series of numbers.

The objective of this Standard is to provide manufacturers and users of telecontrol equipment and systems with the specification for structuring application data units in the transmission frames in order to achieve system interoperability within Australia.

As this Standard is reproduced from an international Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text ‘this International Standard’ should read ‘this Australian Standard’.

(c) A full point substitutes for a comma when referring to a decimal marker.

The references to international Standards should be replaced by references to the following Australian Standards:

Reference to International Standard or other publication		*Australian Standard*	
IEC		AS	
50	International Electrotechnical Vocabulary (IEV)	1852	International Electrotechnical Vocabulary
50(371)	Chapter: 371: Telecontrol	1852.371	Part: 371: Telecontrol
870	Telecontrol equipment and systems	60870	Telecontrol equipment and systems
870-1-1	Part 1: General considerations—Section One: General principles	60870.1.1	Part 1.1: General considerations—General principles
870-5-1	Part 5: Transmission protocols—Section One: Transmission frame formats	60870.5.1	Part 5.1: Transmission protocols—Transmission frame formats
870-5-2	Part 5: Transmission protocols—Section 2: Link transmission procedures	60870.5.2	Part 5.2: Transmission protocols—Link transmission procedures
870-5-4	Part 5: Transmission protocols—Section 4: Definition and coding of application information elements (in preparation)	60870.5.4	Part 5.4: Transmission protocols—Definition and coding of application information elements
870-5-5	Part 5: Transmission protocols—Section 5: Basic application functions (under consideration)	60870.5.5	Part 5.5: Transmission protocols—Basic application functions

IEC		AS	
870-6	Part 6: Telecontrol protocols compatible with ISO and CCITT standards (under consideration)	60870.6	Part 6: Telecontrol protocols compatible with ISO and ITU-T recommendations (all parts)
ISO			
7498	Information processing systems—Open Systems Interconnection—Basic Reference Model	2777	Information processing systems—Open Systems Interconnection—Basic reference model (all parts)
ISO/IEC			
8824	Information technology—Open Systems Interconnection—Specification of Abstract Syntax Notation One (ASN.1)	3625	Information technology—Open Systems Interconnection—Specification of Abstract Syntax Notation One (ASN.1)

© Copyright – STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

Page

Clause

1 Scope and object 1

2 Normative references 2

3 Definitions 2

4 Relation to the ISO reference model 3

5 Structure of application data 4

5.1 APPLICATION SERVICE DATA UNIT 7

5.1.1 DATA UNIT IDENTIFIER 7

5.1.2 INFORMATION OBJECTS 8

5.1.3 Identification of INFORMATION OBJECTS 10

5.1.4 INFORMATION OBJECTS address schemes 11

5.1.5 SETS OF INFORMATION ELEMENTS 11

6 Guideline for constructing APPLICATION SERVICE DATA UNITS 12

6.1 First step: selection of field elements of DATA UNIT IDENTIFIER 13

6.2 Second step: Definition of lengths of field elements of DATA UNIT IDENTIFIER 13

6.3 Third step: Definition of data types of DATA UNIT IDENTIFIER 14

6.4 Fourth step: Definition of INFORMATION OBJECTS 15

6.5 Fifth step: Assignment of INFORMATION OBJECTS to TYPE IDENTIFICATION and definition of semantics 17

AUSTRALIAN STANDARD

Telecontrol equipment and systems

Part 5.3:
Transmission protocols—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 aquisition 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.

COPYRIGHT