

AS 60870.1.4—1998

IEC 60870-1-4:1994

Reconfirmed 2015

Australian Standard[®]

Telecontrol equipment and systems

Part 1.4: General considerations— Basic aspects of telecontrol data transmission and organization of Standards IEC 60870-5 and IEC 60870-6

[IEC title: Telecontrol equipment and systems, Part 1: General considerations, Section 4: Basic aspects of telecontrol data transmission and organization of standards IEC 60870-5 and IEC 60870-6]

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 23 September 1997 and published on 5 January 1998.

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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 60870.1.4—1998

Telecontrol equipment and systems

Part 1.4: General considerations—Basic aspects of telecontrol data transmission and organization of Standards IEC 60870-5 and IEC 60870-6

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Technical Committee EL-050 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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The following are represented on Technical Committee EL-050:

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Telecontrol equipment and systems

Part 1.4: General considerations— Basic aspects of telecontrol data transmission and organization of Standards IEC 60870-5 and IEC 60870-6

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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 870-1-4:1994, *Telecontrol equipment and systems*, Part 1: *General considerations*, Section 4—*Basic aspects of telecontrol data transmission and organization of standards IEC 60870-5 and IEC 60870-6*.

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 to 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 a tutorial on transmission techniques, equipment and protocols in order to guide Australian users of Parts 5 and 6 of this Standard.

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/New Zealand Standards:

<i>Reference to International Standard or other publication</i>		<i>Australian or Joint Australian/New Zealand Standard</i>	
IEC		AS	
50	International Electrotechnical Vocabulary (IEV)—	1852	International Electrotechnical Vocabulary
50(371)	Chapter 371: Telecontrol	1852.371	Part 371: Telecontrol
50(721)	International Electrotechnical Vocabulary (IEV)— Chapter 721: Telegraphy, facsimile and data communications	—	
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
870-1-2	Part 1: General considerations— Section Two: Guide for specifications	60870.1.2	Part 1.2: General considerations— Guide for specifications
870-1-3	Part 1: General considerations— Section Three: Glossary	60870.1.3	Part 1.3: General considerations— Glossary
870-5-1	Part 5: Transmission protocols— Section One: Transmission frame formats	60870.5.1	Part 5.1: Transmission protocols— Transmission frame formats

IEC		AS	
870-5-2	Part 5: Transmission protocols— Section 2: Link transmission procedures	60870.5.2	Part 5.2: Transmission protocols— Link transmission procedures
870-5-3	Part 5: Transmission protocols— Section 3: General structure of application data	60870.5.3	Part 5.3: Transmission protocols— General structure of application data
870-5-4	Part 5: Transmission protocols— Section 4: Definition and coding of application information elements	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
870-5-x	Part 5: Transmission protocols— Section x: Telecontrol companion standards and profiles (under consideration)	—	
870-6-1	Part 6: Telecontrol protocols compatible with ISO and CCITT standards—Section 1: Application context and organization of standards (under consideration)	—	
870-6-2	Part 6: Telecontrol protocols compatible with ISO and CCITT standards—Section 2: Use of base standards (OSI layers 1-4) (under consideration)	—	
870-6-3	Part 6: Telecontrol protocols compatible with ISO and CCITT standards—Section 3: Use of base standards (OSI layers 5-7) (under consideration)	—	
870-6-4	Part 6: Telecontrol protocols compatible with ISO and CCITT standards—Section 4: Network management (under consideration)	—	
870-6-x	Part 6: Telecontrol protocols compatible with ISO and CCITT standards—Section x: Functional profiles (under consideration)	—	
ISO			
2382	Information technology— Vocabulary	1189	Data processing—Vocabulary
7498	Information processing systems— Open Systems Interconnection — Basic reference model	2777	Information processing systems— Open Systems Interconnection— Basic reference model
8072	Information processing systems— Open Systems Interconnection — Transport service definition	2911	Information processing systems— Open Systems Interconnection— Transport service definition

ISO		AS	
8326	Information processing systems— Open Systems Interconnection — Basic connection oriented session service definition	3591	Information processing systems— Open Systems Interconnection— Basic connection oriented session service definition
8327	Information processing systems— Open Systems Interconnection — Basic connection oriented session protocol specification	3592	Information processing systems— Open Systems Interconnection— Basic connection oriented session protocol specification
8509	Information processing systems— Open Systems Interconnection — Service conventions	3620	Information processing systems— Open Systems Interconnection— Service conventions
8822	Information processing systems— Open Systems Interconnection — Connection oriented presentation service definition	3615	Information processing systems— Open Systems Interconnection— Connection oriented presentation service definition
8823	Information processing systems— Open Systems Interconnection — Connection oriented presentation protocol specification	3616	Information processing systems— Open Systems Interconnection— Connection oriented presentation protocol specification
ISO/IEC		AS/NZS	
8073	Information technology— Telecommunications and information exchange between systems—Open Systems Interconnection—Protocol for providing the connection-mode transport service	2912	Information technology— Telecommunications and information exchange between systems—Open Systems Interconnection—Protocol for providing the connection-mode transport service
ITU-T			
Rec.R 35	Standardization of FMVFT systems for a modulation rate of 50 bauds	—	
Rec.R 36:	Coexistence of 50-baud/120-Hz channels, 100-baud/240-Hz channels, 200-baud/360-Hz or 480-Hz channels on the same voice-frequency telegraph system	—	
Rec.R 37	Standardization of FMVFT systems for a modulation rate of 100 bauds	—	
Rec.R 38	Standardization of FMVFT systems for a modulation rate of 200 bauds with channels spaced at 480 Hz	—	
Rec.V 11	Electrical characteristics for balanced double-current interchange circuits for general use with integrated circuit equipment in the field of data communications	—	
Rec V 21	300 bits per second duplex modem standardized for use in the general switched telephone network	—	

ITU-T

Rec.V 22	200 bits per second duplex modem standardized for use in the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits	—
Rec.V 23	600/1 200-baud modem standardized for use in the general switched telephone network	—
Rec.V 24	List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE)	—
Rec.V 26	2400 bits per second modem standardized for use on 4-wire leased telephone-type circuits	—
Rec.V 27	4800 bits per second modem with manual equalizer standardized for use on leased telephone-type circuits	—
Rec.V 28	Electrical characteristics for unbalanced double-current interchange circuits	—
Rec.V 29	9600 bits per second modem standardized for use on point-to-point 4-wire leased telephone-type circuits	—
Rec.V 32	A family of 2-wire, duplex modems operating at data signalling rates of up to 9 600 bits/s for use on the general switched telephone network and on leased telephone-type circuits	—
Rec.X 3	Packet assembly/disassembly facility (PAD) in a public data network	—
Rec.X 20	Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for start-stop transmission services on public data networks	—
Rec.X 21	Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for synchronous operation on public data networks	—

ITU-T

Rec.X 21bis	Use on public data networks of data terminal equipment (DTE) which is designed for interfacing to asynchronous duplex V-series modems	—
Rec.X 22	Multiplex DTE/DCE interface for user classes 3-6	—
Rec.X 24	List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) on public data networks	—
Rec.X 25	Interface between data terminal equipment (DTE) and data circuit-terminating (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit	—
Rec.X 28	DTE/DCE interface for a start-stop mode data terminal equipment accessing the packet assembly/disassembly facility (PAD) in a public data network situated in the same country	—
Rec.X 29	Procedures for the exchange of control information and user data between a packet assembly/dis-assembly facility (PAD) and a packed mode DTE or another PAD	—

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NOTES

AUSTRALIAN STANDARD

Telecontrol equipment and systems

Part 1.4:

General considerations—Basic aspects of telecontrol data transmission and organization of Standards IEC 60870-5 and IEC 60870-6

1 Scope and object

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

This report is intended as a brief tutorial on transmission techniques, equipment and protocols in view of their use in telecontrol systems. It is thus intended as a guide to orient those using the standards defined in the series of IEC 870-5 and IEC 870-6. More precisely, it gives a frame of reference for evaluating solutions as well as defining and describing the key technical terms. Terms that are defined in IEC 50(371) and in IEC 870-1-3 are complemented by further definitions in clause 3 of this report.

It further provides:

- descriptions of applicable basic communication technologies;
- basic rules as to how different system layers (see clause 3) can be used together (i.e. which combinations of standards in different layers are technically coherent and which are not).

It is not intended to recommend or impose solutions, this being the role of IEC 870-5 and IEC 870-6.

2 Reference documents

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

IEC 50(721): 1991, *International Electrotechnical Vocabulary (IEV) – Chapter 721: Telegraphy, facsimile and data communication*

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

IEC 870-1-2:1989, *Telecontrol equipment and systems – Part 1: General considerations – Section Two: Guide for specifications*

IEC 870-1-3:1990, *Telecontrol equipment and systems – Part 1: General considerations – Section Three: Glossary*

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