AS 60870.1.1—1998
IEC 60870-1-1:1988

Australian Standard®

Telecontrol equipment and systems

Part 1.1: General considerations—General principles

[IEC title: Telecontrol equipment and systems, Part 1: General considerations, Section One — General principles]

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.

The following interests are represented on Committee IT/24:

Association of Consulting Engineers Australia

AUSTEL

Australasian Railway Association

Australian Electrical and Electronic Manufacturers Association

Australian Fire Authorities Council

Australian Gas Association

Australian Pipeline Industry Association

Australian Security Industry Association

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Electricity Supply Association of Australia

Fire Protection Association of Australia

Institution of Engineers Australia

Telstra Corporation

Water Services Association of Australia

This Standard was issued in draft form for comment as DR 97093.

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First published as AS 60870.1.1—1998.

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

ISBN 0 7337 1616 4

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 60870-1-1:1988, *Telecontrol equipment and systems*, Part 1: *General considerations, Section One—General principles*.

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 an explanation of their structural elements, configurations and basic functions in order to provide an introduction to the more detailed standards of the series to be adopted in 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.

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INTRODUCTION

Telecontrol systems serve for monitoring and control of processes which are geographically widespread. They include all equipment and functions for acquisition, processing, transmission and display of the necessary process information. The performance of a telecontrol system is determined basically by:

1) the data integrity of information transfer, from a source to its destination, and

2) the speed with which information is transferred to its destination.

The data integrity is defined as the unchangeability of an information content from a source to its destination, while the speed of information transfer is measured by the overall transfer time.

The high responsibility which is associated with the transmission of information such as commands and the occurrence of adverse environmental conditions necessitate standards for data acquisition and of data transmission which fulfil stringent requirements of data integrity and transmission efficiency.

It should be noted that although this series of standards has been produced specifically for telecontrol systems used in electrical power systems, they may also be applied to other fields of application, e.g. gas and water supply and distribution, etc.

The aim of these standards is to provide adequate information for correct planning and reliable operation of telecontrol systems. The standards are divided into different parts, listed in Clause 2 of this report.

This part of this series of telecontrol standards is intended to give the user a general survey of the systems and their elements, thus presenting the necessary basic information for a thorough understanding of the following parts of these standards.

AUSTRALIAN STANDARD

Telecontrol equipment and systems

Part 1.1:
General considerations—General principles

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 series of standards describes configurations and functions of telecontrol systems and of related elements. It defines the functional requirements, logical characteristics and interface conditions of the basic elements and the rules those elements shall follow in co-existing with other elements.

These standards do not define the internal physical characteristics of such elements nor the layout, construction or material used.

The following subjects are outside the scope of these standards:

- ripple control systems;
- properties of transmission channels and local bus (highway) systems for communication between process input/output elements;
- teleprotection and locally automated functions even though they may sometimes be implemented within a telecontrol system.

These standards are subdivided into several parts, which are sub-divided into several sections and issued as separate publications bearing the following titles and scopes:

IEC Publication 870-1-1: Part 1: General considerations, Section One - General principles (which constitutes this report)

This report explains the structural elements, configurations and basic functions of telecontrol systems.

It gives an overview of functional elements which contribute to basic structures and possible choice of telecontrol systems configurations.

It deals with functions which are typical for any process to be monitored and controlled but emphasizes the specific problems which characterize geographically widespread processes, such as the dominant influence of telecommunication links with restricted bandwidth and often low signal-to-noise ratio.

However, this report shall only serve as an introduction to the detailed standards and recommendations laid down in Parts 2-5 quoted below.