TECHNICAL REPORT

IEC TR 60870-6-505

Edition 1.1

2006-12

Edition 1:2002 consolidated with amendment 1:2005

Telecontrol equipment and systems –

Part 6-505: Telecontrol protocols compatible with ISO standards and ITU-T recommendations – TASE.2 User guide

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International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE CS

For price, see current catalogue

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TELECONTROL EQUIPMENT AND SYSTEMS –

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FOREWORD

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IEC 60870-6-505, which is a technical report, has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This consolidated version of IEC 60870-6-505 consists of the first edition (2002) [documents 57/548/CDV and 57/580/RVC] and its amendment 1 (2005) [documents 57/663/DTR + 57/730/DTR and 57/695/RVC + 57/737/RVC].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 1.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

A large number of utilities use the Telecontrol Application Service Element.2 (TASE.2), an international standard protocol for communication of real-time data. TASE.2 provides a common means for all utilities to exchange data between not only control centers, but power plants and substations as well. The adoption of TASE.2 has lead to the availability of competitively priced data communication products based on TASE.2 from multiple vendors at a fraction of the cost of a proprietary system. This report provides guidance for utility users who are evaluating, procuring, and configuring TASE.2, as well as aid to vendors implementing TASE.2 in their products. The individual server and data objects comprising TASE.2 are described, with cross references to the specification. This provides the reader the basic understanding needed to use the TASE.2 specifications in an informed manner. The guide then addresses practical issues that arise in connection with TASE.2 use.

TELECONTROL EQUIPMENT AND SYSTEMS –

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1 Scope

This technical report provides a set of guidelines on the use of the following TASE.2 international standards:

IEC 60870-6-503

IEC 60870-6-702

IEC 60870-6-802

These standards specify a method of exchanging time-critical control center data through wide- and local-area networks using a full ISO compliant protocol stack. They contain provisions for supporting both centralized and distributed architectures. These standards include the exchange of real-time indications, control operations, time series data, scheduling and accounting information, unstructured ASCII or binary files, remote program control, and event notification.

However, the style of the TASE.2 standards may make them somewhat difficult to read for someone either not familiar with the precise syntax of the language used to describe the protocol or with all the background leading up to the development of these specifications. Furthermore, certain types of information that may be very useful to a user of TASE.2 but not necessary for specifying the protocol or services provided by TASE.2 have been omitted. Thus the need for this User Guide.

1.1 Intended users

This User Guide is intended for a broad audience of readers from an end user trying to decide if TASE.2 is appropriate for their data transfer needs to a vendor planning to implement TASE.2, with the goal of offering a TASE.2 product. In particular, this guide should be helpful to the following:

- An end user, such as an electric utility, with the need to transfer real-time data to another utility or utilities or to another internal control center, who is trying to evaluate which protocol is the most appropriate.
- An end user who has already decided to use TASE.2 and now needs guidance in how to procure TASE.2.
- An end user who has procured TASE.2 and is now concerned about how to map their actual data into TASE.2 data objects exactly.
- An end user who is looking for conventions and answers to practical questions regarding configuring TASE.2 software and networks.
- A vendor with a project to implement the TASE.2 specification either as a special project or to offer a standard product.

1.2 Organization

This guide first introduces the background and concepts of TASE.2 to provide a framework for understanding the TASE.2 specification. Then the individual server and data objects comprising TASE.2 are described with cross references into the specification. At this point, (i.e., Clauses 1-8) the reader should have all the necessary basic understanding to use the TASE.2 specifications intelligently. The remainder of the guide (Clauses 9-20) address practical issues that arise in connection with the use of TASE.2.

1.3 TASE.2 Version

This edition of the TASE.2 User Guide was prepared using the Second Edition of the TASE.2 standards, which at the time of the preparation of this report was the 2000 edition.

2 Reference documents

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60870-5-101:1995, *Telecontrol equipment and systems – Part 5: Transmission protocols - Section 101: Companion standard for basic telecontrol tasks*

IEC 60870-6-503:2002, *Telecontrol equipment and systems – Part 6-503: Telecontrol protocols compatible with ISO standards and ITU-T recommendations – TASE.2 Services and protocol*

IEC 60870-6-702:1998, *Telecontrol equipment and systems – Part 6-702: Telecontrol protocols compatible which ISO standards and ITU-T recommendations – Functional profile for providing the TASE.2 application service in end systems*

IEC 60870-6-802:2002, *Telecontrol equipment and systems – Part 6-802: Telecontrol protocols compatible with ISO standards and ITU-T recommendations – TASE.2 Object models*

ISO/IEC 8802-2:1998, *Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 2: Logical link control*

ISO/IEC 9506 (all parts), *Industrial automation systems – Manufacturing message specification*