

# INTERNATIONAL STANDARD

# IEC 60870-6-802

Edition 2.1

2005-09

Edition 2:2002 consolidated with amendment 1:2005

## Telecontrol equipment and systems –

### Part 6-802:

### Telecontrol protocols compatible with ISO standards and ITU-T recommendations – TASE.2 Object models

© IEC 2005 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland  
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: [inmail@iec.ch](mailto:inmail@iec.ch) Web: [www.iec.ch](http://www.iec.ch)



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

PRICE CODE **CS**

*For price, see current catalogue*

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references.....	7
3 Definitions.....	7
4 Abbreviations.....	7
5 Object models.....	8
5.1 Supervisory Control and Data Acquisition.....	8
5.1.1 IndicationPoint Object.....	8
5.1.2 ControlPoint Object.....	11
5.1.3 Protection Equipment Event Object Model.....	12
5.2 Transfer Accounts.....	15
5.2.1 TransferAccount Object.....	15
5.2.2 TransmissionSegment Object.....	18
5.2.3 ProfileValue Object.....	19
5.2.4 AccountRequest Object.....	20
5.3 Device Outage Object.....	21
5.4 InformationBuffer Object.....	23
5.5 Power Plant Objects.....	24
5.5.1 Availability Report Object.....	24
5.5.2 Real Time Status Object.....	27
5.5.3 Forecast Schedule Object.....	30
5.5.4 Curve Object.....	31
5.5.5 Power System Dynamics Objects.....	32
5.6 General Data Report Object.....	32
5.6.1 Abstract Object Model.....	32
5.7 General Data Response Object.....	35
5.7.1 Abstract Object Model.....	35
6 MMS Types for Object Exchange.....	36
6.1 Supervisory Control and Data Acquisition Types.....	36
6.1.1 IndicationPoint Type Descriptions.....	36
6.1.2 ControlPoint Type Descriptions.....	39
6.1.3 Protection Equipment Type Descriptions.....	40
6.2 Transfer Account Types.....	41
6.2.1 TransferAccount Type Descriptions.....	41
6.2.2 TransmissionSegment Type Descriptions.....	42
6.2.3 Transmission Segment Type Descriptions.....	43
6.2.4 ProfileValue Type Descriptions.....	43
6.2.5 Account Request Type Descriptions.....	43
6.3 Device Outage Type Descriptions.....	43
6.4 InformationBuffer Type Descriptions.....	45

6.5	Power Plant Type Descriptions .....	45
6.5.1	Availability Report Type Descriptions.....	46
6.5.2	Real Time Status Type Descriptions.....	47
6.5.3	Forecast Type Descriptions.....	47
6.5.4	Curve Type Descriptions .....	48
6.6	Power System Dynamics.....	48
6.7	Matrix Data Types.....	48
6.8	GeneralDataReport Type Descriptions .....	50
6.9	GeneralDataResponse Type Descriptions .....	50
7	Mapping of Object Models to MMS Types.....	51
7.1	Supervisory Control and Data Mapping .....	51
7.1.1	Indication Object Mapping.....	51
7.1.2	ControlPoint Object Mapping.....	52
7.1.3	Protection Event Mapping .....	54
7.2	Transfer Accounts Mapping .....	56
7.2.1	TransferAccount Mapping .....	56
7.2.2	TransmissionSegment Mapping .....	60
7.2.3	ProfileValue Mapping .....	62
7.2.4	AccountRequest Mapping .....	63
7.3	Device Outage Mapping.....	63
7.4	Information Buffer Mapping.....	65
7.5	Power Plant Mapping .....	65
7.5.1	Availability Report Mapping.....	65
7.5.2	Real Time Status Mapping .....	68
7.5.3	Forecast Mapping .....	70
7.5.4	Curve Mapping .....	71
7.6	General Data Report Mapping.....	72
7.7	General Data Response Mapping.....	76
8	Use of Supervisory Control Objects.....	76
8.1	Use of IndicationPoint Model.....	77
8.2	Use of ControlPoint Model .....	77
9	Conformance.....	78
	Annex A (informative) Transfer account examples.....	79
	Annex B (normative) Supplemental object models .....	83

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### TELECONTROL EQUIPMENT AND SYSTEMS –

#### **Part 6-802: Telecontrol protocols compatible with ISO standards and ITU-T recommendations – TASE.2 Object models**

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60870-6-802 has been prepared by IEC technical committee 57: Power system control and associated communications.

This consolidated version of IEC 60870-6-802 consists of the second edition (2002) [documents 57/575/FDIS and 57/583/RVD] and its amendment 1 (2005) [documents 57/740/FDIS and 57/745/RVD].

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 2.1.

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

Annex A is for information only.

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

The primary purpose of Telecontrol Application Service Element (TASE.2) is to transfer data between control systems and to initiate control actions. Data is represented by object instances. This part of IEC 60870 proposes object models from which to define object instances. The object models represent objects for transfer. The local system may not maintain a copy of every attribute of an object instance.

The object models presented herein are specific to "control centre" or "utility" operations and applications; objects required to implement the TASE.2 protocol and services are found in IEC 60870-6-503. Since needs will vary, the object models presented here provide only a base; extensions or additional models may be necessary for two systems to exchange data not defined within this standard.

It is by definition that the attribute values (i.e. data) are managed by the owner (i.e. source) of an object instance. The method of acquiring the values are implementation dependent; therefore accuracy is a local matter.

The notation of the object modelling used for the objects specified in clause 5 is defined in IEC 60870-6-503. It should be noted that this part of IEC 60870 is based on the TASE.2 services and protocol. To understand the modelling and semantics of this standard, some basic knowledge of IEC 60870-6-503 is recommended.

Clause 5 describes the control centre-specific object models and their application. They are intended to provide information to explain the function of the data.

Clause 6 defines a set of MMS type descriptions for use in exchanging the values of instances of the defined object models. It is important to note that not all attributes of the object models are mapped to types. Some attributes are described simply to define the processing required by the owner of the data and are never exchanged between control centres. Other attributes are used to determine the specific types of MMS variables used for the mapping, and therefore do not appear as exchanged values themselves. A single object model may also be mapped onto several distinct MMS variables, based on the type of access and the TASE.2 services required.

Clause 7 describes the mapping of instances of each object type MMS variables and named variable lists for implementing the exchange.

Clause 8 describes device-specific codes and semantics to be used with the general objects.

An informative annex is included which describes some typical interchange scheduling scenarios, along with the use of TASE.2 objects to implement the schedule exchange.

## TELECONTROL EQUIPMENT AND SYSTEMS –

### Part 6-802: Telecontrol protocols compatible with ISO standards and ITU-T recommendations – TASE.2 Object models

#### 1 Scope

This part of IEC 60870 specifies a method of exchanging time-critical control centre data through wide-area and local-area networks using a full ISO compliant protocol stack. It contains provisions for supporting both centralized and distributed architectures. The standard includes the exchange of real-time data indications, control operations, time series data, scheduling and accounting information, remote program control and event notification.

#### 2 Normative references

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: Telecontrol protocols compatible with ISO standards and ITU-T recommendations – Section 503: TASE.2 Services and protocol*

ISO 9506-1:2000, *Industrial automation systems – Manufacturing message specification – Part 1: Service definition*

ISO 9506-2:2000, *Industrial automation systems – Manufacturing message specification – Part 2: Protocol specification*