![SIST logo]

SLOVENSKI STANDARD
SIST EN 60870-6-802:2014

01-december-2014

Nadomešča:
SIST EN 60870-6-802:2004
SIST EN 60870-6-802:2004/A1:2005

Oprema in sistemi za daljinsko vodenje - 6-802. del: Protokoli daljinskega vodenja, združljivi s standardi ISO in priporočili ITU-T - Objektni modeli TASE.2 (IEC 60870-6-802:201)

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: EN 60870-6-802:2014

ICS:

33.200	Daljinsko krmiljenje, daljinske meritve (telemetrija)	Telecontrol. Telemetering

SIST EN 60870-6-802:2014   **en**

iTeh STANDARD PREVIEW

(standards.iteh.ai)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60870-6-802

October 2014

ICS 33.200

Supersedes EN 60870-6-802:2002

English Version

Telecontrol equipment and systems - Part 6-802: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - TASE.2 Object models (IEC 60870-6-802:2014)

Matériels et systèmes de téléconduite - Partie 6-802:
Protocoles de téléconduite compatibles avec les normes
ISO et les recommandations de l'UIT-T - Modèles d'objets
TASE.2
(CEI 60870-6-802:2014)

Fernwirkeinrichtungen und -systeme - Teil 6-802:
Fernwirkprotokolle, die mit ISO-Normen und ITU-T-
Empfehlungen kompatibel sind - TASE.2-Objektmodelle
(IEC 60870-6-802:2014)

This European Standard was approved by CENELEC on 2014-08-19. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 60870-6-802:2014 E

Foreword

The text of document 57/1455/FDIS, future edition 3 of IEC 60870-6-802, prepared by IEC/TC 57 "Power systems management and associated information exchange" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60870-6-802:2014.

The following dates are fixed:

– latest date by which the document has to be implemented at   (dop)   2015-05-19
  national level by publication of an identical national
  standard or by endorsement

– latest date by which the national standards conflicting with   (dow)   2017-08-19
  the document have to be withdrawn

This document supersedes EN 60870-6-802:2002.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Endorsement notice

The text of the International Standard IEC 60870-6-802:2014 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications
with their corresponding European publications

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

NOTE 1   When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2   Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60870-5-101	2003	Telecontrol equipment and systems - Part 5-101: Transmission protocols - Companion standard for basic telecontrol tasks	EN 60870-5-101	2003
IEC 60870-6-503	2014	Telecontrol equipment and systems - Part 6-503: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - TASE.2 Services and protocol	EN 60870-6-503	2014
ISO 9506-1	2003	Industrial automation systems - Manufacturing Message Specification - Part 1: Service definition	-	-
ISO 9506-2	2003	Industrial automation systems - Manufacturing Message Specification - Part 2: Protocol specification	-	-

iTeh STANDARD PREVIEW
(standards.iteh.ai)

IEC 60870-6-802

Edition 3.0   2014-07

INTERNATIONAL
STANDARD

NORME
INTERNATIONALE

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

Matériels et systèmes de téléconduite –
Partie 6-802: Protocoles de téléconduite compatibles avec les normes ISO
et les recommandations de l'UIT-T – Modèles d'objets TASE.2

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX **XD**

ICS 33.200

ISBN 978-2-8322-1652-1

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

® Registered trademark of the International Electrotechnical Commission
  Marque déposée de la Commission Electrotechnique Internationale

CONTENTS

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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.

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 systems management and associated information exchange.

This third edition cancels and replaces the second edition published in 2002 and its amendment 1 (2005). This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Accounts, Programs, Event Enrollment and Event Condition objects have been changed from informative to normative. As a result, the conformance tables have been updated.

b) The services associated with Accounts, Programs, Event Enrollment and Event Conditions are now out of scope.

c) The TASE.2 conformance blocks 6, 7, 8 and 9 have been made out of scope.

d) The MMS Mappings for Accounts, Programs, Event Enrollment and Event Condition objects have been changed from normative to informative.

The text of this standard is based on the following documents:

FDIS	Report on voting
57/1455/FDIS	57/1479/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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

A list of all parts in the IEC 60870 series, published under the general title *Telecontrol equipment and systems*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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 is 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. 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 would be advisable.

The notation of the object modelling used for the objects specified in Clause B.2 is defined in IEC 60870-6-503. This part of IEC 60870-6 is based on the TASE.2 services and protocol. To understand the modelling and semantics of this part of IEC 60870-6, some basic knowledge of IEC 60870-6-503 would be advisable.

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.

Clause 9 is the standards conformance table.

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

IEC 60870-6-802:2014 © IEC 2014   – 7 –

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 documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60870-5-101:2003, *Telecontrol equipment and systems – Part 5-101: Transmission protocols – Companion standard for basic telecontrol tasks*

IEC 60870-6-503:2014, *Telecontrol equipment and systems – Part 6-503: Telecontrol protocols compatible with ISO standards and ITU-T recommendations – TASE.2 Services and protocol*

ISO 9506-1:2003, *Industrial automation systems – Manufacturing Message Specification – Part 1: Service definition*

ISO 9506-2:2003, *Industrial automation systems – Manufacturing Message Specification – Part 2: Protocol specification*

3 Terms and definitions

For the purposes of this part of IEC 60870, the terms and definitions in the above referenced standards apply.

4 Abbreviations

For the purposes of this part of IEC 60870, all the abbreviations defined in the above referenced standards apply.

5 Object models

5.1 General

Object models are required for various functions within a system. Clause 5 delineates abstract object models based on functionality. Object models within one functional area may be used in another functional area.

5.2   Supervisory Control and Data Acquisition

5.2.1   General

The object models in this clause are derived from the historical perspective of Supervisory Control and Data Acquisition (SCADA) systems. This subclause presents the context within which the object models are defined.

Fundamental to SCADA systems are two key functions: control and indication. The control function is associated with the output of data whereas the indication function is associated with the input of data. A more recent concept that is finding usage is the control and indication function where data output may also be input (i.e. bi-directional).

The previous identified functions within SCADA systems are mapped to point equipment (point). The primary attribute of a point is the data value. SCADA systems define three types of data for points: analog, digital and state.

The association of one or more points together is used to represent devices. For example, a breaker device may be represented by a control point and an indication point. The control point represents the new state that one desires for the breaker device. The indication point represents the current state of the breaker device. For SCADA to SCADA data exchange (e.g. control centre to control centre, control centre to SCADA master, etc.), additional data is often associated with point data. Quality of point data is often exchanged to defined whether the data is valid or not. In addition, for data that may be updated from alternate sources, quality often identifies the alternate source. Select-Before-Operate control is associated with Control Points for momentary inhibiting access except from one source. Two other informative data values are: time stamp and change of value counter. The time stamp, when available, details when a data value last changed. The change of value counter, when available, details the number of changes to the value.

From the context presented, the primary object models required are: Indication Point, and Control Point. The attributes Point Value, Quality, Select-Before-Operate, Time Stamp, and Change of Value Counter are required to meet the desired functionality for data exchange. The Indication Point and Control Point models may be logically combined to a single model to represent a device which implements a control function with a status indication as to its success/failure. The combined logical model will result in the same logical attributes, and map onto the same MMS types as the independent models.

5.2.2   IndicationPoint object

An IndicationPoint object represents an actual input point.

Object: **IndicationPoint** (Read Only)
    Key Attribute: PointName
    Attribute: PointType (REAL, STATE, DISCRETE, STATESUPPLEMENTAL)
    Constraint PointType=REAL
        Attribute: PointRealValue
    Constraint PointType=STATE
        Attribute:PointStateValue
    Constraint PointType=DISCRETE
        Attribute: PointDiscreteValue
    Constraint PointType= STATESUPPLEMENTAL
        Attribute:PointStateSupplementalValue
    Attribute: QualityClass: (QUALITY, NOQUALITY)
    Constraint: QualityClass = QUALITY
        Attribute: Validity (VALID, HELD, SUSPECT, NOTVALID)
        Attribute: CurrentSource (TELEMETERED, CALCULATED, ENTERED, ESTIMATED)

      Attribute: NormalSource (TELEMETERED, CALCULATED, ENTERED, ESTIMATED)

      Attribute: NormalValue (NORMAL,ABNORMAL)

    Attribute: TimeStampClass: (TIMESTAMP, TIMESTAMPEXTENDED, NOTIMESTAMP)

    Constraint: TimeStampClass = TIMESTAMP

      Attribute: TimeStamp

      Attribute: TimeStampQuality: (VALID, INVALID)

    Constraint: TimeStampClass = TIMESTAMPEXTENDED

      Attribute: TimeStampExtended

      Attribute: TimeStampQuality: (VALID, INVALID)

    Attribute: COVClass: (COV, NOCOV)

    Constraint: COVClass = COV

      Attribute: COVCounter

PointName

The PointName attribute uniquely identifies the object.

PointType

The PointType attribute identifies the type of input point, and must be one of the following: REAL, STATE, DISCRETE, STATESUPPLEMENTAL.

PointRealValue

The current value of the IndicationPoint, if the PointType attribute is REAL.

PointStateValue

The current value of the IndicationPoint, if the PointType attribute is STATE.

PointDiscreteValue

The current value of the IndicationPoint, if the PointType attribute is DISCRETE.

PointStateSupplementalValue

The current value of the IndicationPoint, if the PointType attribute is STATESUPPLEMENTAL.

A PointStateSupplementalValue shall have the ability to indicate the current value (State), tagging information (Tag), and the expected value/state (ExpectedState). If the ExpectedState value does not match the State value, this indicates that the provider of the ExpectedState value is indicating a potential issue.

QualityClass

The QualityClass has the value QUALITY if the object instance has any of the quality attributes (Validity, CurrentSource, or NormalValue), and takes the value NOQUALITY if none of the attributes are present.

Validity

The Validity attribute specifies the validity or quality of the PointValue data it is associated with. These are based on the source system's interpretation as follows: