SLOVENSKI

STANDARD

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

Oprema in sistemi za daljinsko vodenje – 6-802. del: Protokoli daljinskega vodenja, ki so združljivi s standardi ISO in priporočili ITU-T – Objektni modeli TASE.2 (IEC 60870-6-802:2002/A1:2005)

Telecontrol equipment and systems - Part 6-802: Telecontrol protocols compatible with ISO standards and ITU-T recommendations - TASE.2 Object models (IEC 60870-6-802:2002/A1:2005)

ICS   33.200

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60870-6-802/A1

April 2005

ICS 33.200

English version

Telecontrol equipment and systems
Part 6-802: Telecontrol protocols compatible with ISO standards and ITU-T recommendations – TASE.2 Object models
(IEC 60870-6-802:2002/A1:2005)

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 60870-6-802:2002/A1:2005)

Fernwirkeinrichtungen und -systeme
Teil 6-802: Fernwirkprotokolle, die mit
ISO-Normen und ITU T-Empfehlungen
kompatibel sind –
TASE.2-Objektmodelle
(IEC 60870-6-802:2002/A1:2005)

This amendment A1 modifies the European Standard EN 60870-6-802:2002; it was approved by CENELEC on 2005-04-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 Central Secretariat or to any CENELEC member.

This amendment 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 Central Secretariat has the same status as the official versions.

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

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60870-6-802:2002/A1:2005 E

Foreword

The text of document 57/740/FDIS, future amendment 1 to IEC 60870-6-802:2002, prepared by IEC TC 57, Power systems management and associated information exchange, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60870-6-802:2002 on 2005-04-01.

The following dates were fixed:

– latest date by which the amendment has to be implemented
  at national level by publication of an identical
  national standard or by endorsement   (dop) 2006-01-01

– latest date by which the national standards conflicting
  with the amendment have to be withdrawn   (dow) 2008-04-01

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Endorsement notice

The text of amendment 1:2005 to the International Standard IEC 60870-6-802:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

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INTERNATIONAL STANDARD

IEC
60870-6-802

2002

AMENDMENT 1
2005-03

Amendment 1

Telecontrol equipment and systems –

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

PRICE CODE **N**

For price, see current catalogue

FOREWORD

This amendment has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

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

FDIS	Report on voting
57/740/FDIS	57/745/RVD

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

The committee has decided that the contents of this amendment and the base publication 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.

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Add, at the end of Annex A, the following new Annex:

Annex B
(normative)

Supplemental object models

B.1   General

This annex expands the number of data objects modelled by TASE.2. It is designed to follow the existing IEC 60870-6-802 document format. This will allow easy integration into the primary document during a maintenance release.

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 60870-6 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 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 B.2 is defined in IEC 60870-6-503. It should be noted that 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 is recommended.

Clause B.2 describes the control centre-specific object models and their application. They are intended to provide information to explain the function of the data.

Clause B.3 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 B.4 describes the mapping of instances of each object type MMS variables and named variable lists for implementing the exchange.

Clause B.5 describes device-specific codes and semantics to be used with the general objects.

Clause B.6 is the standards conformance table.

B.2   Object Models (see clause 5 of this part of IEC 60870-6)

B.2.1   General

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

B.2.2   Supervisory control and data acquisition

The object models in this Clause are derived from the historical perspective of Supervisory Control and Data Acquisition (SCADA) systems. The following text 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.

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 define 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.

B.2.3   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.

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:

Validity	Description
VALID	Data value is valid
HELD	Previous data value has been held over. Interpretation is local
SUSPECT	Data value is questionable. Interpretation is local
NOTVALID	Data value is not valid

CurrentSource
The CurrentSource attribute specifies the current source of the PointValue data it is associated with as follows:

CurrentSource	Description
TELEMETERED	The data value was received from a telemetered site
CALCULATED	The data value was calculated based on other data values
ENTERED	The data value was entered manually
ESTIMATED	The data value was estimated (State Estimator, etc.)

NormalSource
The NormalSource attribute specifies the normal source of the PointValue data it is associated with as follows:

NormalSource	Description
TELEMETERED	The data value is normally received from a telemetered site
CALCULATED	The data value is normally calculated based on other data values
ENTERED	The data value is normally entered manually
ESTIMATED	The data value is normally estimated (State Estimator, etc.)