SLOVENSKI STANDARD
SIST EN 60870-5-101:2004/A1:2016

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Oprema in sistemi za daljinsko vodenje - 5-101. del: Protokoli prenosa - Spremljevalni standardi za osnovne naloge daljinskega vodenja - Dopolnilo A1

Telecontrol equipment and systems - Part 5-101: Transmission protocols - Companion standard for basic telecontrol tasks

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ICS:

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

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60870-5-101:2003/A1

March 2016

ICS 33.200

English Version

Telecontrol equipment and systems - Part 5-101: Transmission protocols - Companion standard for basic telecontrol tasks (IEC 60870-5-101:2003/A1:2015)

Matériels et systèmes de téléconduite - Partie 5-101: Protocoles de transmission - Norme d'accompagnement pour les tâches élémentaires de téléconduite (IEC 60870-5-101:2003/A1:2015)

Fernwirkeinrichtungen und -systeme - Teil 5-101: Übertragungsprotokolle - Anwendungsbezogene Norm für grundlegende Fernwirkaufgaben (IEC 60870-5-101:2003/A1:2015)

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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.

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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

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EN 60870-5-101:2003/A1:2016

European foreword

The text of document 57/1530/CDV, future IEC 60870-5-101:2003/A1, prepared by IEC/TC 57 "Power system control and associated information exchange" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60870-5-101:2003/A1:2016.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2016-09-30
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2018-12-31

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The text of the International Standard IEC 60870-5-101:2003/A1:2015 was approved by CENELEC as a European Standard without any modification.

IEC 60870-5-101

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

Telecontrol equipment and systems –
Part 5-101: Transmission protocols – Companion standard for basic telecontrol tasks

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Partie 5-101: Protocoles de transmission – Norme d'accompagnement pour les tâches élémentaires de téléconduite

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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:

CDV	Report on voting
57/1530/CDV	57/1592/RVC

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 publication will remain unchanged until the stability date indicated on the IEC website 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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4.3 Link layer

Replace the first sentence of the first paragraph of 4.3 with the following new text:

IEC 60870-5-2 defines a set of link transmission procedures using a control field and the optional address field.

Replace the last sentence of the 5ᵗʰ paragraph of 4.3 with the following new text:

In addition a companion standard specifies the time-out interval (T_o) of the primary station (see A.1 of IEC 60870-5-2 for details of link timing).

Figure 5 – State transition diagram for unbalanced transmission primary to secondary

Replace (twice) in Figure 5 the phrase "Rx[error]/ and Trp not time out"

by the following new phrase:

"Rx[error and Trp not time out]"

Replace (twice) in Figure 5 the phrase "Rx[error]/Trp not time out/"

by the following new phrase:

"Rx[error and Trp not time out]"

Add, after Figure 6, the following new subclause heading:

6.2.1.2 Balanced transmission procedures

Replace the first sentence of the first paragraph of 6.2.1.2 by the following new text:

The request to the standardized function codes in primary direction (0 up to 3 and 9) have to receive positive or negative responses.

7.1 Selections from IEC 60870-5-3: General structure of application data

Add at the end of the 3ʳᵈ paragraph of 7.1, the following new text:

ASDU's containing no INFORMATION OBJECT are permitted too.
Additionally: In some cases the ASDU consist of the DATA UNIT IDENTIFIER only.

Replace the second sentence of the 6ᵗʰ paragraph of 7.1 by the following new text:

The COMMON ADDRESS is the station address, which permits the addressing of the whole station or just a particular station sector.

7.2 Selections from IEC 60870-5-4: Definitions and coding of application information elements

Add, at the end of 7.2, the following new text:

Mode 1 (least significant octet first), as defined in 4.10 of IEC 60870-5-4, is used exclusively in this companion standard.

Table 9 – Semantics of TYPE IDENTIFICATION – Process information in control direction

Replace the existing Note below Table 9 with the following new Note:

NOTE   ASDUs marked (**CON)** in control direction are confirmed application services and have to be mirrored in monitor direction with different causes of transmission. These mirrored ASDUs are used for positive/negative acknowledgements (verifications). The causes of transmission are defined in 7.2.3.

Table 13 – Semantics of TYPE IDENTIFICATION – File transfer

Replace the existing Note below Table with the following new Note:

NOTE   ASDUs marked (**CON)** in control direction are confirmed application services and have to be mirrored in monitor direction with different causes of transmission. These mirrored ASDUs are used for positive/negative acknowledgements (verifications). The causes of transmission are defined in 7.2.3.

7.2.3   Cause of transmission:

Replace the first sentence of the first paragraph of 7.2.3 with the following new text:

Octet 3 (and optionally Octet 4) of the DATA UNIT IDENTIFIER of the ASDU defines the CAUSE OF TRANSMISSION field which is specified in the following.

7.2.3   Cause of transmission

Replace the subheading after Figure 14 with the following new numbered subheading:

7.2.3.1   Definition of the semantics of values of the CAUSE OF TRANSMISSION field

Replace the 6th paragraph of 7.2.3.1 with the following new text:

ASDUs marked (**CON)** in control direction are confirmed application services and shall be mirrored in monitor direction with different CAUSES OF TRANSMISSION (see Tables 9, 11 and 12). The originator address directs these mirrored ASDUs and interrogated ASDUs in monitor direction (e.g. interrogated by station interrogation) to the source that activated the procedure.

Replace the 13th paragraph of 7.2.3.1 with the following new text:

ASDUs in the control direction and ASDUs defined for monitor direction used in reverse mode (see clause 8. Interoperability) with not supported values in the data unit identifier (except the variable structure qualifier) and the information object address are mirrored by the controlled station with bit "P/N:= <1> negative confirm" and the following causes of transmission:

7.2.4   COMMON ADDRESS OF ASDUs:

Replace the first sentence of the first paragraph of 7.2.4 with the following new text:

Octet 4 and optionally Octet 5 (or – if the originator address is used – Octet 5 and optionally Octet 6) of the DATA UNIT IDENTIFIER of the ASDU define the station address which is specified in the following.

7.2.6.18   Seven octet binary time

Replace the paragraph beginning "The summer-time bit SU …" with the following new text:

The summer-time bit SU may optionally be used, but is not recommended. A time tag having the SU flag set will indicate the same time value as time tag having the SU flag clear and indicating a time value exactly one hour earlier. The use of the SU-Bit may be useful to assign

the correct hour to information objects which are generated during the first hour after switching from summer-time to standard time.

7.2.6.21 Cause of initialization

Replace

COI   := CP8{UI7[1..7],BS1[8]}   (Type 1.1)
UI7[1..7]<0..127>

with the following new text:

COI   := CP8{UI7[1..7],BS1[8]}
UI7[1..7]<0..127>   (Type 1.1)

7.2.6.38 Status of file

Replace

SOF   :=   CP8{STATUS,LFD,FOR,FA}
STATUS   :=   UI5[1..5]<0..32>   (Type 1.1)
             <0> :=   default
             <1..15> := reserved for standard definitions of this companion standard
                         (compatible range)
             <16..32>:= reserved for special use (private range)

with the following new text:

SOF   :=   CP8{STATUS,LFD,FOR,FA}
STATUS   :=   UI5[1..5]<0..31>   (Type 1.1)
             <0> :=   default
             <1..15> := reserved for standard definitions of this companion standard
                         (compatible range)
             <16..31>:= reserved for special use (private range)

7.3.1.20 TYPE IDENT 20: M_PS_NA_1
Packed single-point information with status change detection

Add, at the end of 7.3.1.20, the following new Note:

NOTE   OV within the QDS is not used in this Information Object and is always set to <0>.

Figure 50 – ASDU: M_PS_NA_1 Sequence of packed single-point information with status change detection

Replace the description of Status change detection in Information Object j in Figure 50 with the following new text:

SCD = Status + status change detection, 32 bit, defined in 7.2.6.40
Belongs to information object address A+16*(j-1)

7.3.4.2   TYPE IDENT 101:C_CI_NS_1
Counter interrogation command

Replace the following existing text:

CAUSE OF TRANSMISSION

in control direction: