

Telecontrol equipment and systems —

Part 5-104: Transmission protocols —
Network access for IEC 60870-5-101
using standard transport profiles
(IEC 60870-5-104:2006)

ICS 33.200

National foreword

This British Standard is the UK implementation of EN 60870-5-104:2006+A1:2016. It is identical to IEC 60870-5-104:2006, incorporating amendment 1:2016. It supersedes BS EN 60870-5-104:2006 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by **A1** ~~A1~~.

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A list of organizations represented on this committee can be obtained on request to its secretary.

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(IEC 60870-5-104:2006)**

Matériels et systèmes de téléconduite
Partie 5-104: Protocoles de transmission -
Accès aux réseaux utilisant
des profils de transport normalisés
pour la CEI 60870-5-101
(CEI 60870-5-104:2006)

Fernwirkeinrichtungen und -systeme
Teil 5-104: Übertragungsprotokolle -
Zugriff für IEC 60870-5-101 auf Netze
mit genormten Transportprofilen
(IEC 60870-5-104:2006)

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CENELEC

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

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Foreword

The text of document 57/812/FDIS, future edition 2 of IEC 60870-5-104, 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 EN 60870-5-104 on 2006-09-01.

This European Standard supersedes EN 60870-5-104:2001.

The main changes with respect to EN 60870-5-104:2001 are as follows: improvement of the sequences and interoperability of the protocol and addition of new functions for the handling of redundant connections.

The following dates were fixed:

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Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60870-5-104:2006 was approved by CENELEC as a European Standard without any modification.

Foreword to amendment A1

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-11-18

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The text of the International Standard IEC 60870-5-104:2006/A1:2016 was approved by CENELEC as a European Standard without any modification.

CONTENTS

INTRODUCTION.....	6
1 Scope and object.....	7
2 Normative references	7
3 General architecture	8
4 Protocol structure	10
5 Definition of Application Protocol Control Information (APCI)	11
5.1 Protection against loss and duplication of messages	14
5.2 Test procedures	16
5.3 Transmission control using Start/Stop	18
5.4 Portnumber	22
5.5 Maximum number of outstanding I format APDUs (k)	22
6 Selection of ASDUs defined in IEC 60870-5-101 and additional ASDUs	22
7 Mapping of selected application data units and functions to the TCP services	26
7.1 Station initialization (6.1.5 to 6.1.7 of IEC 60870-5-5)	26
7.2 Data acquisition by polling (6.2 of IEC 60870-5-5)	31
7.3 Cyclic data transmission (6.3 of IEC 60870-5-5)	31
7.4 Acquisition of events (6.4 of IEC 60870-5-5).....	31
7.5 General interrogation (6.6 of IEC 60870-5-5).....	31
7.6 Clock synchronization (6.7 of IEC 60870-5-5).....	32
7.7 Command transmission (6.8 of IEC 60870-5-5)	33
7.8 Transmission of integrated totals (6.9 of IEC 60870-5-5)	34
7.9 Parameter loading (6.10 of IEC 60870-5-5)	34
7.10 Test procedure (6.11 of IEC 60870-5-5)	35
7.11 File transfer (6.12 of IEC 60870-5-5) Control and monitor direction.....	35
8 ASDUs for process information in control direction with time tag	36
8.1 TYPE IDENT 58: C_SC_TA_1 Single command with time tag CP56Time2a.....	37
8.2 TYPE IDENT 59: C_DC_TA_1 Double command with time tag CP56Time2a	38
8.3 TYPE IDENT 60: C_RC_TA_1 Regulating step command with time tag CP56Time2a	39
8.4 TYPE IDENT 61: C_SE_TA_1 Set-point command with time tag CP56Time2a, normalized value	40
8.5 TYPE IDENT 62: C_SE_TB_1 Set-point command with time tag CP56Time2a, scaled value	41
8.6 TYPE IDENT 63: C_SE_TC_1 Set-point command with time tag CP56Time2a, short floating point number	42
8.7 TYPE IDENT 64: C_BO_TA_1 Bitstring of 32 bit with time tag CP56Time2a.....	43
8.8 TYPE IDENT 107: C_TS_TA_1 Test command with time tag CP56Time2a	44
8.9 TYPE IDENT 127: F_SC_NB_1 QueryLog – Request archive file	45

9	Interoperability	46
9.1	System or device	46
9.2	Network configuration	46
9.3	Physical layer	47
9.4	Link layer	47
9.5	Application layer	48
9.6	Basic application functions.....	53
10	Redundant connections	57
10.1	General	57
10.2	General requirements	57
10.3	Initialisation of controlling station	59
10.4	Initialisation of controlled station	61
10.5	User data from controlling station.....	63
10.6	User data from controlled station	65
10.7	State transition diagrams	67

Annex ZA (normative) Normative references to international publications with their corresponding European publications.....	70
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Figure 1 – General architecture (example).....	9
Figure 2 – Selected standard provisions of the defined telecontrol companion standard	10
Figure 3 – Selected standard provisions of the TCP/IP protocol suite RFC 2200 (example).....	11
Figure 4 – APDU of the defined telecontrol companion standard	12
Figure 5 – APCI of the defined telecontrol companion standard	12
Figure 6 – Control field of type Information transfer format (I format)	13
Figure 7 – Control field of type numbered supervisory functions (S format)	13
Figure 8 – Control field of type unnumbered control functions (U format).....	13
Figure 9 – Undisturbed sequences of numbered I format APDUs	14
Figure 10 – Undisturbed sequences of numbered I format APDUs acknowledged by an S format APDU	15
Figure 11 – Disturbed sequence of numbered I format APDUs.....	15
Figure 12 – Time-out in case of a not acknowledged last I format APDU	16
Figure 13 – Undisturbed test procedure	17
Figure 14 – Unconfirmed test procedure.....	17
Figure 15 – Start data transfer procedure	18
Figure 16 – Stop data transfer procedure	19
Figure 17 – State transition diagram for Start/Stop procedure (controlled station)	20
Figure 18 – State transition diagram for Start/Stop procedure (controlling station).....	21
Figure 19 – TCP connection establishment and close.....	27
Figure 20 – Initialization of the controlling station	28
Figure 21 – Local initialization of the controlled station.....	29
Figure 22 – Remote initialization of the controlled station	30
Figure 23 – ASDU: C_SC_TA_1 Single command with time tag CP56Time2a.....	37

Figure 24 – ASDU: C_DC_TA_1 Double command with time tag CP56Time2a	38
Figure 25 – ASDU: C_RC_TA_1 Regulating step command with time tag CP56Time2a	39
Figure 26 – ASDU: C_SE_TA_1 Set-point command with time tag CP56Time2a, normalized value	40
Figure 27 – ASDU: C_SE_TB_1 Set-point command with time tag CP56Time2a, scaled value	41
Figure 28 – ASDU: C_SE_TC_1 Set-point command with time tag CP56Time2a, short floating point number	42
Figure 29 – ASDU: C_BO_TA_1 Bitstring of 32 bit with time tag CP56Time2a.....	43
Figure 30 – ASDU: C_TS_TA_1 Test command with time tag CP56Time2a.....	44
Figure 31 – ASDU: F_SC_NB_1 QueryLog – Request archive file.....	45
Figure 32 – Initialisation of controlling station with redundant connections	60
Figure 33 – Initialisation of controlled station with redundant connections.....	62
Figure 34 – Redundant connections – User data from controlling station.....	64
Figure 35 – Redundant connections – User data from controlled station	66
Figure 36 – State transition diagram for redundant connections (controlled station)	68
Figure 37 – State transition diagram for redundant connections (controlling station).....	69
Table 1 – Process information in monitor direction.....	23
Table 2 – Process information in control direction.....	24
Table 3 – System information in monitor direction.....	25
Table 4 – System information in control direction.....	25
Table 5 – Parameter in control direction	25
Table 6 – File transfer.....	25

INTRODUCTION

IEC 60870-5-101 provides a communication profile for sending basic telecontrol messages between a central telecontrol station and telecontrol outstations, which uses permanent directly connected data circuits between the central station and individual outstations.

In some applications, it may be required to send the same types of application messages between telecontrol stations using a data network containing relay stations which store and forward the messages and provide only a virtual circuit between the telecontrol stations. This type of network delays messages by varying amounts of time depending on the network traffic load.

In general, the variable message delay times mean that it is not possible to use the link layer as defined in IEC 60870-5-101 between telecontrol stations. However, in some cases it is possible to connect telecontrol stations having all three layers of the companion standard IEC 60870-5-101 to suitable data networks using Packet Assembler Disassembler (PAD) type stations to provide access for balanced communication.

In all other cases this companion standard, which does not use the link functions of IEC 60870-5-101, may be used to provide balanced access via a suitable transport profile.

TELECONTROL EQUIPMENT AND SYSTEMS –

Part 5-104: Transmission protocols – Network access for IEC 60870-5-101 using standard transport profiles

1 Scope and object

This part of IEC 60870 applies to telecontrol equipment and systems with coded bit serial data transmission for monitoring and controlling geographically widespread processes. It defines a telecontrol companion standard that enables interoperability among compatible telecontrol equipment. The defined telecontrol companion standard utilizes standards of the IEC 60870-5 series. The specifications of this part present a combination of the application layer of IEC 60870-5-101 and the transport functions provided by a TCP/IP (Transmission Control Protocol/Internet Protocol). Within TCP/IP, various network types can be utilized, including X.25, FR (Frame Relay), ATM (Asynchronous Transfer Mode) and ISDN (Integrated Service Data Network). Using the same definitions, alternative ASDUs (Application Service Data Unit) as specified in other IEC 60870-5 companion standards (for example, IEC 60870-5-102) may be combined with TCP/IP, but this is not described further in this part.

NOTE Security mechanisms are outside the scope of this standard.

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 60870-5-3:1992, *Telecontrol equipment and systems – Part 5: Transmission protocols – Section 3: General structure of application data*

IEC 60870-5-4:1993, *Telecontrol equipment and systems – Part 5: Transmission protocols – Section 4: Definition and coding of application information elements*

IEC 60870-5-5:1995, *Telecontrol equipment and systems – Part 5: Transmission protocols – Section 5: Basic application functions*

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

IEC 60870-5-102:1996, *Telecontrol equipment and systems – Part 5: Transmission protocols – Section 102: Companion standard for the transmission of integrated totals in electric power systems*

ITU-T Recommendation X.25:1996, *Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit*

IEEE 802.3:1998, *Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications*