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

TELECONTROL EQUIPMENT AND SYSTEMS –

Part 5-101: Transmission protocols –
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International Standard IEC 60870-5-101 has been prepared by IEC technical committee 57: Power system control and associated communications.

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- replaced by a revised edition, or
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TELECONTROL EQUIPMENT AND SYSTEMS –

Part 5-101: Transmission protocols –
Companion standard for basic telecontrol tasks

1 Scope and object

This part of IEC 60870-5 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 of documents. The specifications of this standard present a functional profile for basic telecontrol tasks. Further companion standards, based on the IEC 60870-5 series are under consideration.

This standard defines ASDUs with time tags CP24Time2a which includes three octets binary time from milliseconds to minutes. In addition to these specifications, ASDUs with time tags CP56Time2a, which includes seven octets binary time from milliseconds to years, are defined in this standard (see 6.8 of IEC 60870-5-4 and 7.2.6.18 of this standard).

ASDUs with time tags CP56Time2a are used when the controlling station is not able to add the time from hours to years unambiguously to the received ASDUs which are tagged from milliseconds to minutes. This may happen when using networks with uncertain transmission delays or if temporary failure of a network occurs.

Although this companion standard defines the most important user functions, other than the actual communication functions, it cannot guarantee complete compatibility and interoperability between equipment of different vendors. An additional mutual agreement is normally required between concerned parties regarding the methods of use of the defined communication functions, taking into account the operation of the entire telecontrol equipment.

Standards specified in this standard are compatible with standards defined in IEC 60870-5-1 to IEC 60870-5-5 (see Clause 2).

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 60870-1-1:1988, Telecontrol equipment and systems – Part 1: General considerations – Section 1: General principles

IEC 60870-5-1:1990, Telecontrol equipment and systems – Part 5: Transmission protocols – Section 1: Transmission frame formats

IEC 60870-5-2:1992, Telecontrol equipment and systems – Part 5: Transmission protocols – Section 2: Link transmission procedures
Terms and definitions

For the purpose of this part of IEC 60870-5, the following definitions apply.

3.1 companion standard
a companion standard adds semantics to the definitions of the basic standard or a functional profile. This may be expressed by defining particular uses for information objects or by defining additional information objects, service procedures and parameters of the basic standard.

NOTE Companion standards do not alter the standards to which they refer, but make explicit the relationship between those used together for a specific domain of activity.

3.2 group (of information objects)
selection of COMMON ADDRESSES or INFORMATION ADDRESSES which is specifically defined for a particular system

3.3 control direction
direction of transmission from the controlling station to a controlled station

3.4 monitor direction
direction of transmission from a controlled station to the controlling station


ITU-T V.24:2000, List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE)

ITU-T V.28:1993, Electrical characteristics for unbalanced double-current interchange circuits

ITU-T X.24:1988, List of definitions for interchange circuits between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) on public data networks

ITU-T X.27:1996, Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s

IEEE 754:1985, Binary floating-point arithmetic
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TELECONTROL EQUIPMENT AND SYSTEMS –

Part 5-101: Transmission protocols –
Companion standard for basic telecontrol tasks

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- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.
1 Scope and object

This part of IEC 60870-5 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 of documents. The specifications of this standard present a functional profile for basic telecontrol tasks. Further companion standards, based on the IEC 60870-5 series are under consideration.

This standard defines ASDUs with time tags CP24Time2a which includes three octets binary time from milliseconds to minutes. In addition to these specifications, ASDUs with time tags CP56Time2a, which includes seven octets binary time from milliseconds to years, are defined in this standard (see 6.8 of IEC 60870-5-4 and 7.2.6.18 of this standard).

ASDUs with time tags CP56Time2a are used when the controlling station is not able to add the time from hours to years unambiguously to the received ASDUs which are tagged from milliseconds to minutes. This may happen when using networks with uncertain transmission delays or if temporary failure of a network occurs.

Although this companion standard defines the most important user functions, other than the actual communication functions, it cannot guarantee complete compatibility and interoperability between equipment of different vendors. An additional mutual agreement is normally required between concerned parties regarding the methods of use of the defined communication functions, taking into account the operation of the entire telecontrol equipment.

Standards specified in this standard are compatible with standards defined in IEC 60870-5-1 to IEC 60870-5-5 (see Clause 2).

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 60870-1-1:1988, Telecontrol equipment and systems – Part 1: General considerations – Section 1: General principles

IEC 60870-5-1:1990, Telecontrol equipment and systems – Part 5: Transmission protocols – Section 1: Transmission frame formats

IEC 60870-5-2:1992, Telecontrol equipment and systems – Part 5: Transmission protocols – Section 2: Link transmission procedures
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*


ITU-T V.24:2000, *List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE)*

ITU-T V.28:1993, *Electrical characteristics for unbalanced double-current interchange circuits*

ITU-T X.24:1988, *List of definitions for interchange circuits between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) on public data networks*

ITU-T X.27:1996, *Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s*

IEEE 754:1985, *Binary floating-point arithmetic*