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Telecontrol equipment and systems –
Part 5-604: Conformance test cases for the IEC 60870-5-104 companion standard

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CONTENTS

FOREWORD....4
INTRODUCTION....6
1 Scope....7
2 Normative references....7
3 Terms and definitions....8
4 Abbreviated terms....8
5 Conformance testing for IEC 60870-5-104....8
5.1 Overview and legend....8
5.2 Configuration parameters IEC 60870-5-104....10
5.3 Verification of IEC 60870-5-104 communication....10
5.4 Conformance test procedures....51
5.5 Test results chart....107
5.6 Test results of command transmission....121
5.6.1 General....121
5.6.2 Test results of single command transmission....122
5.6.3 Test results of double command transmission....125
5.6.4 Test results of regulating step command transmission....128
5.6.5 Test results of setpoint command transmission....131

Figure 1 – Test procedure....9

Table 1 – Run the Conformance Test Procedures for each of the following supported configuration parameter values....10
Table 2 – Tests on transport provider level *(1 of 5)*....11
Table 3 – Tests on data unit identifier....16
Table 4 – Verification of ASDUs for process information in monitor (normal) direction *(1 of 18)*....17
Table 5 – Verification of ASDUs for process information in control (normal) direction *(1 of 8)*....35
Table 6 – Verification of ASDUs for system information in monitor (normal) direction....43
Table 7 – Verification of ASDUs for system information in control (normal) direction *(1 of 3)*....43
Table 8 – Verification of ASDUs for parameters in control (normal) direction *(1 of 2)*....46
Table 9 – Verification of ASDUs for file transfer (in monitor (normal) and control direction) *(1 of 4)*....48
Table 10 – Data unit identifier conformance test procedures *(1 of 2)*....52
Table 11 – Information object address conformance test procedures....53
Table 12 – Station initialisation function conformance test procedures *(1 of 3)*....54
Table 13 – Redundant link conformance test procedures *(1 of 3)*....57
Table 14 – Cyclic data transmission function conformance test procedures....59
Table 15 – Data acquisition through read function conformance test procedures....61
Table 16 – Acquisition of events function conformance test procedures....62
Table 17 – General interrogation function conformance test procedures *(1 of 5)*....63
Table 18 – Clock synchronisation function conformance test procedures....72

Table 19 – Command transmission function conformance test procedures *(1 of 9)* 74
Table 20 – Transmission of integrated totals (telecounting) function conformance test procedures *(1 of 4)* 88
Table 21 – Parameter loading function conformance test procedures 95
Table 22 – Test procedure function conformance test procedures 97
Table 23 – File transfer procedure function conformance test procedures *(1 of 3)* 98
Table 24 – Additional conformance test procedures 103
Table 25 – Negative conformance test procedures.....105
Table 26 – PIXIT related conformance test procedures 107
Table 27 – Test results chart.....108
Table 28 – Test results of single command transmission *(1 of 3)*.....122
Table 29 – Test results of double command transmission *(1 of 3*) 125
Table 30 – Test results of regulating step command transmission *(1 of 3)* 128
Table 31 – Test results of setpoint command transmission *(1 of 2)*.....131

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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TELECONTROL EQUIPMENT AND SYSTEMS –

Part 5-604: Conformance test cases for the IEC 60870-5-104 companion standard

FOREWORD

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This Redline version provides you with a quick and easy way to compare all the changes between this standard and its previous edition. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical specification when

- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 60870-5-604, which is a technical specification, has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

This second edition cancels and replaces the first edition published in 2007. This edition constitutes a technical revision.

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

a) Resolution of ambiguities between IEC 60870-5-104:2006 and IEC TS 60870-5-604:2016 (together with IEC 60870-5-104/AMD1);
b) Refinement of some test cases to enhance operability between tested devices;
c) Additional test cases (mainly negative test cases) added.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
57/1614/DTS	57/1683/RVC

Full information on the voting for the approval of this technical specification 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 of IEC 60870 series, published under the general title *Telecontrol equipment and systems,* can be found on the IEC website.

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IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This part of IEC 60870, which is a technical specification, describes test cases for conformance testing of telecontrol equipment or systems using ~~the IEC 60870-5 companion standard 104 based on~~ the IEC 60870-5-104 companion standard and IEC 60870-5-6, *Guidelines for conformance testing for the IEC 60870-5 companion standards*.

TELECONTROL EQUIPMENT AND SYSTEMS –

Part 5-604: Conformance test cases for the IEC 60870-5-104 companion standard

1 Scope

This part of IEC 60870, which is a technical specification ~~which is part of the IEC 60870-5 series~~, describes test cases for conformance testing of telecontrol equipment, Substation Automation Systems (SAS) and telecontrol systems, including front-end functions of SCADA, using the IEC 60870-5-104 companion standard and IEC 60870-5-6, *Guidelines for conformance testing for the IEC 60870-5 companion standards*.

The use of this part of IEC 60870 facilitates interoperability by providing a standard method of testing protocol implementations, but it does not guarantee interoperability of devices. It is expected that using this specification during testing will minimize the risk of non-interoperability.

The goal of this part of IEC 60870 is to enable unambiguous and standardised evaluation of IEC 60870-5 companion standard protocol implementations. The guidelines and conditions for the testing environment are described in IEC 60870-5-6. The detailed test cases per companion standard, containing among others mandatory and optional mandatory test cases per Basic Application Function, ASDU and transmission procedure, will become available as a technical specification. Other functionality may need additional test cases but this is outside the scope of this part of IEC 60870. For proper testing, it is recommended to define these additional test cases. This document is such a Technical Specification for the mentioned companion standard.

This part of IEC 60870 deals mainly with communication conformance testing; therefore other requirements, such as safety or EMC are not covered. These requirements are covered by other standards (if applicable) and the proof of compliance for these topics is done according to these standards.

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.[1]

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*

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[1] The base standard always takes precedence. In case of ambiguity between this technical specification and the base standards (IEC 60870-5-1 to IEC 60870-5-5, IEC 60870-5-104), this part of IEC 60870 needs to be clarified or amended.

When testing, negative behaviour is not described in the base standard, the behaviour described in this document prevails and should be observed.

The conformance statement produced after testing indicates any lack of conformance to either the test plan or the base standard.

IEC 60870-5-6:2006, *Telecontrol equipment and systems – Part 5-6: Guidelines for conformance testing for the IEC 60870-5 companion standards*

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

IEC 60870-5-104:2006, *Telecontrol equipment and systems – Part 5-104: Transmission protocols – Network access for IEC 60870-5-101 using standard transport profiles*

IETF RFC2200, *Internet Official Protocol Standards*

IEC TS 60870-5-604

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TECHNICAL SPECIFICATION

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Telecontrol equipment and systems –
Part 5-604: Conformance test cases for the IEC 60870-5-104 companion standard



IEC TS 60870-5-604:2016-06(en)

CONTENTS

FOREWORD....4
INTRODUCTION....6
1 Scope....7
2 Normative references....7
3 Terms and definitions....8
4 Abbreviated terms....8
5 Conformance testing for IEC 60870-5-104....8
5.1 Overview and legend....8
5.2 Configuration parameters IEC 60870-5-104....10
5.3 Verification of IEC 60870-5-104 communication....10
5.4 Conformance test procedures....51
5.5 Test results chart....88
5.6 Test results of command transmission....95
5.6.1 General....95
5.6.2 Test results of single command transmission....96
5.6.3 Test results of double command transmission....99
5.6.4 Test results of regulating step command transmission....102
5.6.5 Test results of setpoint command transmission....105

Figure 1 – Test procedure....9

Table 1 – Run the Conformance Test Procedures for each of the following supported configuration parameter values....10
Table 2 – Tests on transport provider level *(1 of 5)*....11
Table 3 – Tests on data unit identifier....16
Table 4 – Verification of ASDUs for process information in monitor (normal) direction *(1 of 18)*....17
Table 5 – Verification of ASDUs for process information in control (normal) direction *(1 of 8)*....35
Table 6 – Verification of ASDUs for system information in monitor (normal) direction....43
Table 7 – Verification of ASDUs for system information in control (normal) direction *(1 of 3)*....43
Table 8 – Verification of ASDUs for parameters in control (normal) direction *(1 of 2)*....46
Table 9 – Verification of ASDUs for file transfer (in monitor (normal) and control direction) *(1 of 4)*....48
Table 10 – Data unit identifier conformance test procedures *(1 of 2)*....52
Table 11 – Information object address conformance test procedures....53
Table 12 – Station initialisation function conformance test procedures *(1 of 3)*....54
Table 13 – Redundant link conformance test procedures *(1 of 3)*....57
Table 14 – Cyclic data transmission function conformance test procedures....60
Table 15 – Data acquisition through read function conformance test procedures....61
Table 16 – Acquisition of events function conformance test procedures....62
Table 17 – General interrogation function conformance test procedures *(1 of 5)*....63
Table 18 – Clock synchronisation function conformance test procedures....68

Table 19 – Command transmission function conformance test procedures *(1 of 9)* 69
Table 20 – Transmission of integrated totals (telecounting) function conformance test procedures *(1 of 4)* 77
Table 21 – Parameter loading function conformance test procedures 81
Table 22 – Test procedure function conformance test procedures 82
Table 23 – File transfer procedure function conformance test procedures *(1 of 3)* 83
Table 24 – Additional conformance test procedures 86
Table 25 – Negative conformance test procedures.....87
Table 26 – PIXIT related conformance test procedures 88
Table 27 – Test results chart *(1 of 7)*.....89
Table 28 – Test results of single command transmission *(1 of 3)*.....96
Table 29 – Test results of double command transmission *(1 of 3*) 99
Table 30 – Test results of regulating step command transmission *(1 of 3)* 102
Table 31 – Test results of setpoint command transmission *(1 of 2)*.....105

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