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Hardware-in-the-loop simulation test of power system stability control system

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CONTENTS

FOREWORD 3
1 Scope 5
2 Normative references 5
3 Terms, definitions, and abbreviated terms 5
3.1 Terms and definitions 5
3.2 Abbreviated terms 6
4 General recommendations 6
4.1 Test scope 6
4.2 Test recommendations 7
5 Test system 7
5.1 Basic architecture 7
5.2 Simulation model for the testing system 7
5.3 Simulation interface 8
5.3.1 General 8
5.3.2 Analog value sampling interface 8
5.3.3 Discrete value sampling interface 8
5.3.4 Digital interface 9
5.4 Tested PSSC system 9
5.5 Other control and protection systems 9
6 Test contents 9
6.1 Interactive information effectiveness test 9
6.1.1 Interactive information test between PSSC device and CHIL digital simulator 9
6.1.2 Interactive information test of inter-substation communication 10
6.1.3 Interactive information test between PSSC device and HVDC control and protection system 10
6.1.4 Interactive information test between PSSC device and renewable energy controller 10
6.1.5 Other situations 10
6.2 Basic detection logic test 10
6.3 Functional strategy test 11
6.3.1 General 11
6.3.2 Lines/main transformers N-k(k ≥ 2) fault test 11
6.3.3 Lines/main transformers overload test 11
6.3.4 HVDC Converter blocking (power ramp-down) strategy test 11
6.3.5 Voltage/frequency control strategy test 12
6.3.6 Other related tests 12
6.4 Control strategy and configuration adaptability testing 13
6.4.1 General 13
6.4.2 Operation mode setting 13
6.4.3 Fault setting 13
6.4.4 Stability criteria 13
6.4.5 Configuration adaptability test 13
7 Test quality management 13
7.1 Version management of PSSC system 13
7.2 Test model and data management 14
7.3 Test report 14

Annex A (informative) Example of a typical CHIL simulation testing system for PSSC system 15
Bibliography 17

Figure A.1 – A typical example of the CHIL simulation test structure of a PSSC system based on a physical interface 15
Figure A.2 – A typical example of the CHIL simulation test structure of a PSSC system based on a digital interface 16

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Hardware-in-the-loop simulation test of power system stability control system

FOREWORD

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Draft	Report on voting
8C/157/DTS	8C/169A/RVDTS

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

The language used for the development of this Technical Specification is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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– reconfirmed,
– withdrawn, or
– revised.

1 Scope

This Technical Specification (TS) addresses the requirements for hardware-in-the-loop (HIL) simulation test of power system stability control system (see definition in 3.1.2). Its purpose is to provide guidelines encompassing the use of terms and definitions, as well as the objective and general requirements for HIL simulation test. The TS covers the test requirements, test system, test contents, and test quality management.

This TS improves the safe and stable operation of the power system.

2 Normative references

There are no normative references in this document.

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/

– ISO Online browsing platform: available at https://www.iso.org/obp

3.1.1
power system stability control
<of an electric power system> control in power system which prevents system insecurity, instability and collapse caused by disturbances, and, to minimize further loss of power supply

Note 1 to entry: The Power System Stability Control is different than the Control and Protection System delivered by the manufacturer of an individual power system asset such as a generator or HVDC Control and Protection system. The power system stability control can interface with such individual control systems but is distinct from them.

Note 2 to entry: Special Protection System (SPS), Remedial Action Scheme (RAS), System Integrity Protection Schemes (SIPS), System Protection Schemes (SyPS), Special Protection Schemes (SpPS), Power System Stability Control (PSSC) system are typical examples of stability control implementation. Control and Protection Systems delivered with an individual power system asset, such as a dedicated generator control or HVDC Control and Protection System, are not examples of PSSC systems, although they can be responsible for implementing the decisions and actions decided by the PSSC.

3.1.2
power system stability control system
<of an electric power system> automatic system capable of implementing control schemes which detect contingency events or/and violations of key operating parameter limit in order to improve the stability and security of power systems

3.1.3
PSSC device
power system stability control device
<of an electric power system> type of equipment installed in power plants, transformer substations, converter stations, or renewable energy stations to ensure the stability of the power system when encountering large disturbances

Note 1 to entry: This device is designed to perform various functions such as generator tripping, load shedding, fast active power reduction, activating emergency control of HVDC, and providing rapid control for renewable energy resources such as wind power, photovoltaics, and energy storage. Its primary objective is to maintain the stability and reliability of the power system during significant fluctuations or disturbances.