AMERICAN NATIONAL STANDARD

ANSI/ISA-62382-2012 (IEC 62382 Modified)

Automation Systems in the Process Industry – Electrical and Instrumentation Loop Check

Approved 5 June 2012

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Automation Systems in the Process Industry − Electrical and Instrumentation Loop Check

ISBN: 978-1-937560-51-5

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Automation Systems in the Process Industry – Electrical and Instrumentation Loop Check

US FOREWORD

This standard is a US adoption of IEC 62382 Edition 1, prepared by the ISA105 standards development committee. While the content is essentially the same as that of IEC 62382, this adoption contains the following changes, which have been submitted to IEC TC65 for consideration:

- Added reference to ANSI/ISA-84-00-01-2004 Part 2 (IEC 61511-2 Mod), *Functional Safety: Safety Instrumented Systems for the Process Industry Sector – Part 2: Guidelines for the Application of ANSI/ISA-84.00.01 – 2004 Part 1 (IEC 61511-1 Mod) - Informative*.
- Added both the increasing and decreasing directions to tests in order to identify any hysteresis issues.
- Added a category of “standard loops” for completeness.
- Replaced the various input/output check forms with a single loop check form that can be used for all loops, including indicating and control. This significantly reduces the number of check forms needed and at the same time reinforces the “loop” concept in the loop check activity.
- Added a reference to IEC 62381.
- Organized definitions of terms alphabetically.
- Organized loop check planning and tests for clarity.
- Moved and expanded examples of loop checks to the annexes. Specific loop checks must be established by the user depending on the specific hardware/software to be verified on the project.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

AUTOMATION SYSTEMS IN THE PROCESS INDUSTRY-ELECTRICAL AND INSTRUMENTATION LOOP CHECK

FOREWORD

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International Standard IEC 62382 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

This second edition cancels and replaces the first edition published in 2006. This edition constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

– The definitions of the documents mentioned in the standards are in accordance with IEC 62708 “*Documents for Electrical and Instrumentation Projects in the Process Industry*”.
– Chapter 6.3 has been revised.

The text of this standard is based on the following documents:

FDIS	Report on voting
65E/386/FDIS	65E/395/RVD

Full information on the voting for the approval of this standard 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.

The committee has decided that the contents of this publication will remain unchanged until the stability date[1] indicated on the IEC web site 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.

This publication contains attached files in the form of Excel files. These files are intended to be used as a complement and do not form an integral part of the standard.

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1 The National Committees are requested to note that for this publication the stability date is 2016.

INTRODUCTION

The inspection and verification of the individual measurements and controls in conjunction with the control systems used to monitor these devices (DCS, PLC, etc.) is referred to as loop check. In industry, numerous methods and philosophies are used to check the instrumentation and controls after mechanical installation within projects for modified or new facilities.

This standard was created to provide a better understanding of what loop check consists of and also to provide a standard methodology for executing a loop check.

The annexes of this standard contain forms which may be used in the check procedures. Buyers of this publication may copy these forms for their own purposes only in the required amount.

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AUTOMATION SYSTEMS IN THE PROCESS INDUSTRY- ELECTRICAL AND INSTRUMENTATION LOOP CHECK

1 Scope

1.1 General applicability

This standard defines procedures and specifications for loop check, which comprises the activities between the completion of the loop construction (including installation and point-to-point checks) and the start-up of cold commissioning. This standard is applicable for the construction of new plants and for expansion/retrofits (i.e. revamping) of E&I (Electrical & Instrument) installations in existing plants (including PLC, BAS, DCS, panel-mounted and field instrumentation). It does not include a detailed checkout of power distribution systems, except as they relate to the loops being checked (i.e. a motor starter or a power supply to a four-wire transmitter).

1.2 Exclusions

1.2.1 Prior and post activities

Engineering and manufacturing activities prior to or subsequent to the loop checks, such as FAT, SAT, SIT and commissioning, are not covered by this standard.

The intent of this standard is to provide a means for all parties, including the owner, the contractor and the vendor, to clearly establish and agree on the scope of activities and responsibilities involved in performing these tests in order to achieve a timely delivery and acceptance of the automation system. The activities described in this standard can be taken as a guideline and adapted to the specific requirements of the process/plant/equipment.

1.2.2 Regulated industries

For application in the pharmaceutical or other highly specialized industries, additional guidelines (for example, Good Automated Manufacturing Practice (GAMP)), definitions and stipulations should apply in accordance with existing standards, for example, for GMP Compliance 21 CFR (FDA) and the Standard Operating Procedure of the European Medicines Agency (SOP/INSP/2003).

1.2.3 Safety Instrumented Systems

For additional guidance on specific requirements on the installation, commissioning, start-up, and validation of safety instrumented systems, refer to ANSI/ISA–84.00.01–2004 Part 1 (IEC 61511-1 Mod), *Functional Safety: Safety Instrumented Systems for the Process Industry Sector – Part 1: Framework, Definitions, System, Hardware and Software Requirements* and ANSI/ISA-84-00-01-2004 Part 2 (IEC 61511-2 Mod), *Functional Safety: Safety Instrumented Systems for the Process Industry Sector – Part 2: Guidelines for the Application of ANSI/ISA-84.00.01-2004 Part 1 (IEC 61511-1 Mod) - Informative*.

2 Normative references

The following referenced documents are useful 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.