

TECHNICAL REPORT

ISA-TR84.00.04-2005 Part 1

**Guidelines for the Implementation
of ANSI/ISA-84.00.01-2004
(IEC 61511 Mod)**

Approved 1 December 2005

ISA-TR84.00.04-2005 Part 1 --
Guidelines for the Implementation of ANSI/ISA-84.00.01-2004 (IEC 61511 Mod)

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Contents

Preface	3
1 Purpose	9
2 Introduction.....	9
3 Grandfather Clause	10
3.1 General Considerations	11
3.2 Management of Change Considerations.....	11
4 The Differences.....	13
4.1 Clause 1 - Scope	13
4.2 Clause 2 – References.....	14
4.3 Clause 3 – Abbreviations and Definitions.....	14
4.4 Clause 4 – Conformance to Standard.....	14
4.5 Clause 5 – Management of Functional Safety	14
4.6 Clause 6 – Safety Lifecycle Requirements.....	15
4.7 Clause 7 – Verification	15
4.8 Clause 8 – Process Hazard and Risk Analysis.....	15
4.9 Clause 9 – Allocation of Safety Functions to Protection Layers.....	17
4.10 Clause 10 – SIS Safety Requirement Specification.....	18
4.11 Clause 11 – SIS Design and Engineering.....	18
4.12 Clause 12 – Requirements for Application Software, Including Selection Criteria for Utility Software	19
4.13 Clause 13 – Factory Acceptance Testing (FAT)	19
4.14 Clause 14 – SIS Installation and Commissioning	19
4.15 Clause 15 - SIS Safety Validation.....	19
4.16 Clause 16 – SIS Operation and Maintenance.....	19
4.17 Clause 17 SIS Modification.....	20
4.18 Clause 18 – SIS Decommissioning	20
4.19 Clause 19 – Information and Documentation Requirements	20
Annex A Example Methods for Determining Grandfather Status	23
Annex B Operator Action as an Independent Protection Layer (IPL)	41
Annex C Management of Functional Safety	51
Annex D Verification, Validation and Functional Safety Assessments	81
Annex E Audits.....	103
Annex F BPCS and Its Relationship to the SIS	109
Annex G Failures - Types, Classifications, Sources and Strategy for Defense.....	127
Annex H SIF versus Interlocks, Permissives, and Inhibits.....	141
Annex I Continuous Mode versus Demand Mode	147
Annex J SIL 4 versus Inherently Safer Design	155
Annex K Fault Tolerance Topics	157
Annex L Device Selection	165
Annex M General Purpose versus Safety Logic Solvers	177
Annex N Design Guidance.....	181
Annex O Software	201
Annex P Response to Detection of a Dangerous Fault	207
Annex Q Acronyms and Abbreviations	213
Annex R References	215

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1 Purpose

ANSI/ISA-84.01-1996, *Application of Safety Instrumented Systems for the Process Industries*, was replaced in 2004 by ANSI/ISA-84.00.01-2004 Parts 1-3 (IEC 61511 Modified), *Functional Safety: Safety Instrumented Systems for the Process Industry Sector*. The three-part series is the United States adoption of the international standards, IEC 61511 Parts 1-3, and includes one additional clause, a “grandfather clause” covering existing safety instrumented systems (see ANSI/ISA-84.00.01-2004 Part 1 Clause 1.0 y).

This Part 1 technical report provides guidance related to the transition of programs developed for the 1996 standard to one compliant with the intent of the 2004 standards. This Part 1 technical report also includes 16 informative annexes providing guidance from the ISA-SP84 committee on a wide range of topics related to the new standards. A companion technical report, ISA-TR84.00.04-2005 Part 2, provides an example illustrating some of the lifecycle steps in ANSI/ISA-84.00.01-2004.

This Part 1 technical report contains four main clauses. Clause 1 is the purpose. Clause 2 explains the origins of ANSI/ISA-84.00.01-2004 and discusses its relationship to other regulations, standards, and practices. Clause 3 and Annex A specifically address the grandfather clause and provide guidance on the evaluation of existing safety instrumented systems. Clause 4 assists the owner/operator in the transition from ANSI/ISA-84.01-1996 to ANSI/ISA-84.00.01-2004.

NOTE: Throughout this technical report, the term “ISA-84.01-2004” is used to refer to ANSI/ISA-84.00.01-2004 Parts 1-3 (IEC 61511 Modified). The term “ISA-84.01-1996” is used to refer to ANSI/ISA-84.01-1996.

See Annex R of this technical report for a list of references for all documents cited herein.

2 Introduction

In the United States of America, the Occupational Safety and Health Administration (US-OSHA) regulation, 29 CFR 1910.119 (OSHA 1910.119), requires the identification and management of the instrumented systems responsible for safe operation. ISA Standards Committee SP84 developed ISA-84.01-1996 to define how to manage safety instrumented systems (SIS) using a lifecycle approach. The standard provided a formal, documented process for addressing the design, operation, maintenance, testing and management of change for SIS. The efforts of the ISA-SP84 committee resulted in US-OSHA recognizing ISA-84.01-1996 as representing good engineering practice for SIS.

During its initial development, the ISA-SP84 committee relied on existing US functional safety practices, such as those documented in OSHA 1910.119 and by the Center for Chemical Process Safety (CCPS), e.g., “*Guidelines for the Safe Automation of Chemical Processes*.” Working in parallel with the ISA-SP84 committee effort, the International Electrotechnical Commission (IEC) was developing IEC 61508, *Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems*. Concepts introduced in the international standard were incorporated into ISA-84.01-1996, resulting in ISA-84.01-1996 being accepted as the US process sector functional safety standard by the US and IEC. Through ISA-84.01-1996, owner/operators have become familiar with terms such as safety integrity levels, safety instrumented systems, and safety functions (i.e., safety instrumented function).

Since 1996, some countries have utilized ISA-84.01-1996, while others have used their own national standard or adopted IEC 61508 when it was released in 1999. In an era where design, engineering, and operation can occur in multiple countries, this diversity of standards resulted in an immediate need for an international, consensus process sector standard.

The IEC 61511 committee was formed to specifically address the process sector under the framework of IEC 61508. This international consensus standard was issued in 2003. With the completion of IEC 61511, the ISA-SP84 committee adopted IEC 61511 as ISA-84.00.01-2004 Parts 1-3 (IEC 61511 Mod). Once the standards were adopted by ISA, the SP84 committee immediately initiated the development of this