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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

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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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ISA-TR84.00.04-2005 Part 1

Preface

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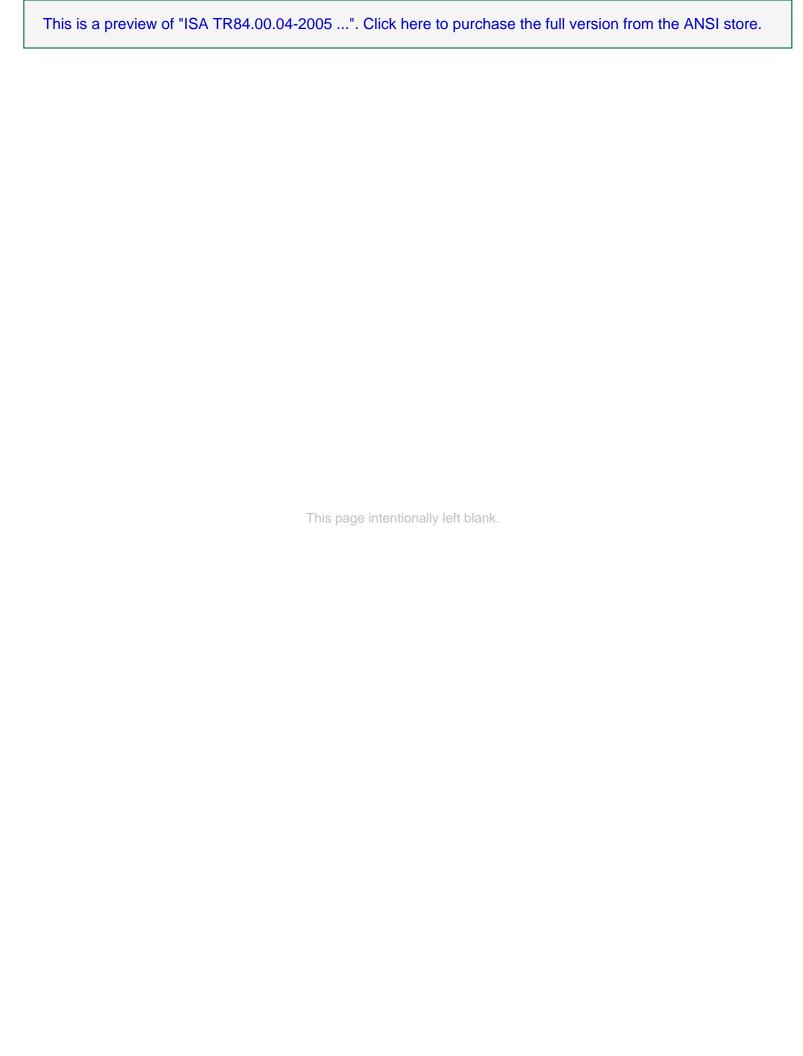
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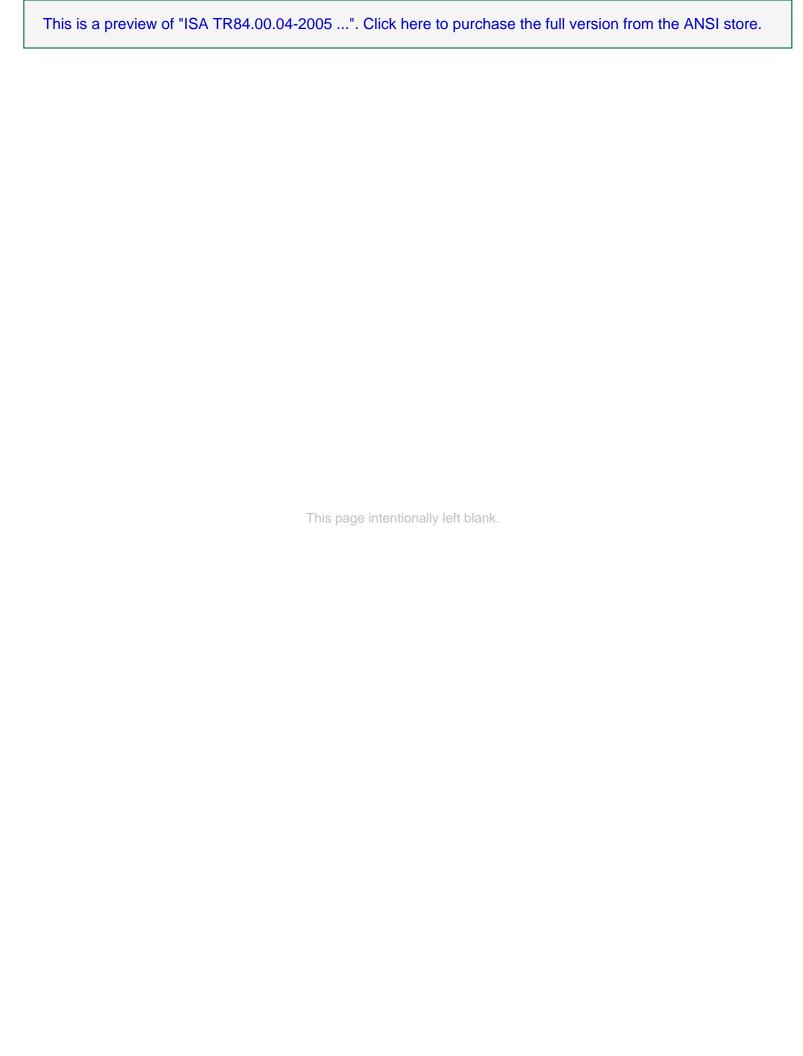
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1 Purpose

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