



*Setting the Standard for Automation™*

# ISA Standards: An Overview

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Standards  
Certification  
Education & Training  
Publishing  
Conferences & Exhibits



# International Society of Automation

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- ISA is an international, nonprofit member association of 30,000+ automation professionals engaged in the design, development, production, and application of devices and systems that sense, measure, and control industrial processes and manufacturing operations.
- ISA develops industry standards and provides education and training, certification, conferences and exhibits, book and journal publications.
- ISA Member Sections are in 28 countries.
- ISA Headquarters: Research Triangle Park, North Carolina, USA.
- Please visit [www.isa.org](http://www.isa.org) for more information about ISA.



# ISA Standards

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- ISA develops industry standards that meet ISA and American National Standards Institute requirements for openness and due process
- Globally used standards in vital areas including safety, security, documentation, batch control, enterprise-control integration and, wireless systems for automation
- 4000+ automation professionals involved in ISA Standards, in 140 committees/subcommittees
- Inventory of 150 standards documents
- Primary ISA Member benefit: 47,000 free downloads in 2008

# Wide Coverage in Industrial Automation

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- Symbols and Diagrams (ISA5 Series)
- Alarm Management (ISA18 Series)
- Specification Forms (ISA20 Series)
- Electrical Equipment for Hazardous Locations (ISA12 Series)
- Control Valves (ISA75 Series)
- Fossil Fuel Power and Nuclear Power Plant Standards (ISA77 and ISA67 Series)
- Functional Safety (ISA84 Series)
- Batch Control (ISA88 Series)
- Enterprise-Control System Integration (ISA95 Series)
- Security for Industrial Automation and Control Systems (ISA99 Series)
- Wireless Systems for Automation (ISA100 Series)
- Human-Machine Interface (ISA101 Series)
- Field Device Tools – FDT (ISA103 Series)
- Electronic Device Description Language – EDDL (ISA104 Series)

## Global Impact

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- Through ANSI, many ISA Standards have become widely used international standards for industry through the International Electrotechnical Commission (IEC):
  - *IEC 61511* Parts 1-3 are based on ISA84 standards on Safety Instrumented Systems for the Process Industries
  - *IEC 61512* Parts 1-4 are based on ISA88 Batch Control Standards
  - *IEC 62264* Parts 1-3 are based on ISA95 Enterprise-Control System Integration Standards.

# Types of ISA Standards Documents

## Standard

- A document that embodies requirements that, if not followed, could directly affect safety, interchangeability, performance, or test results.



## Recommended Practice

- A document that embodies recommendations that are likely to change because of technological progress or user experience, or which must often be modified in use to accommodate specific needs or problems of the user of the document.

## Technical Report

- A document that embodies informative material; for example, reports of technical research, tutorials, factual data obtained from a survey, or information on the state of a technology.

## Develop safe procedures...



**...to protect humans**



## ...and the environment



# Promote efficient and repeatable processes



# Secure the infrastructure



# A Common View of the Standards Process...but



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# We have to follow the rules

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- And the rules we have to follow to assure an open and fair process can be a real pain sometimes.
- ISA, an accredited member of the American National Standards Institute (ANSI), develops standards in accordance with ANSI procedures that define **consensus**, **balance**, and other **due process requirements** to assure that the standards are truly representative of input from users, suppliers, and others involved in each subject area. Visit [www.ansi.org](http://www.ansi.org) .
- Resources are tight and demands of 'day jobs' are great.
- Electronic meetings are helping to speed things up.

## And some standards projects are large and contentious

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- For example, ISA100, Wireless Systems for Industrial Automation, is a truly international collaboration, with 400+ experts representing 30 countries and 250+ organizations.
- 17 working groups addressing various issues pertaining to use of wireless in industrial applications
- 3000+ comments received in reviews of early drafts
- Visit [www.isa100.org](http://www.isa100.org)

# ANSI/ISA-5.1-2009

## *Instrumentation Symbols and Identification*

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- ISA's most widely used American National Standard.
- First version published in 1949 as ISA-RP-5.1.
- Establishes a uniform means of depicting and identifying instruments or devices and their inherent functions.
- Intended not just for P&IDs, but also for PFDs, UFDs, EFDs, MFDs, SFDs, technical papers, specifications and purchase orders, and many other types of engineering documents.

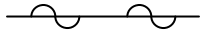
## ANSI/ISA-5.1-2009 (cont.)

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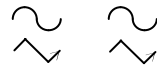
Main sections:

- Definitions
- Identification letters table and guidelines
- Graphic symbols tables and guidelines
- Graphic symbols dimensions tables

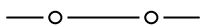
# Line symbols: instrument-to-instrument connections (from Table 5.3.2)



- Guided electromagnetic signal.
- Guided sonic signal.
- Fiber optic cable.



- **Unguided electromagnetic signals, light, radiation, radio, sound, wireless, etc.**
- Wireless ignition signal.
- Wireless communication link.



- Communication link and system bus, between devices and functions of a shared display, shared control system.
- DCS, PLC, or PC communication link and system bus.

## ANSI/ISA-5.1-2009 (cont.)

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- ISA Members: download it for free by the end of the year:
  - [www.isa.org/standards](http://www.isa.org/standards)
- For those new to the field, ISA offers books and training courses on instrumentation symbols:
  - [www.isa.org/books](http://www.isa.org/books)
  - [www.isa.org/training](http://www.isa.org/training)

## More information sources

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- Find ISA standards
  - [www.isa.org/standards](http://www.isa.org/standards)
- Find national and international standards
  - [www.nssn.org](http://www.nssn.org) (key word search)
- Suggest new ISA standards projects
  - [www.isa.org/standards/proposal](http://www.isa.org/standards/proposal)
- Get smarter and get networked
  - [www.isa.org/standards/volunteer](http://www.isa.org/standards/volunteer)
- Contact: Charley Robinson, [crobinson@isa.org](mailto:crobinson@isa.org)