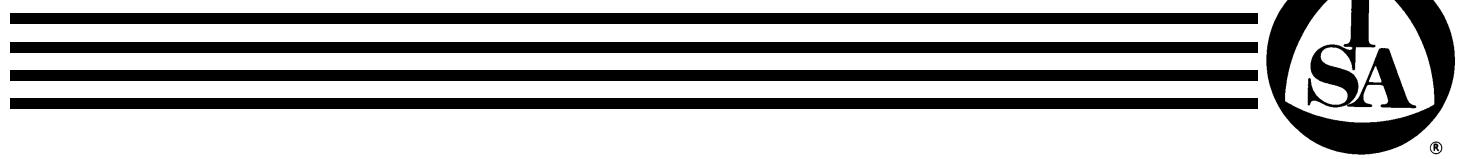**ANSI/ISA-S5.5-1985**

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American National Standard

Graphic Symbols
for Process Displays

ISA-S5.5, Graphic Symbols for Process Displays

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Preface

This preface is included for informational purposes and is not a part of Standard S5.5.

This Standard has been prepared as a part of the service of ISA toward a goal of uniformity in the field of instrumentation. To be of real value, this document should not be static, but should be subject to periodic review. Toward this end, the Society welcomes all comments and criticisms and asks that they be addressed to the Secretary, Standards and Practices Board, ISA, 67 Alexander Drive, P.O. Box 12277, Research Triangle Park, North Carolina 27709, Telephone (919) 549-8411, e-mail: standards@isa.org.

The ISA Standards and Practices Department is aware of the growing need for attention to the metric system of units in general and the International System of Units (SI) in particular, in the preparation of instrumentation standards. The Department is further aware of the benefits to U.S.A. users of ISA Standards of incorporating suitable references to the SI (and the metric system) in their business and professional dealings with other countries. Toward this end, this Department will endeavor to introduce SI-acceptable metric units in all new and revised standards to the greatest extent possible. *The Metric Practice Guide,* which has been published by the Institute of Electrical and Electronics Engineers as ANSI/IEEE Std. 268-1982, and future revisions will be the reference guide for definitions, symbols, abbreviations, and conversion factors.

It is the policy of ISA to encourage and welcome the participation of all concerned individuals and interests in the development of ISA Standards. Participation in the ISA Standards-making process by an individual in no way constitutes endorsement by the employer of that individual of ISA or any of the standards which ISA develops.

The information contained in this preface, in the footnotes, and in the appendices is included for information only and is not part of the standard.

The original draft of this document resulted from the committee work of the International Purdue Workshop on Industrial Computer Systems, the Man/ Machine Communication Committee TC-6.

The use of graphic symbols representing entities and characteristics of processes has evolved rapidly during the course of the last decade. Technology has allowed the presentation of a physical process to be represented and controlled by the use of computers and advanced electronic systems. These systems use video-display technologies such as CRTs, plasma screens, and other media to present to the user a graphic representation of his process. It is through these devices and the symbology used to represent the process in question that the user monitors and controls the particular operation.

Process displays convey information to the user in the form of both text and graphic symbols. Text information is based on the use of numeric data and the alphabet to construct the words necessary to convey the meaning of the information. This text information is structured around the use of written language and is highly ordered and understood by users. On the other hand, the use of graphic symbols for process and information presentation is highly dependent upon the manufacturer and the user of the product. These graphic symbols are generally customized to the particular application at hand.

Standard graphic symbols provide a more logical and uniformly understandable mechanism for modern control processes. For example, a control system may be constructed of several control systems and a central control system. In cases such as this, the operator often finds that he

must become familiar with the graphic symbology of several different systems, although they may represent common elements.

It is the intent of this document that both the manufacturers and users of process displays use these graphic symbols in their systems whenever applicable. It is recognized that technology is rapidly changing in the types of devices available for process display use. The graphic symbols suggested in this standard should provide a foundation for all display systems that are used to display and control processes. The graphic symbols that are represented in this standard are divided into 13 major groups. Attributes associated with the various types of symbols such as color usage, blink, orientation, etc., are addressed in the document.

The symbols defined in ISA-S5.5 are intended to supplement those of ISA-S5.1 and ISA-S5.3 to provide a cohesive integration of graphic symbology and common industry usage of flow diagrams. ISA-S5.1 and ISA-S5.3 are drafting standards which govern the depiction of process and instrumentation symbols for drawings and other printed documents. The ISA-S5.5 symbols were developed for use on video devices that represent both character display and pixel addressable displays. Use of the symbols also applies to both color and monochromatic video displays as well as other media. Therefore, the symbols that are represented in this standard may differ from those in the other standards because of the nature of the physical devices used to display the symbols. The principal users of these symbols are operators and other personnel who use information concerning process operations.

The main intent of the graphic symbols is to provide to the user an easily understandable representation of his process on a display device. Computers, distributed control systems, stand-alone microprocessor-based systems, etc., can appear to be similar or to perform similar functions; however, they are diverse in philosophy and graphic presentation. Therefore, it is essential that a common set of symbols be used to convey process information to the users of such devices.

The symbols presented in this standard are by no means all that were suggested or that may be required; however, by adopting these as a standard, the majority of present processes may be adequately represented. When it becomes necessary to develop special symbols for equipment not included in the standard, simplicity of form is considered of paramount importance.

The ISA Standards Committee on Graphic Symbols for Process Displays SP5.5 operates within the ISA Standards and Practices Department, Norman Conger, Vice President. The persons listed below served as members of ISA Committee SP5.5, which prepared this standard:

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A. T. Bonina	Industrial Data Terminals
R. F. Carroll, Chairman 1981	Setpoint, Inc.
A. S. Fortunak	Inland Steel Company
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NAME	COMPANY
D. E. Rapley, Chairman	Rapley Engineering Services
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D. G. Kempfer	Standard Oil Company of Ohio
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This standard was approved for publication by the ISA Standards and Practices Board in December 1985.

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*Director Emeritus

Contents

1 Purpose

The purpose of this standard is to establish a system of graphic symbols for process displays that are used by plant operators, engineers, etc., for process monitoring and control. The system is intended to facilitate rapid comprehension by the users of the information that is conveyed through displays, and to establish uniformity of practice throughout the process industries.

Resulting benefits are intended to be as follows:

  a) A decrease in operator errors

  b) A shortening of operator training

  c) Better communication of the intent of the control system designer to the system users

An objective of the standard is to insure maximum compatibility of symbols on process visual display units (VDUs) with related symbols used in other disciplines.

The symbols in this standard are intended to depict processes and process equipment. The symbols are suitable for use on Visual Display Units (VDUs), such as Cathode Ray Tubes (CRTs).

2 Scope

The standard is suitable for use in the chemical, petroleum, power generation, air conditioning, metal refining, and numerous other industries.

Though the standard may make use of standard symbols now used for piping and instrument diagrams, logic diagrams, loop diagrams, and other documents, the symbols of the standard are generally expected to be used in ways complementing existing types of engineering documents.

The symbolism is intended to be independent of type or brand of hardware or computer software.

2.1 Application to work activities

This standard is suitable for use whenever any reference to process equipment on VDUs is required. Such references may be required for the following uses as well as others:

  a) Process displays on CRTs

  b) Process displays on other visual media such as plasma displays, liquid crystal displays, etc.

2.2 Relationship to other ISA Standards

This standard complements, whenever possible, ISA Standards S5.1 "Instrumentation Symbols and Identification," S5.3 "Flow Diagram Graphic Symbols for Distributed Control/Shared Display Instrumentation Logic and Computer Systems," RP60.05 "Graphic Displays for Control Centers," and ANSI/ISA S51.1 "Process Instrumentation Terminology."