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**CHEMICAL INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

HG/T 20505-2014

Replacing HG/T 20505-2000

**Functional identification and symbols for process measuring
and controlling instrumentation**

过程测量与控制仪表的功能标志及图形符号

(English Translation)

Issued on: May 6, 2014

Implemented on: October 1, 2014

**Issued by: Ministry of Industry and Information Technology of the
People's Republic of China**

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Foreword

This standard was revised in accordance with the requirements of the "Notice on Issuing the First Batch of Industry Standard Development and Revision Plans for 2010" of the Ministry of Industry and Information Technology (Gong Xin Ting Ke [2010] No. 74) and of the "Notice on Forwarding the Notice of the General Office of the Ministry of Industry and Information Technology on Issuing the First Batch of Industry Standard Development and Revision Plans for 2010" of the China Petroleum and Chemical Industry Federation (Zhong Shi Hua Lian Zhi Fa [2010] No. 222). The revision was organized by the National Chemical Industry Automatic Control Design Technical Center Station, entrusted by the China Petroleum and Chemical Engineering Survey and Design Association.

From its date of implementation, this standard replaces "Functional identification and symbols for process measuring and controlling instrumentation" HG/T 20505-2000.

In preparing this standard, the drafting group carried out extensive investigation and research, conscientiously summarized practical experience, made reference to relevant international standards and advanced foreign standards, and completed the revision on the basis of wide consultation.

The main technical contents of this standard are as follows: Part 1 covers instrument function identification, including instrument function identification letters and their combinations in application, and the composition of instrument loop numbers and instrument tag numbers; Part 2 covers instrument graphic symbols, including graphic symbols for instrument devices and functions, graphic symbols for measuring instruments, instrument line symbols, graphic symbols for final control elements, graphic symbols for signal processing functions, graphic symbols for binary logic, graphic symbols for electrical elements and the dimensional proportions of graphic symbols; Part 3 covers application examples of graphic symbols, including graphic symbol examples for detection systems and graphic symbol examples for control and interlock systems.

Compared with HG/T 20505-2000, the main changes of this standard are as follows:

1. The chapter "Terms" has been added.
2. In the chapter "Instrument function identification", content relating to the instrument loop number has been added, and the description of the components of the instrument tag number has been modified.
3. In the chapter "Instrument function identification letters and common abbreviations", identification used for safety instrumented systems has been added, the combinations of instrument function identification letters in application have been supplemented, and the section "Additional function symbols of letter Y" has been deleted.
4. In the chapter "Instrument graphic symbols", the meanings of the graphic symbols "circle

inside a square" and "diamond inside a square" have been modified; four sections, "Graphic symbols for signal processing functions", "Graphic symbols for binary logic", "Graphic symbols for electrical elements" and "Description of graphic symbol dimensions", have been added; and some instrument graphic symbols have been adjusted and supplemented.

5. In the chapter "Application examples of graphic symbols", some examples have been modified and deleted.

This standard was proposed by and is under the jurisdiction of the China Petroleum and Chemical Industry Federation.

China Chengda Engineering Co., Ltd. is responsible for the interpretation of the technical contents of this standard. Any comments and suggestions arising in the course of implementing this standard should be sent to China Chengda Engineering Co., Ltd. (address: Chengda Building, No. 279, Middle Section of Tianfu Avenue, Chengdu; postcode: 610041) for reference in future revisions.

Chief editorial organization of this standard: China Chengda Engineering Co., Ltd.

1 General provisions

1.0.1

This standard is formulated in order to unify the application of and requirements for functional identification and graphic symbols for process measuring and controlling instrumentation in the chemical industry, and to promote the standardization of functional identification and graphic symbols for process measuring and controlling instrumentation in engineering design.

1.0.2

This standard is applicable to the compilation of instrument loop numbers and instrument tag numbers, and to the specification and application of instrument graphic symbols, in automatic control design in the chemical industry.

1.0.3

In addition to complying with the requirements of this standard, the functional identification and graphic symbols for process measuring and controlling instrumentation shall also comply with the provisions of the current relevant national standards.

2.0.1 accessible

A feature of a device or function, a feature of an interactively shared system function, or a feature that can be used or viewed by the operator for the purpose of performing control operations.

2.0.2 basic process control system

A system which responds to input signals from the process, from the equipment associated with the system and from the operator, and generates output signals that cause the process and the equipment associated with the system to operate in the required manner.

2.0.3 computer system

A system integrated with the production process by manipulating set points in the basic process control system, including but not limited to process controllers, process optimizers, statistical process control systems, model predictive process control systems, analyzer controllers, business computers and manufacturing systems.

2.0.4 discrete (instrument device or function)

An independent hardware-based instrument device or function which may or may not be connected to other instrument devices or systems, including but not limited to transmitters, switches, relays, controllers and control valves.

2.0.5 distributed control system

A network of intelligent stations of hierarchical structure, with distributed control functions and centralized operation and display. Its purpose is to control, or to control and manage, an industrial production process or plant.

2.0.6 programmable logic controller

An electronic controller whose functions can be stored as a program in the control unit. The configuration and wiring of the controller are independent of the functions of the controller system.

2.0.7 shared control

A feature of a control device or function containing preset algorithm programs which are retrievable, configurable and connectable, allowing the user to define control strategies and functions. It is often used to describe the control features of DCS, PLC or other microprocessor-based systems.

2.0.8 shared display

An operator interface device, which may be a screen, light-emitting diode, liquid crystal or other display unit, used to display process control information from a number of sources at the command of the operator. It is often used to describe the display features of DCS, PLC or other microprocessor-based systems.