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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 25110.1-2010

**Industrial automation systems and integration -- Distributed
installation in industrial applications -- Part 1: Sensors and
actuators**

工业自动化系统与集成 工业应用中的分布式安装 第1部分：传感器和执行器

(English Translation)

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Foreword

GB/T 25110 "Industrial automation systems and integration - Distributed installation in industrial applications," contains the following sections.

Part 1. Sensors and actuators;

Part 2. Hybrid communication bus;

Part 3. distribution bus.

This part of GB/T 25110 Part 1.

This part identical with ISO 23570-1:2005 "Industrial automation systems and integration - Distributed installation in industrial applications - Part 1 Score. sensors and actuators "(in English), the use of equivalent translation method for drafting.

"Industrial automation systems and integration of industrial applications Distribution 2005. technical content in this composition and structure of ISO 23570-1 Installation - Part 1. consistent with sensors and actuators "(in English).

This section only the following editorial changes.

--- The "ISO 23570" to "GB/T 25110", the "ISO 23570-1" changed to "GB/T 25110 Part 1" or GB/T 25110.1 or "GB/T 25110 in this section";

--- Remove the ISO 23570-1:2005 Foreword and in accordance with the requirements of national standards for the preparation redrafting the foreword;

--- Emerging international standards in this section has been transformed into national standards, national standards be renumbered number unconverted international standards

Reservations.

Appendix A of this section is informative appendix.

This part is proposed by China Machinery Industry Federation.

This part of the automation systems and integration by the National Standardization Technical Committee (SAC/TC159) centralized.

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Introduction

Discrete parts manufacturing industry for the modern machine is a complex system, which includes the preparation of material (metal removal, molding material Etc.), material handling, clamping, and the transmission line parts move from one station to another station subsystem. Each subsystem is itself a Complex systems containing many sensors, actuators and control elements, which receive and transmit electrical signals and/or power required. To reduce it Downtime barrier case, most of them using the quick-change cable assemblies. System as a whole, the need for proper operation to coordinate the various subsystems, which requires more cables and connectors. Because of this complexity, proper operation of such a machine requires a large the amount of cables and connectors. Adding sensors, actuators and control elements of the number of cable assemblies cause this kind of increase. Because of its complex Polygamous, cable assemblies kind of increase will lead to increased maintenance costs, a large number of spare parts inventory and increase maintenance personnel training costs.

Explanation.

- 1 --- motors (e.g., stepper motors) with integrated electronic components;
- 2 --- fixed speed motor with separate motor controller;
- 3 --- distribution control cabinet;
- 4 --- having a fixed speed motor connected to the motor controller;
- 5 --- with integrated I/O modules and settings of sensors and actuators with a variable-speed motor;
- 6 --- having a sensor I/O modules;
- 7 --- motors (e.g., stepper motors) with integrated electronic components;
- 8 --- connected to a set of sensors and actuators including hydraulic/pneumatic valve in the

I/O modules;

. 9 --- remote terminal.

FIG. 1 GB/T 25110 in the expression system components

GB/T 25110 provides for the cables, connectors and selection of parameters within the range of these elements a set of requirements, if at all to give full Foot, which will greatly reduce the complexity and maintenance costs of such machine line system. For manufacturers of such systems would reduce the complexity of the in this way the cost of profitability, and for the user of such a system, due to reduced spare parts inventory and simplify maintenance training will reduce downtime Party Formula profit.

GB/T 25110 technique described in other industrial processes and applicability; for discrete parts manufacturing, it does not limit the suitability Versatility.

GB/T 25110 expressed in three important aspects.

- Sensors and actuators with interconnection system architecture;
- Containing highways (field bus) and the power supply system architecture of the hybrid field device;
- Trunk can provide power for the electric power system, all auxiliary motor.

GB/T 25110 power devices such as metal cutting spindle motor is not covered.

GB/T 25110 in the machine described by the national and international safety standards constraints. GB/T 25110 intends to support character details this combination of standard system components.

In Figure 1, the "solid" for the motor cable on behalf of the 3-phase AC power distribution bus. "Hollow" represents an fieldbus cable through Letter channels and low-voltage electric hybrid communication bus.

Figure 1 middle (3) 3 groups display for distribution bus control cabinet. The distal end portion of the cabinet containing the fieldbus communication, and low-voltage power supply 3-phase power.

The left control cabinet (1) is a motor having an integrated electronic component, and (2) is a fixed speed motor having a separate motor controller.

Two units via the communication bus and power distribution bus connected to the control cabinet.

Control cabinet right (4) is fixed speed motor has a motor connected to the controller, and (5) having a connection to a number of sensors and actuators Variable speed motor is integrated I/O modules, and (6) is connected to a plurality of sensors and actuators comprising hydraulic/pneumatic valve of another an I/O module. I/O modules (6) Mix only

communication bus connected to the control cabinet through.

Front of the cabinet there are three units, (7) is a motor with integrated electronic components (8) is connected to several sensors and containing fluid Another I actuator pressure/pneumatic valve/O modules, and (9) is a remote terminal.

Figure 1 may be used to explain the interconnection GB/T 25110 of the various components.

This section GB/T 25110 provides support for sensor system requirements, for actuators and I/O modules.

GB/T 25110.2 provides communication requirements and low voltage distribution systems for sharing. GB/T 25110.3 provides for low power Electrical power distribution system requirements.

Although by the use of a separate part of the standard, it may be able to significantly reduce maintenance and operating costs, but to get the maximum benefit, Only if all parts of this standard.

This section GB/T 25110 provides support for sensor system requirements, for actuators and I/O modules.

Industrial automation systems and integration Distributed installation in industrial applications Part 1. Sensors and actuators

1 Scope

This section GB/T 25110 requirements between machine tools and industrial automation in the field of large-scale equipment similar to the control system components Interconnections. The specification includes. cable type, size and color of the jacket, the type of connector and contact assignments as well as for sensors and enforcement Actuator diagnostics.

This section GB/T 25110 requirements between the sensor and actuator using the input or the output of the direct control of I/O modules Interconnection, as well as sensors and actuators suitable for use in diagnostic functions.

This section GB/T 25110 no statements about security issues such equipment operation. This requirement should consult with the appropriate security standard.

2 Conformance

If the sensors, actuators, cable assemblies and I/O modules to meet the requirements of Article 5, which the manufacturer can declare compliance with GB/T 25110 of this section.

If all parts of discrete parts manufacturing equipment to meet the requirements of Article 5,