

ICS 25.010
CCS J 07



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

GB/T 19903.111-2013

**Industrial automation systems and integration -- Physical
device control -- Data model for computerized numerical
controllers -- Part 111: Tools for milling machines**

工业自动化系统与集成 物理设备控制 计算机数值控制器用的数据模型 第111部分
： 铣床用刀具

(English Translation)

Issued on: November 12, 2013

Implemented on: March 15, 2014

Issued by: Standardization Administration of China

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References

Foreword

GB/T 19903 "Industrial automation systems and integration - Physical device control data model for computerized numerical controllers of" divided into the Under sections.

--- Part 1. Overview and basic principles (ISO 14649-1);

--- Part 10. General process data (ISO 14649-10);

--- Part 11. Process data for milling (ISO 14649-11);

--- Part 12. Process data for turning (ISO 14649-12);

--- Part 111. Milling Tool (ISO 14649-111);

--- Part 121. lathe tool (ISO 14649-121);

This section GB/T Part of 11,119,903.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This part identical with ISO 14649-111:2010 "Industrial automation systems and integration - Physical device control computer numerically controlled Used Part 111 data model. Milling Machine Tool. " Consistency correspondence between this part of international documents and normative references of our files are as follows.

--- GB/T 19903.10 Industrial automation systems and integration - Physical device control data model for computerized numerical controllers of Part 10. General process data (ISO 14649-10:2004, IDT)

--- GB/T 19903.11 Industrial automation systems and integration - Physical device control data model for computerized numerical controllers of Part 11. Process data for milling (ISO 14649-11:2004, IDT) Edit this section to the following modifications.

GB/T 19903.111 standard text used in the "GB/T 19903 in this part of" instead of "this part of ISO 14649" is used.

Please note that some of the content of this section may involve patents. This part of the release mechanism does not assume the responsibility to identify these patents.

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.

This section is drafted. Beijing Machine Tool Research Institute, Beijing University of Chemical Technology, Dalian Machine Tool Group Co., Ltd., a limited GSK the company, Nanjing Washing CNC Technology Co., Ltd., Dalian-NC Technology Development Center Co., Ltd.

Introduction

Modern production equipment manufacturing enterprises are often distributed at home and abroad, these devices are often provided by different manufacturers. In manufacturing Process, we need between the workshops and equipment to transfer large amounts of information. Today, digital communications standards have solved reliably pass through the global network Lose information technology issues. For mechanical processing, by GB/T 16656 series of standards (STEP standard) makes product data Description standardization, which provides the possibility for the machinery manufacturing enterprises to adopt standardized data throughout the process. However, prejudice standardization Cause of data is the data format used in the enterprise CNC machine tools used. Most CNC machine tools are still using GB/T 8870 standard "G and M code" language programming associate provisions, NC programs are usually generated by CAD/CAM systems. However, with the GB/T 8870 standard Associate program has some shortcomings. First, the language used for the programming of the machine tool center axis, rather than parts processing Programming process; second, procedural semantics GB/T 8870 regulations in most cases be misleading; third, CNC manufacturers tend to spread Charge of programming languages, but this is beyond the scope of the expansion GB/T 8870 standard, non-interchangeable.

GB/T 19903 is a new model of data transfer between CAD/CAM systems and CNC machine tools, used to replace GB/T 8870 standard. It uses object-oriented principle of step (Workingstep), by a predetermined machining process (rather than the tool Motion) to overcome the lack of GB/T 8870 standard exist. Corresponding to the top step of machining features and associated parameters, CNC systems the step is converted into motion and the tool axis operation. GB/T 19903 A major advantage is that it uses data from the GB/T 16656 standard According to the model. Since the GB/T 19903 standard provides a wide range of manufacturing process model, therefore, it can also be used as all other

information technology Two-way and multi-directional exchange of data between the base of the system operation.

GB/T 19903 is an object-oriented programming information and context preservation methods used, replacing the data into a simple switch command or linear and circular motion. And because of its object-oriented features, and describes the machining operation of the workpiece, rather than describing the machine coordinate movement, because and it can run on different machines or controllers. New data models such as the NC controller used, its compatibility will be omitted by Postprocessor all data adaptation work. If GB/T 8870 NC program in this controller, the appropriate interpreter should be able to handle different types of parallel NC program is necessary.

From the use of GB/T 8870 process-based programming to portable feature programmed with a gradual. GB/T 19903 of early adopters it will be supported by the program or manually enter the traditional "G and M code" data, as modern controller supports both command-line interface and support as a graphical user interface. With the growing popularity of open architecture controllers, this approach will be more easily achieved. GB/T 19903 Excluding traditional programming statements.

Industrial automation systems and integration - Physical device control Data model for computerized numerical controllers of Part 111. Milling Tool

1 Scope

GB/T 19903 provisions of this part of the description of milling machines and machining centers with cutting tool data elements.

This section applies to and GB/T 19903.11 (milling machines and machining centers process data) to use together. These data elements can be it is used to select one of the processing operations, but they do not have complete information about a description of a particular tool. Therefore, the choice of leaving some genera to the controller of the greater freedom of tool selection.

Note 1: Assuming NC system can be specified to give a complete description of the tool from the database. This section defines the work of `miling_machine_tool_schema` the basic tool for the model, which includes CNC system Select the desired tool from the tool holder.

Note 2: GB/T 8870.1, the tool is defined by its identifier (eg T8), no more information about the tool types and geometric aspects. These letters Hike is part of the tool set table, provided by the NC program to the machine. The tool set table gives the tool orientation (such as an eighth slot magazine) and tool type (such as 4mm drill) relationship.

This part is included in the tool set table contains information about.

--- Tool identifier;

--- Tool type;