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

GB/T 8870.1-2012

Replacing GB/T 8870-1988

**Automation systems and integration -- Numerical control of machines
-- Program format and definitions of address words -- Part 1: Data
format for positioning, line motion and contouring control systems**

自动化系统与集成 机床数值控制 程序格式和地址字定义 第1部分：点位、直线运
动和轮廓控制系统的数据格式

(English Translation)

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Foreword

GB/T 8870 "automation systems and integration - Numerical control of machines program format and definition of address words" is divided into two parts.

--- Part 1. point, line motion and contouring control system data format;

--- Part 2. Encoding auxiliary functions (1-8 classes) [Technical Report].

This section GB/T 8870 Part 1, Part 2 of Technical Report is planning to publish.

This section uses the translation method identical with ISO 6983-1:2009 "automation systems and integration - Numerical control of machines and procedures to format Address word definitions - Part 1. point, line motion and contouring control system data format. " this section drafted in accordance with GB/T 1.1-2009 given rules.

Consistency correspondence between this part of international documents and normative references of our files are as follows.

--- GB/T 8129-1997 Industrial automation systems - Numerical control of machines vocabulary (ISO 2806:1994, IDT).

This part of GB/T 8870-1988 compared to the structural adjustment as follows.

--- Usually prepared (G) and the use of auxiliary (M) function code to marshal a unified standard (see Appendix E);

--- Address index increased axis index (see 6.2.1);

--- For existing programming method provides a new data format, helical interpolation (see 7.3); pause (see Chapter 13); threading (See Chapter 11).

Edit this section to the following modifications.

--- Remove the ISO 6983-1:2009 foreword and introduction, will apply the contents into this part of the introduction.

--- Increased appendix NA (informative) "Permanent special application code is not specified" to guide use.

This Part replaces GB/T 8870-1988 "numerical control machine tool positioning, line motion and contouring control system data format." Some 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, Beijing Aerospace CNC System Co., Ltd., Beijing Fanuc Electromechanical Ltd., Guangzhou NC Equipment Co., Ltd., Guangzhou Digital Control Equipment Co. Nordson.

Introduction

GB/T 8870 is described in different data storage media for machine control program in a word address programming format. E.g.

Punched tape, magnetic media, Universal Serial Bus (USB) stick, hard disk, floppy disk, random access memory (RAM), etc., or by a remote data source provide. GB/T 8870 to cover variable block format that does not include mechanical design.

The program format classification GB/T 8870 for machinery/machine tool numerical control (NC) control program. But also for a variety of several Classified and interactive dialogue between the machinery.

With GB/T 8870 program format classification is generally based on "G-code programming" or "ISO programming." According to GB/T 8870 requirements does not guarantee the interchangeability of different mechanical/machine between the machine control program. Set forth in Appendix D Consider some additional requirements to ensure their interchangeability.

Automation systems and integration - Numerical control of machines Program format and definition of address words Part 1. point, line motion and contouring Data Format Control System

1 Scope

GB/T 8870 this part of the data format Numerical control of machines used in the positioning, line motion and contouring control systems proposed Requirements and recommendations, help coordinate systems design, spare parts processing procedures required for the type of FIG least, so as to promote programming technology system First,

and between models of CNC machine tools, processing technology, function, size and precision of the same classification to enter the program interchangeable. hope Wang used a simple format for purely numerical control machine programming, more complex mechanical systems just do step by step stretch.

This section does not apply to the shipbuilding industry specific numerical control flame cutting machine and plotter. Their associated format ("ESSI grid Formula ") described in the ISO 6852.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

ISO 2806 Industrial automation systems - Numerical control of machines vocabulary
(Industrialautomationsystems-Numerical controlofmachines-Vocabulary)

3 Terms and Definitions

Terms and definitions as defined in ISO 2806 apply to this document.

4 Program format

Machining program by the data block, including the control system command group, the block consists of several words, each word is a control system A system of specific instructions.

"Block End" character is used to terminate each data block, and before the first data block is placed.

"Program start" character should be placed including the "end of block" character, including all control data before and recommended it as "absolute weight Set stop "character.

All letters, numbers and special characters should be consistent in Appendix A. When the print processing program can print these characters. Appendix A "non Print "character, except LF/NL (end of block) character outside the control means be ignored.

If there is any group of characters, dealing with the requirements of this section when inconsistent, the group of characters should be within brackets (control pause - resume control Complex), but it can not contain "." or "%" character. This group of characters can be displayed, for example, it is used to guide the operator.

When the need to identify a machining program, the identification mark should be placed immediately after the "program start" character, the first "end of block" before character.

If the identification flag in the letters, then all signatures should be in parentheses. We need

to identify the machining program number must be placed immediately following the first A "Block End" position after the character, if the program number is greater than the ability to store and display systems, display the least significant digit.