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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Production equipment for microsystems. Interface between end effector and handling system

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

The translation method used in this standard is equivalent to ISO 29262.2011 "Interfaces between end effectors and processors of production equipment for microsystems".

The Chinese documents that have a consistent correspondence relationship with the normatively cited international documents in this standard are as follows.

---GB/T 119.2-2000 cylindrical pin hardened steel and martensitic stainless steel (eqvISO 8734.1997);

---GB/T 1800.1-2020 Product Geometric Technical Specification (GPS) Linear Dimension Tolerance ISO Code System Part 1.

The basis of tolerance deviation and fit (ISO 286-1.2010, MOD);

---GB/T 1800.2-2020 Product Geometric Technical Specification (GPS) Linear Dimension Tolerance ISO Code System Part 2.

Standard tolerance zone code and limit deviation table of holes and shafts (ISO 286-2.2010, MOD);

---GB/T 1182-2018 Product Geometric Technical Specification (GPS) Geometric Tolerance Shape, Direction, Position and Runout Tolerance Marking

(ISO 1101.2017,MOD);

---GB/T 6093-2001 Geometric Quantity Technical Specification (GPS) Length Standard Gauge Block (eqvISO /FDIS3650.1998);

---GB/T 14468.1-2006 Mechanical Interface of Industrial Robot Part 1.Board Type (ISO 9409-1.2004, IDT);

---GB/T 14468.2-2006 Industrial robot mechanical interface Part 2.Shaft (ISO 9409-2.2002, IDT);

---GB/T 16977-2019 Robot and robot equipment coordinate system and motion naming principles (ISO 9787.2013, IDT);

---GB/T 18233-2008 General cabling for information technology user buildings (ISO /IEC 11801.2002, IDT);

---GB/T 18858.2-2012 Low-voltage switchgear and control equipment Controller Device Interface (CDI) Part 2.Implementation

Traveler sensor interface (AS-i) (IEC 62026-2.2008, IDT);

---GB/T 33362-2016 Conversion of hardness values of metallic materials (ISO 18265.2013, IDT).

This standard was proposed by the China Machinery Industry Federation.

This standard is under the jurisdiction of the National Standardization Technical Committee for Metal Cutting Machine Tools (SAC/TC22).

Drafting organizations of this standard. National Machine Tool Quality Supervision and Inspection Center, Guangdong Grand Precision New Technology Co., Ltd., Shandong Construction University

School, Dalian University of Technology, Beijing University of Technology, Chongqing Machine Tool Group Co., Ltd., Wuhan Heavy Machine Tool Group Co., Ltd., Guangdong Jinke Machine Tool

Co., Ltd., Shandong Yima Intelligent Technology Co., Ltd.

Introduction

This standard specifies the interface requirements between the end effector and the control system or between the functional modules of the micro-system production equipment. In precision

In the production equipment with micro-system technology, the mode of small batch

production requires frequent replacement of tools and end effectors. Macroscopic control system

The interface, such as GB/T 14468.1 or GB/T 14468.2, is not applicable to the interface of micro and precision mechanical end effectors and tools.

Due to the small processing size of its parts, it will not be considered here. In addition to the mechanical interface, this standard also specifies the feedthrough of fluid and electrical coupling components.

Location and specifications. A notable feature that is different from the standard in other applications is that the production and assembly process can be observed through the central opening.

Production equipment for microsystems

End effector and processor interface

1 Scope

This standard specifies the interface requirements between the end effector and the control system in the micro system production equipment, as well as the manual and automatic replacement

The basic deviation, tolerance and identification of the end effector. Its purpose is to specify the end effector interface on three levels as specifications increase.

This standard applies to production equipment for microsystems.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

ISO 286-1 Product Geometric Technical Specification (GPS) Linear Dimensional Tolerance ISO Code System Part 1.Tolerance Deviation and Matching

The basis of integration [Geometricalproductspecifications(GPS)-ISO codesystemfortolerancesonlinearsizes-

Part 1.Basisoftolerances, deviationsandfits]

ISO 286-2 Product Geometric Technical Specification (GPS) Linear Dimensional Tolerance ISO Code System Part 2.Standard Tolerance Zone Code

And hole, shaft limit deviation table [Geometricalproductspecifications(GPS)-ISO

codesystemfortoleranceson

linearsizes-Part 2.Tablesofstandardtoleranceclassesandlimitdeviationsforholesandshafts]

ISO 1101 Geometrical Technical Specifications for Products (GPS) Geometrical Tolerance Shape, Direction, Position, and Runout Tolerance Marking [Geometrical

ProductSpecifications(GPS)-Geometricaltolerancing-Tolerancesofform,orientation,location

andrun-out]

ISO 3650 Geometrical Product Specifications (GPS) length standard gauge block [GeometricalProductSpecifications

(GPS)-Lengthstandards-Gaugeblocks]

ISO 8734.1997 Parallel pins hardened steel and martensitic stainless steel [Paralelpins, ofhardenedsteelandmartensitic

stainlesssteel(Dowelpins)]

ISO 9409-1 Industrial Robots Mechanical Interface Part 1.Plates (Manipulating industrial robots-

Mechanicalinterfaces-Part 1.Plates)

ISO 9409-2 Mechanical Interface of Industrial Robots Part 2.Shafts (Manipulating industrial robots-

Mechanicalinterfaces-Part 2.Shafts)

ISO 9787 Industrial robot coordinate system and motion naming principles (Manipulatingindustrialrobots-Coordinate

systemsandmotionnomenclatures)

ISO 18265 Conversion of Hardness Values of Metallic Materials (Metalicmaterials-Conversionofhardnessvalues)

ISO /IEC 11801.2002 Information technology-Generic cabling (Informationtechnology-Generic

cablingforcustomerpremises)

ISO /IEC 24702 Information technology-Generic cabling (Informationtechnology-Generic cabling)

cabling-Industrialpremises)

ISO /IEC 24740 Information Technology Response Link [Informationtechnology-ResponsiveLink(RL)]

IEC 61131-2 Programmable Controller Part 2.Equipment Requirements and Testing