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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 33262-2016

Design specification of modularity for industrial robots

工业机器人模块化设计规范

Issued on: December 13, 2016 **Implemented on: July 1, 2017**

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Standardization Administration of the PRC

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009. This standard is proposed by the China Machinery Industry Federation. This standard is nationalized by the National Automation and Integration Standardization Technical Committee (SAC/TC159). The main drafting unit of this standard. Shenyang Xin Song Robot Automation Co., Ltd., Beijing University of Aeronautics and Astronautics, Beijing Machinery Industry Automation Center, China Machine Productivity Promotion Center. The main drafters of this standard. Xu Fang, Zou Fengshan, Li Bangyu, Song Jilai, Wei Hongxing, Yang Shuai, Wang Haidan, Liu Ying. Specification for modular design of industrial robots

1 Scope

China's national specification for designing industrial robots in modules. It specifies the terminology, the modular classification, the modular design requirements and the modular design methods for industrial robots, and it applies to the modular design of serial, parallel and SCARA robots. Where the service robot general principles document treats modularity as a way out of the cost of designing every machine from scratch, this one applies the same idea to a product family that is already fairly standardised - and finds a different problem to solve. An industrial robot is built from a small number of recurring elements: a joint with its motor, gearbox, brake and encoder; a link between joints; an end effector interface; and a controller. Nearly every robot in the world is some arrangement of those, and yet each manufacturer's are incompatible with every other's and often with their own previous generation. The standard divides the modules into two families that need different treatment. Mechanism modules are the physical joints and links, and their specification concerns composition, range of motion, how their characteristics are expressed, and above all their interfaces - mechanical, electrical and data. Control modules are the drives, controllers and communication elements, and they are classified and specified separately. The design method clause then sets out the process: define the requirement, apply the design principles, follow the design steps, and select modules to meet it, which is the step

modularity is supposed to make possible. Issued on 13 December 2016 and in force since 1 July 2017.

This standard specifies the terminology, modular classification, modular design requirements and modular design requirements for industrial robots (hereinafter referred to as "robots") Modular design methods. This standard applies to industrial robots (including tandem, parallel, SCARA) modular design.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

GB 146.1 Standard Gauge Rail Locomotive Vehicle Boundary

GB 1589 Road vehicle profile size, shaft load and quality limit Safety requirements for robots for industrial environments - Part 1. Robots - Safety requirements

GB/T 11291.1-2011 Performance specification for industrial robots

GB/T 12642-2013 Performance of industrial robots

GB/T 12644-2001 Industrial robots - Mechanical interfaces - Part 1. Boards

GB/T 14468.1-2006 Industrial robots - Mechanical interfaces - Part 2. Shafts GB/T 14468.2-2006

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Robot modular terminology and definitions

3.1.1 Module module Component Can be individually named and independently complete a certain function of the unit.

3.1.2 Mechanism module A module for the transfer of movement and movement of a robot movement.

3.1.3 Control module controlmodule The module that records the current operating state of the robot and implements the robot control function.

3.2 Institutional Module Terms and Definitions

3.2.1 Joint module jointmodule To achieve the robot rotation, movement and other movement function module.