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

GB/T 30549-2014

General specification for permanent magnet AC servo motor

永磁交流伺服电动机 通用技术条件

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Table of Contents

1 Scope
4 Classification
5 Technical Requirements and Test Methods
5.1 Appearance
5.2 Nameplate
5.3 Lead wires or terminals
5.4 External shape and installation dimensions
5.5 Radial clearance
5.6 Axial clearance
5.7 Radial runout of shaft extension
5.8 Radial runout of the flange stop relative to the motor axis
5.9 Runout of the motor flange mounting end face relative to the motor shaft
5.10 Dielectric strength of insulation
5.11 Insulation Resistance
5.12 Direction of Rotation
5.13 Difference in rotational speed between forward and reverse directions
5.14 Rated Data
5.15 Continuous stall data
5.16 Peak stall data
5.17 Work Area
5.18 Back electromotive force constant
5.19 Static friction torque
5.20 Stator line resistance
5.21 Rotor moment of inertia
5.22 Electrical Time Constant

1 Scope

China's national general specification for permanent magnet AC servo motors. It specifies the classification, the technical requirements and test methods, the inspection rules, and the delivery preparation and user service for these motors, and it applies to permanent magnet AC servo motors of frame sizes 40 to 500 inclusive. The permanent magnet AC servo motor is the actuator behind almost all modern factory automation: machine tool

axes, robot joints, packaging and printing machinery, injection moulding, and the feed drives of any equipment where a position or a speed has to be held accurately and changed quickly. What distinguishes it from an ordinary induction motor is that its rotor field is produced by magnets rather than by induced current, so it has no rotor losses, a high torque-to-inertia ratio, and a torque that follows current closely enough to be controlled directly - and that it is never sold alone, but always as one half of a matched pair with a drive. The standard classifies motors by drive method into sinusoidal and square wave types, and this is the first thing a buyer needs to know, because the two require different drives and different feedback and are not interchangeable. It then fixes the model designation - frame size, product name code, performance parameter code and derivative code, built on GB/T 10405 - so that a motor can be identified from its type number; specifies the DC bus voltage series from 6 V to 1500 V; requires the standard mounting to be a flanged spigot face and the standard shaft extension to be a cylindrical shaft with keyway to GB/T 756; and sets the enclosure protection, cooling and duty requirements against GB/T 4942.1 and GB 755. Issued on 6 May 2014 and in force since 28 October 2014.

This standard specifies the classification, technical requirements and test methods, inspection rules, delivery preparation and user services for permanent magnet AC servo motors. This standard applies to permanent magnet AC servo motors (hereinafter referred to as "motors") with frame sizes of 40 (inclusive) to 500 (inclusive).

4 Classification

4.1 Classification Motors are classified into sinusoidal wave drive motors and square wave drive motors according to their driving method.

4.2 Model Naming The model number of the motor shall be named in accordance with GB/T 10405-2009, consisting of the frame number, product name code, performance parameter code, and derivative code. It consists of four parts.

4.2.1 Frame size The frame size of the motor should conform to the following requirements.

a) The frame size and its corresponding frame should be selected in accordance with GB/T 7346. The frame size is indicated by the outer diameter of the motor or the center height of the motor shaft.

b) When using the outer diameter to indicate the frame size, for motors with an outer diameter not exceeding 320mm, the frame size shall conform to the specifications of GB/T 7346. When the motor has a non-cylindrical shape, it is represented by the diameter of the inscribed circle of the non-cylindrical section; for motors with a diameter greater than 320mm... The frame size of the machine can be represented by the center height of the motor shaft;

c) When using the shaft center height to represent the frame number, "M" should be added

after the frame number represented by the shaft center height;

d) The frame number only takes the numerical part of the frame size and has no unit of measurement.

4.2.2 Product Name Code The product name code should be represented by uppercase Chinese Pinyin letters and should comply with the provisions of section

2.3 of GB/T 10405-2009.

4.2.3 Performance Parameter Codes Performance parameter codes are represented by 01 to 99.

4.2.4 Derivative Codes Derivation includes structural derivation and performance derivation. Derivative codes are represented by uppercase Chinese Pinyin letters "A", "B", and "C", but must not use... Use the letters "O" and "I".

4.3 DC bus voltage The DC bus voltage specifications for motor drivers are. 6V, 12V, 24V, 36V, 48V, 60V, 72V, 96V, 110V, 220V. 310V, 440V, 530V, 750V, 1500V or as specified in the product's specific technical specifications.

4.4 Basic External Structure and Installation Dimensions The basic mounting type of the motor is an end face stop with a flange. The basic shaft extension type of the motor is a cylindrical shaft extension with a keyway. The shaft extension diameter and keyway of the motor shall conform to the provisions of GB/T 756. The basic external structure and installation dimensions of the modular motor are specified in the product's specific technical specifications.

4.5 Protection rating and cooling method The enclosure protection rating of the motor shall comply with the provisions of GB/T 4942.1. The motor is cooled by either closed self-cooling or closed forced cooling.

5.1 Appearance

5.1.1 Technical Requirements The motor surface should be free from rust, dents, scratches, and peeling coating; fastener connections should be secure, and the lettering and content on the nameplate should be clear and legible. It is incorrect, and it must not fall off.

5.1.2 Test Methods Visually inspect the appearance of the motor and its accessories; the results should meet the requirements of 5.1.1.

5.2 Nameplate

5.2.1 Technical Requirements The motor shall have a nameplate, which shall comply with the provisions related to nameplates in GB/T 7346 and the durability provisions in GB 18211.

5.2.2 Test Methods The durability test of the nameplate shall be conducted according to the

method specified in

5.2.2 of GB/T 7345-2008, and the results shall meet the requirements of 5.2.1.

5.3 Lead wires or terminals

5.3.1 Technical Requirements The leads or terminals of the motor shall comply with the provisions of

5.3.1 in GB/T 7345-2008.

5.3.2 Test Methods The test shall be conducted according to the method specified in

5.3.1 of GB/T 7345-2008, and the results shall meet the requirements of 5.3.1.

5.4 External shape and installation dimensions

5.4.1 Technical Requirements Manufacturers should specify the shape and mounting dimensions of the motor, which should conform to Figure 2 and Table 1 or according to the product's specific technical specifications. Technical requirements apply. Unless otherwise specified, the manufacturer shall deliver the outline and installation dimension drawings together with the motor.

5.4.2 Test Methods Select the type and accuracy class of measuring tools according to the motor's shape and installation dimensions. Place the motor under normal temperature conditions to allow it to stabilize. After determining the non-working temperature, each item should be measured, and the results should meet the requirements of 5.4.1.

Note. Immediate measurement at room temperature is permitted without affecting measurement accuracy.

5.5 Radial clearance

5.5.1 Technical Requirements When required, the manufacturer should specify the radial clearance and radial force applied to the motor shaft. The radial clearance should conform to the product specifications. Technical requirements.

5.5.2 Test Methods The radial force shall be measured according to the method specified in 5.5.2 of GB/T 7345-2008, and shall comply with the provisions of the product's specific technical specifications. The results should meet the requirements of 5.5.1.

5.6 Axial clearance

5.6.1 Technical Requirements When required, the manufacturer should specify the axial clearance and axial force applied to the motor shaft. The axial clearance should conform to the product specifications. Technical requirements.