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

GB/T 22137.2-2018

**Valve positioners for industrial process control systems -- Part
2: Methods of evaluating the performance of intelligent valve
positioners**

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Foreword

GB/T 22137 "Valve Positioner for Industrial Process Control System" is divided into the following two parts.

--- Part 1. Performance evaluation method for pneumatic output valve positioner;

--- Part 2. Intelligent valve positioner performance evaluation method.

This part is the second part of GB/T 22137.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 22137.2-2008 "Valve positioner for industrial process control systems - Part 2. Pneumatic output intelligent valves

Door Locator Performance Evaluation Method. Compared with GB/T 22137.2-2008, the main changes are as follows.

---Modified standard name;

--- Revised the normative reference document (see Chapter 2, Chapter 2 of the.2008 edition);

--- Modified the term "configuration" to "configuration" (see 3.2,.2008 version 3.2);

--- Modified the term "configurability" to "configuration capability" (see 3.3,.2008 version 3.3);

--- Modified the term "form" to "set" (see 3.6, 3.6 of the.2008 edition);

--- Modified the term "stroke truncation" to "stroke cut-off point" (see 3.7, 3.6 of the.2008 edition);

--- Increased the consideration of "two-way action type" in the review function checklist (see Table 1);

--- Adjust the "valve diagnosis" "check valve diagnostic range and tools" from the reliability operation part to the functional part (see Table 1,.2008)

Version 4.2.1.4);

--- Removed "Incorrect Use of Detection" in the Reliability Review Form "Environmental Stress Screening for Reducing Early Failures" (see.2008)

Version 4.2.1.5);

--- Added a table of failure protection characteristics (see Table 6);

--- Deleted the "Manufacturer Support" form (see 4.2.1.6 of the.2008 edition);

--- Revised the variation of the air source pressure in the dynamic test and airflow test in the performance test reference conditions (see 5.2.1, 5.1 of the.2008 edition);

--- Removed the specific size of the actuator (see Table 1, Table 2 of the.2008 edition);

--- Removed the recommended value of the actuator stroke (see 5.1.1.2 of the.2008 version);

--- Revised the size of the dead zone in the friction clause (see 5.2.2.7, 5.1.1.6 of the.2008 edition).

This part uses the redrafting method to modify the use of IEC 61514-2.2013 "Industrial Process Control System Part 2. Installation on the Execution Machine

Performance Evaluation Method for Intelligent Valve Positioners with Pneumatic Output on a Structure/Valve Combination.

The technical differences and their reasons for this part compared with IEC 61514-2.2013 are as follows.

---About the normative reference documents, this part has made technical adjustments to adapt to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory References", and the specific adjustments are as follows.

* Replace IEC 60068-2-1..1990 with GB/T 2423.1-2008 equivalent to IEC 60068-2-1.2007;

* Replace IEC 60068-2-2. 1974 with GB/T 2423.2-2008 equivalent to IEC 60068-2-2.2007;

* Replace IEC 60068-2-78.2001 with GB/T 2423.3-2016 equivalent to IEC 60068-2-78.2012;

* Replace IEC 60068-2-31.1969 with GB/T 2423.7-1995 equivalent to IEC

60068-2-31.1982;

* Replace IEC 60050 (all parts) with GB/T 2900.56-2008 equivalent to IEC 60050-351.2006;

* Replace IEC 60529.1989 with GB/T 4208-2017 equivalent to IEC 60529.2013;

* IEC 61069, IEC 62098 and IEC 61158 with unregulated references have been deleted;

* Added IEC 61508 (all parts) and IEC 61511 (all parts) for normative references.

This section has made the following editorial changes.

---Modified standard name;

--- Added informative Appendix B to list the Chinese documents that have a consistent correspondence with the international documents referenced in this standard.

This part was proposed by the China Machinery Industry Federation.

This part is under the jurisdiction of the National Industrial Process Measurement Control and Automation Standardization Technical Committee (SAC/TC124).

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Introduction

New process measurement and control instruments, including valve positioners, most with microprocessors for digital data processing and communication

Letter methods and/or artificial intelligence make these instruments more complex and add significant value.

Today's smart valve positioners are no longer just controlling the position of the valve, in many cases with self-tests, actuators/valves

Various functions such as door status monitoring and alarm. There are a wide variety of new features, far from being comparable to a single-function "cam-type" positioner.

Therefore, with

Accuracy-related performance tests, while still very important, are not sufficient to demonstrate the flexibility, capability, and design of smart valve positioners.

Features such as work, installation, maintainability, reliability and operability.

The assessments described in this section take into account both hardware and software performance testing and design reviews. The structure of this section is arranged to a certain extent

The framework of IEC /T S62098 "Methods for the evaluation of microprocessor-based instruments" is followed. Some performance tests described in GB/T 22137.1

Still suitable for smart valve positioners. It is recommended to further read the IEC 61069 "Systematic Measurement of Industrial Process Measurement and Control Systems"

Sexual assessment.

Valve positioner for industrial process control systems

Part 2. Smart Valve Positioner

Performance evaluation method

1 Scope

This part of GB/T 22137 specifies the performance evaluation method for single-acting or double-acting intelligent valve positioners (hereinafter referred to as positioners).

Method to test and determine the static and dynamic performance, intelligence and communication of intelligent valve positioners through design reviews and tests ability.

This section applies to receiving standard analog input signals (see IEC 60381) and/or digital signals transmitted via data communication links.

Intelligent valve positioner with pneumatic output. As defined in Chapter 3, the intelligent valve positioner is a data processing, decision generation

A meter that implements its functions with digital technologies such as two-way communication. It can be equipped with additional sensors and additional features to support its main features.

The performance test of the intelligent valve positioner requires the positioner to be installed and connected to the associated actuator/valve assembly. Due to

The performance of the positioner is highly dependent on the actuator used, so some characteristic parameters of the assembly, such as size, stroke, friction