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

GB/T 27669-2011

**Non-destructive testing -- Ultrasonic inspection -- Evaluating
electronic characteristics of ultrasonic test instruments**

无损检测 超声检测 超声检测仪电性能评定

(English Translation)

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Foreword

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

This standard uses the translation method identical with ISO 12710:2002 "NDT ultrasonic testing ultrasonic detector electrical performance assessment" (English Wen first edition).

The standard ISO 12710:2002 made the following editorial changes.

--- Use the "standard" instead of "this International Standard";

--- Deleted international standards foreword, preface rewritten.

Please note that some of the content of this document may involve patents. Release mechanism of the present document does not assume responsibility for the identification of these patents.

The standard proposed by China Machinery Industry Federation.

This standard by the National Standardization Technical Committee tester (SAC/TC122) centralized.

This standard was drafted. Changchun Research Institute of Machinery Co., Ltd.,

Guangdong Shantou Ultrasonic Electronics Corp. ultrasound equipment at public Secretary, Edson (Xiamen) Electronics Co., Ltd., Jilin Province Electrotechnical Society, Jilin Vocational and Technical College.

Introduction

Ultrasonic nondestructive testing technique is the use of ultrasonic pulse and echo signals to detect and evaluate the internal structure of the material lattice or uneven distribution defect. Various types of electronic equipment can produce ultrasonic pulse and echo signals.

This standard describes a method for detecting the ultrasonic detector with display performance characteristics. Although these methods can also be detected with higher frequency Rate of ultrasonic detector, but these methods are best suited for detecting the nominal operating frequency range of 100kHz ~ 25MHz ultrasonic detector.

These recommended techniques for the detection of mass-produced industrial ultrasonic detector. When this standard study ultrasound detector can not serve when a combination of electronic components as a whole be described, the ultrasonic detector can be part of each electrical properties were evaluated separately. Evaluation of the ultrasonic inspection each part of the measuring instrument should provide a description of the relevant parts of the assessment.

Implementation of these proposed rules allow more detailed instructions. To use the provisions of electronic instruments is the ability to effectively use these methods Prerequisite. It recommends carefully selecting and determining detection method. If some application-independent parameters and expectations, may not be detected, for example, for example, when using a single-stage alarm defect in the application it is possible and vertical linear independence, only on the basis of ultrasonic flaw detector display accurate detection of deep or the thickness of the horizontal linear only crucial.

Do not make recommendations or give imply shortest cycle assessment ultrasonic detector electrical properties. Measurement accuracy depends not only each parameter Comprehensive accuracy in each electronic equipment (should be given in the technical specifications and calibration of these instruments in the report) but also on the various parts of the system Readings for precision. Can be assumed that the vertical and horizontal reading error measurements measured by the ultrasonic detector for display $\pm 1\text{mm}$.

In particular, these techniques and methods in this standard aims to achieve the following purposes.

- a) measuring the performance characteristics of the various components of the ultrasonic detector;
- b) Check and ensure that the various components of the ultrasonic detector in working life

has stability;

c) select and specify the required ultrasonic detector inherent overall performance characteristics;

d) the same type of testing, so that the same parts or the same as the entire instrument interchangeability;

e) For the performance test results of different instruments and test source having a consistency and comparability to create the basic conditions.

NOTE: These methods are not suitable for this standard to exclude some or all of measurement technology ultrasonic testing equipment use or application. In addition, this standard does not it is not suitable for ultrasonic testing system as defined performance specifications. If you need to request performance of the system, it is desirable that the relevant parties agree.

NDT ultrasonic testing Ultrasonic detector electrical performance evaluation

1 Scope

1.1

standard established detection method with on-screen display of analog and digital pulse-echo ultrasonic nondestructive testing instrument performance characteristics of the components.

Its purpose is to establish a uniform evaluation method, and compare the measurement results obtained at different times for different laboratories and test data points Analysis process to provide evidence.

This standard does not specify acceptance criteria, the acceptance criteria should be specified by the consumer.

Common components and performance characteristics of ultrasonic detector, comprising measuring the performance characteristics of these methods are listed in 1.2 to 1.6.

1.2 Power section

--- Linear regulator;

--- Battery discharge time;

--- Battery charging time.

1.3 Pulse generator section

--- Pulse shape;

--- Pulse amplitude;

--- Pulse rise time;

---Pulse Width;

--- Pulse spectrum.

1.4 The receiver section

--- Vertical linear;

---Frequency response;

--- Noise and sensitivity;

--- Gain control.

1.5 Moiety

--- Horizontal linear;

--- Clock (pulse repetition frequency).

1.6 Gate and (or) the alarm section

--- Delay and gate width;

--- Resolution;

--- Alarm level;

--- Gain identity;

--- Analog output;

--- Echo the back gate of the linear.

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.

IEC 60050-111 International Electrotechnical Vocabulary Chapter 111. Physics and Chemistry (Internationalelectrotechnicalvocabulary