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

GB/T 8338-2023

Replacing GB/T 8338-2005

Camera shutters - Time measurement

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document replaces GB/T 8338-2005 "Camera Shutter". Compared with GB/T 8338-2005, in addition to structural adjustments and editorial changes

In addition, the main technical changes are as follows.

---Modified the content of the scope (see Chapter 1, Chapter 1 of the.2005 edition);

---Modify "Terms, Definitions and Symbols" to "Terms and Definitions", delete the terms "shutter wide open", "shutter rebound", "exposure value unit" and their

Definition (3.1.1, 3.1.2 and 3.1.6 of the.2005 version), adding inter-lens shutter, focal plane shutter, effective exposure time, exposure time

time, total exposure time, shutter efficiency, exposure time fluctuation, effective exposure time interval rate, exposure unevenness, total exposure time

Intermediate terms and their definitions (see Chapter 3);

---Modify "Classification" to "Symbol", delete the content of "Classification", and include the relevant content of "Symbol" after modification (see Chapter 4,

2005 version 3.2);

---Modify "requirements" to "required characteristics and their tolerances", and its content has been modified (see Chapter 5, Chapter 5 of the.2005 version);

---"General Principles" and "Instruments and Equipment" were added to "Test Methods", and the contents of other test methods were modified (see Chapter 6,.2005

version of Chapter 6);

---Added a chapter of "Notes" and deleted the contents of "Quality Grading", "Inspection Rules", "Instructions for Use" and "Packaging, Transportation and Storage" (see Chapter Chapter 7, Chapters 7, 8, and 9 of the.2005 edition);

---Revise "Appendix A" and "Appendix B" to "Appendix A (Normative) Test Methods", and its content has been completely revised (see appendix A, Appendix A and Appendix B of the.2005 edition).

This document is equivalent to ISO 516.2019 "General definition of camera shutter time and measurement of mechanical shutter".

This document has made the following minimal editorial changes.

---Change the file name to "Measurement of Camera Shutter Time" to coordinate with existing standardized documents.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

1 Scope

This document defines the terms and definitions for exposure times of all types of shutters used in cameras, and specifies the

Exposure time stamps and their tolerances, and defines all types of controls installed in the camera that affect exposure control, shutter closing and synchronization with the flash

Mechanical shutter characteristics.

The test methods described in this document for routine manufacturing testing and quality control are applicable to focal plane testing that requires close proximity to the camera and are not applicable to

Completely assembled digital camera.

2 Normative reference documents

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

frontshutter

Shutter inside the lens.

Note 1. The inter-lens shutter can be at the front, rear or middle of the lens assembly, and can be composed of a rotating disk, rotating slats, sliding blades, swing blades, etc. The program shutter can also be

included.

Note 2. A common feature of inter-lens shutters is that the entire image area is exposed almost simultaneously.

Note 3. When the shutter and aperture are too far apart, the exposure and shutter speed will differ at different points in the image area.

3.2

focal plane shutter focal-plane shutter

The shutter in front of the focal plane.

Note 1. The focal plane shutter can be composed of a fixed or variable slit curtain, a turntable, a sliding blade, etc.

Note 2. The basic feature of the focal plane shutter is that the image area is gradually exposed, and the time required to expose the entire image area is greater than the exposure time of any point.

3.3

effective exposure time effective time

T_e

The best measure of the amount of light falling within an image area.

Note 1. The effective exposure time is defined by formula (1).

$t_e =$

E_0

(1)

In the formula.

t_e --- shutter effective exposure time, unit is seconds (s);

H --- exposure, that is, the integration of illumination over time, the unit is lux.second (lx.s);

E_0 --- maximum illumination, unit is lux (lx).

Note 2. At any point in the image area, when vignetting is not severe, the t_e of the entire image area of the inter-lens shutter is usually the same. For focal plane shutter t_e

Will vary with W and VC . To facilitate measurement, the formula in Note 1 can be

approximated as Formula (2).

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