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Fotografija - Kamere - Avtomatski nadzor ekspozicije

Photography - Film-based cameras - Automatic controls of exposure

Photographie - Appareils de prise de vues à film - Commandes automatiques de l'exposition

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Photography — Film-based cameras — Automatic controls of exposure

Photographie — Appareils de prise de vues à film — Commandes automatiques de l'exposition

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 2721 was prepared by Technical Committee ISO/TC 42, *Photography*.

This second edition cancels and replaces the first edition (ISO 2721:1982), of which it constitutes a minor revision with the following changes:

a) The title has been updated from "Cameras" to "Film-based cameras".

b) The scope has been updated to include the clarification, "This standard is not applicable to digital cameras."

Introduction

This International Standard gives the nominal exposure at the focal plane and its tolerance, which are to be taken as reference values in designing and testing automatic film-based cameras.

"Correct" exposure may vary from one photographer to another due to personal preferences and/or type of photograph. For this reason, no "standard" value for the exposure at the focal plane can be given. However, a "normal" focal plane exposure for a film of a particular speed and an average scene can be determined by allocating representative values to the relevant exposure parameters.

The nominal exposure at the focal plane $H = \frac{H_0}{S}$ or $H = \frac{H_0}{10^{(S^0 - 1)/10}}$ given in this International Standard is determined on the above assumption. Long experience has proved that the above value is adequate for most automatic cameras in most situations.

Since with some cameras the use of a different focal plane exposure gives better results when taking pictures outdoors, the nominal focal plane exposure is only to be considered as a reference value. The tolerance ± 1 step (±1 *E*v) is also a reference value. Experience has proved that this tolerance is satisfactory in most cases. However, a much tighter tolerance, such as ± 1/3 step, is often required by advanced photographers for film such as colour reversal film having limited exposure latitude.

On the other hand, if colour reversal films are not likely to be used in certain kinds of cameras, as in the case of cameras using 110 size colour negative films, even an exposure deviation of + 3 steps or – 1 step is acceptable for such cameras.

Therefore, when testing and/or evaluating an automatic camera according to the methods specified in this International Standard, the above-mentioned points must be taken into consideration. A photographic check of the correct exposure is recommended.

Photography — Film-based cameras — Automatic controls of exposure

1 Scope

This International Standard specifies the exposure at the focal plane of film-based cameras for values of two exposure parameters, i.e. field luminance and film speed, and also describes methods of evaluating other photometric characteristics, such as the acceptance angles of the photoelectric system.

This International Standard applies to automatic exposure control systems which are built into film-based cameras or coupled with them to regulate the exposure in the focal plane as a function of the several exposure parameters. The mechanism can control either the focal-plane illuminance or the exposure-time interval or both. Pointer (or needle) matching systems are included in this International Standard even though they are not fully automatic. This standard is not applicable to digital cameras.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-2-6, *Environmental testing — Part 2-6: Tests — Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27, *Environmental testing — Part 2-27: Tests — Test Ea and guidance: Shock*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
exposure in the focal plane
denoted by H[1)] and defined by the equation

$$H = \frac{1}{A}\int_{A}\int_{t_1}^{t_2} E(r,t)\,\mathrm{d}t\,\mathrm{d}r$$

where

A is the prescribed area for the exposure measurement;

t_1 is the time at which the exposure time begins;

t_2 is the time at which the exposure finishes;

$E(r,t)$ is the illuminance in the focal plane at a point (coordinate r) in the prescribed area at an instant t during the exposure time.

1) International Lighting Vocabulary. Publication CIE 17,1970: light exposure H. In this International Standard, H is referred to as "exposure".