

# ISO/FDIS 516ISO 516:2019 (E)

## Camera shutters — Timing — General definition and mechanical shutter measurements Camera shutters — Timing — General definition and mechanical shutter measurements

---

### Contents

	Foreword
	Introduction
	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Symbols
5	Required characteristics and their tolerances
5.1	Exposure time
5.1.1	Exposure time marking
5.1.2	Tolerances
5.2	Delay time
5.2.1	Front shutters
5.2.2	Focal-plane shutters
6	Test methods
6.1	General
6.2	Apparatus
6.2.1	Apparatus
6.2.2	Detector
6.2.3	Time-interval meter
6.3	Front-shutter test
6.3.1	Test assembly
6.3.2	Procedure
6.3.2.1	Total time, $t_o$
6.3.2.2	Effective time, $t_e$
6.3.2.3	Delay time, $t_d$
6.4	Focal-plane-shutter test
6.4.1	Test assembly
6.4.2	Procedure
6.4.2.1	Effective time, $t_e$
6.4.2.2	Non-uniformity of exposure, $r$
6.4.2.3	Delay time, $t_d$
7	Explanatory notes
7.1	Tolerance
7.2	Test method
1	Scope
2	Normative references
3	Terms and definitions

**4 Symbols**

**5 Required characteristics and their tolerances**

- 5.1 Exposure time
- 5.1.1 Exposure time marking
- 5.1.2 Tolerances
- 5.2 Delay time
- 5.2.1 Front shutters
- 5.2.2 Focal-plane shutters

**6 Test methods**

- 6.1 General
- 6.2 Apparatus
- 6.2.1 Apparatus
- 6.2.2 Detector
- 6.2.3 Time-interval meter
- 6.3 Front-shutter test
- 6.3.1 Test assembly
- 6.3.2 Procedure
- 6.3.2.1 Total time, to
- 6.3.2.2 Effective time, te
- 6.3.2.3 Delay time, td
- 6.4 Focal-plane-shutter test
- 6.4.1 Test assembly
- 6.4.2 Procedure
- 6.4.2.1 Effective time, te
- 6.4.2.2 Non-uniformity of exposure, r
- 6.4.2.3 Delay time, td

**7 Explanatory notes**

- 7.1 Tolerance
- 7.2 Test method

**Annex A (normative) Graphic test methods**

- A.1 General
- A.2 Apparatus
- A.2.1 Cathode-ray tube oscilloscope.
- A.2.2 Camera.
- A.2.3 Connecting leads.
- A.2.4 Revolving-drum tester (for focal-plane shutters).
- A.3 Front-shutter test
- A.3.1 Test assembly
- A.3.2 Procedure
- A.3.2.1 Effective time, te
- A.3.2.2 Total time, to
- A.3.2.3 Non-uniformity of exposure, r
- A.3.2.4 Delay time, td
- A.4 Focal-plane-shutter test
- A.4.1 Test assembly
- A.4.2 Procedure
- A.4.2.1 Effective time, te
- A.4.2.2 Slit width, w (at any distance from the edge of the picture area)
- A.4.2.3 Curtain velocity, vc
- A.4.2.4 Non-uniformity of exposure, r
- A.4.2.5 Overall time, T

**Annex A (normative) Graphic test methods**

- A.1 General
- A.2 Apparatus
- A.2.1 Cathode-ray tube oscilloscope.
- A.2.2 Camera.
- A.2.3 Connecting leads.
- A.2.4 Revolving-drum tester (for focal-plane shutters).

- A.3 Front-shutter test
  - A.3.1 Test assembly
  - A.3.2 Procedure
    - A.3.2.1 Effective time,  $t_e$
    - A.3.2.2 Total time,  $t_o$
    - A.3.2.3 Non-uniformity of exposure,  $r$
    - A.3.2.4 Delay time,  $t_d$
- A.4 Focal-plane-shutter test
  - A.4.1 Test assembly
  - A.4.2 Procedure
    - A.4.2.1 Effective time,  $t_e$
    - A.4.2.2 Slit width,  $w$  (at any distance from the edge of the picture area)
    - A.4.2.3 Curtain velocity,  $v_c$
    - A.4.2.4 Non-uniformity of exposure,  $r$
    - A.4.2.5 Overall time,  $T$

Page count: 0 22