

Baby Shutter Tester – User Manual

The Baby Shutter Tester is a device designed to check the accuracy of the shutter speed of film cameras.

Presentation

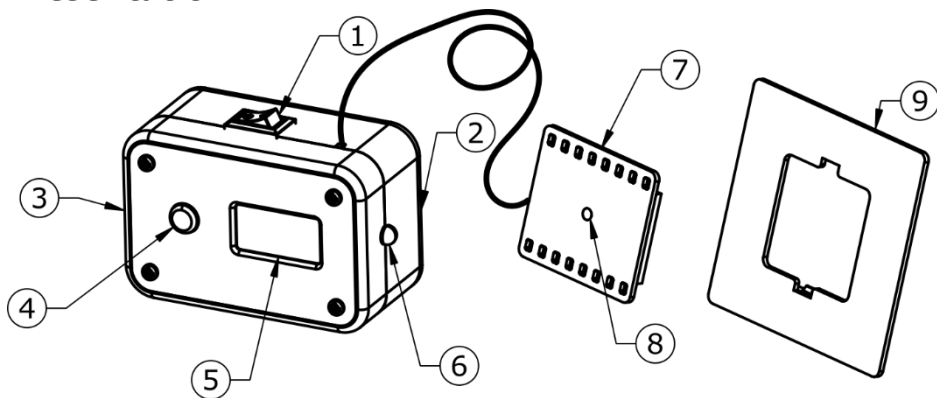



Figure 1 : Presentation

- | | |
|------------------------------------|--|
| 1. On/Off switch | 6. Lighting LED |
| 2. LR03/AAA battery compartment | 7. Sensor support |
| 3. Micro-USB port | 8. Light sensitive sensor |
| 4. Reset and mode selection button | 9. Removable 6x6 medium format adapter (120 film format) |
| 5. Display screen | |

Setup

The device can be powered either by a micro-USB cable or by two LR03 (AAA) batteries. When the device is powered through the USB port, the On/Off switch is not functional.

When the voltage delivered by the batteries during operation is too low, a low battery indication () appears on the display. Change the batteries to avoid erratic operation.

It is necessary to **remove the batteries**

- When not using the device for a long time
- **When you power the device using the USB port**

The Baby Shutter Tester should be kept away from moisture and heat sources. It is designed to operate over a temperature range from 5 to 40°C.

Measurement operation

- Open the back of your camera.
- Place the sensor on the back of the camera, in place of the film. With medium format cameras, use the supplied adapter. Be sure to center the sensor, and hold it with a rubber band or other device.
- Place the main box in front of your camera, raising it if necessary, so that the illumination LED of the device is in front of the sensor. The Baby Shutter Tester LED has an

illumination cone of 20°. It is necessary that the sensor is located in this lighting cone. Avoid projecting the light beam towards the eyes

- Turn on the baby Shutter Tester. The box displays "Ready" and the lighting LED is on
- To be sure that the Baby Shutter Tester box and its sensor are correctly positioned, use the Test mode (see next chapter). **For accurate measurements at high speeds (1/250th of a second and faster), place your equipment in a fixed position and calibrate the tester first.**
- Select the speed you want to measure on your camera.
- Trigger your camera's shutter. During the shutter opening phase, the Baby Shutter Tester displays a sun picture in order to indicate that it detects light. This phase can be very brief, depending on the speed chosen on the camera.
- Once the shutter is closed, the measured speed value is displayed on the screen
- Compare the measured value with the value chosen on the speed selector of your camera
- To perform a new measurement, press the reset button.

If used rigorously, the Baby Shutter Tester can perform measurements ranging from several seconds to 1/4000th of a second with a precision of a few microseconds.

The different operating modes

The initial operating mode of the Baby Shutter Tester is the "Measurement" mode, with which speed measurements are carried out.

But the device also has other operating modes, to facilitate positioning and calibration, or to display information. A long or short press on the device button allows you to navigate from one mode to another.

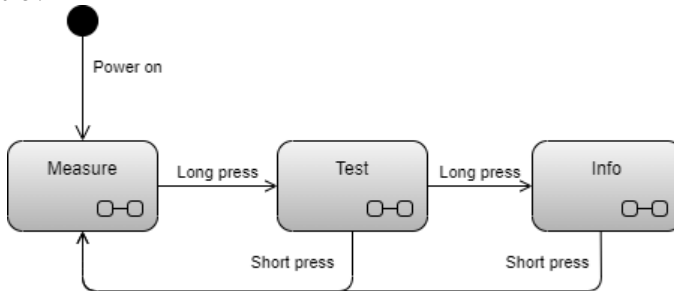


Figure 2 Operating modes and transitions from one mode to another

Measurement mode

This mode allows you to measure the speed of your camera (see Measurement Operation above).

Test mode

This mode allows you to place the sensor correctly on the back of the camera, and obtain the best measurement accuracy.

To obtain a reliable measurement at high speeds (1/250th and faster), an optimum positioning of the tester's LED in relation to the sensor is essential. This is the calibration process.

To ensure that calibration and measurements are reliable, it is necessary to proceed in subdued light, i.e. in conditions where the ambient light hitting the sensor is lower than that coming from the LED.

After positioning the sensor on the back of the camera, correctly centred, with the LED of the tester in front of it, select a slow shutter speed or pause B on your camera and release the shutter.

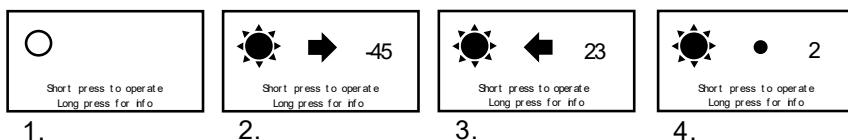


Figure 3 : Test Mode displays

In Test mode, as long as the sensor does not detect the light from the LED, a circle is displayed on the left of the screen (display 1).

When the sensor detects the LED, a sun is displayed instead of the circle.

- If the LED is too close to the sensor, a right arrow is displayed in the centre of the screen, along with a negative number (display 2).
- If the LED is too far from the sensor, a left arrow is displayed in the centre of the screen, along with a positive number (display 3).
- If the LED is positioned at the right distance, a dot is displayed in the centre of the screen, along with a number between -10 and 10 (display 4).

The last distance indication display persists 2 seconds after the camera has stopped detecting the LED. This facilitates calibration even if the camera has neither slow speed nor B mode.

If your camera lens is removable, calibration will be easier when it is removed.

If the lens is not removable, or if the object of the measurement is a central (leaf) shutter located in the lens, the procedure is made easier when the aperture is set to full open and the focus is set to infinity.

Once your assembly has been correctly positioned, return to measurement mode and **carry out the speed measurements under exactly the same conditions as the calibration.**

Incorrect positioning of the LED in relation to the sensor can result in a measurement error of up to 1 f-stop for a speed of 1000th of a second.

Information mode

In this mode, the screen displays information about the device, including its firmware version number.

Specificity of the measure according to the type of shutter.

There are mainly two types of shutters:

- Focal plane shutters (curtain shutters)
- Leaf shutters (central shutters)

The Baby Shutter Tester gives an indication of shutter speed as a single value.

However, there are some cases where this simple value is not sufficient to determine the exposure.

Focal plane shutter

The focal plane shutter uses two curtains that move successively in the same direction. The opening of the first is followed by the closing of the second. If the two curtains move at the same speed over the entire surface, the exposure is uniform and is given by the measurement of the Shutter Speed Tester.

If the two curtains move at different speeds, this will result in different exposures in different parts of the photo. It is difficult for a single-sensor device such as the Baby Shutter Tester to assess this type of phenomenon.

If you need to, turn to a multi-sensor device such as the Shutter Lover, from the same manufacturer.

Leaf shutter

The central shutter has the characteristic of operating in three phases: opening, full opening, and closing.

When full aperture lasts longer than the opening and closing phases, everything is fine, and the measured shutter speed corresponds to the exposure the film will have. When this is no longer the case (for very high speeds, but also if the shutter blades move too slowly), you can have a discrepancy between the measured speed and the actual exposure that the film will have, since the intermediate phase during which the shutter is neither fully open nor fully closed is not negligible. This results in a speed measurement at the optical centre that is underestimated with the Baby Shutter Tester. At the maximum speed of a central shutter, an underestimation of the speed by up to one f-stop is usual. So, there's no need to worry in this case.

If you place the sensor as close as possible to the shutter (on the lens side), you can take measurements in the centre and at the periphery. The difference in time measured will give you the time taken for the blades of the shutter to open and close.

Manufacture

This product has been designed and manufactured in France. Its assembly is made according to an artisanal process. The case is printed individually on a 3D printer with a bio sourced raw material produced in Europe.

Its design is an extension of the Shutter Speed Tester open-source project (github.com/sebastienroy/shutter_speed_tester).

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